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FINAL PHASE I VAPOR INTRUSION INVESTIGATION REPORT MCAS CHERRY POINT NC

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CH2MHILL

Final

Phase I Vapor Intrusion Investigation Report

Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

Prepared for

Department of the Navy
Naval Facilities Engineering Command
Mid-Atlantic

Contract No. N62470-02-D-3052
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January 2011

Prepared by

CH2MHILL.

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Phase I Vapor Intrusion Investigation Report

Marine Corps Air Station Cherry Point
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Contract Task Order 177

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Prepared for

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Under the

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Contract N62470-02-D-3052

Prepared by

CH2MHILL

Charlotte, North Carolina

Executive Summary

This Vapor Intrusion Investigation Report documents the activities, results, and conclusions of the vapor intrusion investigation performed at Operable Unit 1 (OU1), located at Marine Corps Air Station (MCAS) Cherry Point in North Carolina (**Figure 1-1**). The vapor intrusion evaluation was conducted to assess potential migration of chlorinated volatile organic compounds (cVOCs) from contaminated groundwater into overlying industrial buildings at OU1. Field activities included collection of soil vapor and groundwater samples associated with 21 buildings of interest at OU1 (**Figure 1-2**).

This vapor intrusion investigation was implemented based on the proposed future actions described in the OU1 Remedial Investigation (RI) Addendum (CH2M HILL, 2009a) and in accordance with the Uniform Federal Policy Sampling and Analysis Plan (UFP-SAP) for the OU1 Vapor Intrusion Investigation (CH2M HILL, 2009c).

This report was prepared under the United States Department of the Navy (Navy), Naval Facilities Engineering Command (NAVFAC), Atlantic Division, Comprehensive Long-Term Environmental Action Navy III Contract N62470-02-D-3052, Contract Task Order 0177, for submittal to NAVFAC Mid-Atlantic Division, MCAS Cherry Point Environmental Affairs Department (EAD), U.S. Environmental Protection Agency (USEPA) Region 4, and North Carolina Department of Environment and Natural Resources (NCDENR). The Navy, EAD, USEPA, and NCDENR work jointly as the MCAS Cherry Point Tier I Partnering Team.

Objective

The overall objective of this vapor intrusion investigation is to assess the potential for migration of select VOCs from contaminated groundwater and soil vapor into overlying industrial buildings at OU1 and to assess current potential risk to industrial workers from potential vapor intrusion. This objective is being accomplished by: (1) identifying buildings of interest located within 100 feet (ft) of upper surficial aquifer monitoring wells with groundwater concentrations above site-specific vapor intrusion risk-based screening values; (2) collecting multiple lines of evidence (e.g., building usage/history; pressure differential; soil vapor and subslab samples); and (3) performing a risk evaluation to assess whether potential cancer risks or noncancer hazards for building occupants exceed target levels. Although potential risks exceeding target levels can be inferred during the initial investigative phase by comparing measured concentrations with vapor intrusion risk-based screening levels, the actual quantitative risk estimates will be calculated during a subsequent phase of the vapor intrusion investigation and are not provided as part of this Phase I report.

Investigation Activities

The vapor intrusion investigation is being conducted using a phased, multiple-lines-of-evidence approach consistent with the Department of Defense (DOD, 2009) Vapor Intrusion Handbook, the Interstate Technology & Regulatory Council (ITRC, 2007), and the USEPA (2002) Vapor Intrusion Guidance documents. The initial screening steps used to identify the

buildings of interest that were the target of the Phase I investigation presented in this report have been described in the Final UFP-SAP (CH2M HILL, 2009c). Briefly, buildings of interest for inclusion in Phase I of the vapor intrusion investigation were selected by screening constituent of potential concern (COPC) historical groundwater data against USEPA (2002) generic vapor intrusion screening levels. Buildings located above the groundwater plumes or within 100 ft of groundwater monitoring wells with concentrations that exceeded the generic screening levels were selected as buildings of interest. Initially, 80 buildings were identified for further investigation (CH2M HILL, 2009c).

Buildings located in areas where contamination was not present in the upper surficial aquifer were removed from the buildings of interest list. Non-occupied buildings were also removed since this investigation focused on potential risks associated with current use of the buildings. These two additional screening steps reduced the list of buildings of interest from 80 to 41 (CH2M HILL, 2009c).

Detailed building surveys (site reconnaissance) were conducted at seven buildings (133, 137, 80, 3402, 4224, 4497, and 4533) considered to have the highest vapor intrusion potential based on the highest historical shallow groundwater concentrations, presence of dense, non-aqueous phase liquid (DNAPL), and/or location within assumed source areas. A general building survey was performed at the remaining 34 buildings to determine the building type, size, status, occupancy, and construction (slab on grade, materials, windows, etc.). The detailed surveys included building descriptions indicating the size, potential conduits from soil (joints, floor drains, etc.), potential pathways/driving forces (heating, ventilation, and air conditioning [HVAC] systems), and potential indoor sources, as well as an indication of whether any current mitigation systems exist.

The 2006 groundwater data that were available during the initial screening steps were subsequently compared with site-specific screening levels derived using USEPA's (2004) version of the Johnson and Ettinger (J&E) (1991) model. Site-specific screening levels were developed for large (>100,000 square feet [ft^2]), medium (10,000 – 100,000 ft^2), and small (<10,000 ft^2) buildings. Nineteen buildings of interest within 100 ft of monitoring wells with groundwater concentrations above the large, medium, or small industrial building site-specific screening values were identified for further investigation during Phase I sampling.

Additional groundwater sampling not related to the Phase I vapor intrusion sampling was also conducted at OU1 in 2009 (CH2M HILL, 2009a). The 2009 Additional Groundwater Investigation (CH2M HILL, 2009b) took place from March through May 2009 and included groundwater samples from 160 existing monitoring wells and installation and sampling of 14 new monitoring wells. The results from this 2009 event redefined the plume boundaries and led to the addition of two buildings (159 and 4498) of interest to the Phase I vapor intrusion investigation.

A field investigation was conducted to assess the potential for vapor intrusion at the 21 identified buildings of interest. Phase I field activities related to the 21 buildings were conducted in November 2009 and primarily included exterior sampling adjacent to the buildings (i.e., groundwater grab sampling from the top of the water table and co-located exterior soil vapor sampling). In addition, interior sampling (i.e., subslab soil vapor sampling) was conducted at Buildings 133 and 137 based on the high source strength and depth to groundwater (e.g., a DNAPL plume beneath Building 133 and relatively high

groundwater concentrations beneath Building 137). Indoor-to-subslab pressure differential monitoring was also conducted at these two buildings.

A review of the Phase I sampling results and other lines of evidence indicated that there are eleven MCAS Cherry Point OU1 buildings where additional Phase II vapor intrusion investigations are needed (i.e., a significant vapor intrusion pathway cannot be ruled out).

Data Evaluation

Phase I data were compared to risk-based screening levels. Preliminary conceptual site models (CSMs) were refined using these risk-based screening level comparisons and other available lines of evidence (e.g., pressure data, size of the buildings, type of construction material, number and size of openings, building usage patterns, subsurface lithology, and groundwater depth and flow). Potential horizontal transport of vapors via preferential pathways (e.g., underground utilities) at select buildings was also considered.

The results of this initial Phase I vapor intrusion assessment indicated it is unlikely that the vapor intrusion pathway would result in current cVOC concentrations above indoor air risk-based screening levels at Buildings 159, 4630, 4032, 4172, 4380, 3987, 1005, 452, and 4808; therefore, a Phase II evaluation is not recommended for these buildings. The significance of the vapor intrusion pathway would need to be re-evaluated at Building 159 if cVOCs continue to migrate and higher concentrations are detected under the building in the future. It is recommended that cVOCs continue to be monitored in groundwater wells within 100 ft of Building 159.

Although significant vapor intrusion of cVOCs at Buildings 4533, 4498, and 4497 is unlikely, elevated reporting limits were observed and may have been caused by the presence of a POL plume in the subsurface. Potential petroleum impacts at these buildings will be evaluated in a cooperative effort between NAVFAC and Unites States Marine Corps (USMC) POL team. program.

The potential for a complete vapor intrusion pathway could not be ruled out based on this Phase I assessment for Buildings 143, 4225, 4224, 133, 3402, 4026, 137, 3997, and 131. A thorough building survey is recommended to document building characteristics, which will be needed to evaluate the vapor intrusion pathway using a multiple–lines-of-evidence approach at each of the buildings to be investigated during Phase II. Subslab soil vapor probes should be installed and sampled during Phase II in Buildings 143, 4225, 4224, 3402, 4026, 3997, and 131 to further evaluate the potential for vapor migration from cVOC-contaminated groundwater into the building, and to determine if any building occupants are currently subject to unacceptable risks. It is recommended that additional subslab soil vapor samples be collected from the existing subslab probes at Building 133 and 137, that additional subslab probes be installed and sampled, and that indoor and outdoor air samples be collected to further evaluate the potential for vapor migration during Phase II. A detailed evaluation of the Phase I results for each building of interest is presented in Section 6.

Buildings 4525/129 and 188 were identified for Phase II sampling during the preferential pathway analysis. These buildings are located along the northeast side of Building 133; cVOCs were detected in exceedance of the industrial generic soil vapor screening levels

(SVSLs) in subslab soil vapor at Building 133 and the highest detections occurred in the east and northeast sections of the building. The two buildings to the northeast of Building 133 that were not included in the Phase I vapor intrusion evaluation should be evaluated during Phase II, with greater emphasis placed on the portions of the buildings closest to Building 133 and areas where subsurface utilities enter the buildings. A detailed preferential pathway analysis is presented in Section 7.3.

Table ES-1 summarizes the Phase I recommendations for each OU1 building of interest. These recommendations will be implemented during the Phase II investigation at OU1.

TABLE ES-1
Summary of Phase I Recommendations

Bldg #	Phase II Evaluation Recommended	Evaluation Recommended under UST Program	Monitor cVOCs in Groundwater	Perform Building Survey	Additional Round of Subslab Sampling	Install and Sample Subslab Probes	Sample Indoor and Outdoor Air at Building
Building 159	NO		X				
Building 4630	NO						
Building 4032	NO						
Building 4172	NO						
Building 4380	NO						
Building 3987	NO						
Building 1005	NO						
Building 452	NO						
Building 143	YES			X		X	
Building 4225	YES			X		X	
Building 4224	YES			X		X	
Building 133	YES			X	X	X	X
Building 4533	NO	X					
Building 4498	NO	X					
Building 4497	NO	X					
Building 3402	YES			X		X	
Building 4026	YES			X		X	
Building 137	YES			X	X	X	X
Building 4808	NO						
Building 3997	YES			X		X	
Building 131	YES			X		X	
Buildings Recommended for Sampling Based on Preferential Pathway Analysis							
Building 4525/129	YES			X		X	
Building 188	YES			X		X	

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Acronyms and Abbreviations

AF	attenuation factor
AS/SVE	Air Sparge/Soil Vapor Extraction
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CLEAN	Comprehensive Long-term Environmental Action – Navy
COPC	constituent of potential concern
CSM	conceptual site model
cVOC	chlorinated volatile organic compound
DCA	dichloroethane
DCE	dichloroethene
DNAPL	dense, non-aqueous phase liquid
DO	dissolved oxygen
DOD	Department of Defense
DPT	direct-push technology
DQO	data quality objective
DRMO	Defense Reutilization & Marketing Office
DTW	depth to water
ELCR	excess lifetime cancer risk
FFA	Federal Facility Agreement
FRCE	Fleet Readiness Center East
ft	foot, feet
GIS	Geographic Information System
GWSL	groundwater screening level
Hg	mercury
HHRA	Human Health Risk Assessment
HQ	hazard quotient
HVAC	Heating, Ventilation, and Air Conditioning
IASL	indoor air screening level
IDW	investigation-derived waste
ITRC	Interstate Technology & Regulatory Council
IWTP	Industrial Wastewater Treatment Plant
J&E	Johnson and Ettinger
$\mu g/m^3$	micrograms per cubic meter
µg/L	micrograms per liter
MCAS	Marine Corps Air Station

MS/MSD	matrix spike/ matrix spike duplicate
mL/min	milliliters per minute
NADEP	Naval Aviation Depot
NAVFAC	Naval Facilities Engineering Command
NC	North Carolina
NCDENR	North Carolina Department of Environment and Natural Resources
NCGWS	North Carolina Groundwater Standard
OU	Operable Unit
Pa	Pascal
PAL	Project Action Limit
PCA	tetrachloroethane
PCE	tetrachloroethene
PETG	polyethylene terephalate glycol
POL	petroleum oil lubricant
PPE	personal protective equipment
PRT	post-run tubing
QA/QC	Quality Assurance/Quality Control
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RSL	Regional screening level
SOP	standard operating procedure
STP	Sewage Treatment Plant
SVSL	soil vapor screening level
TCA	trichloroethane
TCE	trichloroethene
UFP-SAP	Uniform Federal Policy Sampling and Analysis Plan
USEPA	U.S. Environmental Protection Agency
USMC	United States Marine Corps
UST	Underground Storage Tank
VC	vinyl chloride
VOC	volatile organic compound

SECTION 1

Introduction

This Vapor Intrusion Investigation Report documents the activities, results, and conclusions of the vapor intrusion investigation performed at Operable Unit 1 (OU1), located at Marine Corps Air Station (MCAS) Cherry Point, North Carolina (**Figure 1-1**). The vapor intrusion evaluation was conducted to assess potential vapor intrusion migration of chlorinated volatile organic compounds (cVOCs) from contaminated groundwater into overlying industrial buildings at OU1. The field activities included the collection of soil vapor and groundwater samples from 21 buildings of interest (**Figure 1-2**).

The vapor intrusion investigation was implemented based on the proposed future actions described in the OU1 Remedial Investigation (RI) Addendum (CH2M HILL, 2009a) and in accordance with the Uniform Federal Policy Sampling and Analysis Plan (UFP-SAP) for the OU1 Vapor Intrusion Investigation (CH2M HILL, 2009b).

This report was prepared under the United States Department of the Navy (Navy), Naval Facilities Engineering Command (NAVFAC), Atlantic Division, Comprehensive Long-Term Environmental Action Navy III Contract N62470-02-D-3052, Contract Task Order 0177, for submittal to NAVFAC Mid-Atlantic Division, MCAS Cherry Point Environmental Affairs Department (EAD), U.S. Environmental Protection Agency (USEPA) Region 4, and North Carolina Department of Environment and Natural Resources (NCDENR). The Navy, EAD, USEPA, and NCDENR work jointly as the MCAS Cherry Point Tier I Partnering Team.

1.1 Objectives and Approach

The main objectives of this vapor intrusion investigation are to assess the potential for migration of select volatile organic compounds (VOCs) from contaminated groundwater and soil vapor into overlying industrial buildings at OU1 and to assess current potential risk to industrial workers from vapor intrusion.

The vapor intrusion evaluation approach includes: (1) identifying buildings of interest—those located within 100 feet (ft) of monitoring wells with VOC groundwater concentrations above generic screening levels; (2) conducting a desktop screening evaluation to refine the buildings of interest list by comparing the upper surficial monitoring wells with VOC groundwater concentrations above site-specific vapor intrusion risk-based screening values; (3) performing sampling and analysis to collect multiple lines of evidence (e.g., building usage/history; pressure differential; soil vapor, and subslab samples); and (4) conducting a risk evaluation to assess whether potential cancer risks or non-cancer hazards for building occupants exceed target levels. Although potential risks exceeding target levels can be inferred during the initial investigative phase by comparing measured concentrations with vapor intrusion risk-based screening levels, the actual quantitative risk estimates will be calculated during a subsequent phase of the vapor intrusion investigation and are not provided as part of this Phase I report.

Vapor intrusion investigations are conducted using a phased, multiple-lines-of-evidence approach consistent with the Department of Defense (DOD) Vapor Intrusion Handbook (2009), the Interstate Technology & Regulatory Council (ITRC) Vapor Intrusion Practical Guide (2007), and USEPA (2002) Vapor Intrusion Guidance documents. The general steps of the phased approach that will be applied during this vapor intrusion investigation are presented on **Figure 1-3**. The detailed sample selection strategy and risk evaluation strategy are presented as **Figures 1-4 and 1-5**. The objective during the initial phase (i.e., Phase I) of this vapor intrusion investigation, which is the focus of this report, is to identify buildings that may need to be investigated further during Phase II.

Soil and groundwater impacts from underground storage tank (UST) sites are addressed under the MCAS Cherry Point UST Program and were not evaluated as part of this vapor intrusion investigation.

1.2 Report Organization

The following additional sections are included in this Vapor Intrusion Investigation Report:

- Section 2—Site Background and Characterization
- Section 3—Investigation Methods and Procedures
- Section 4— Quality Assurance
- Section 5 – Data Evaluation
- Section 6—Refined Conceptual Site Model for Vapor Intrusion
- Section 7—Conclusions and Recommendations
- Section 8—References

Tables and figures are provided at the end of the section where each is cited.

Legend

- Cities
- Rivers and Streams
- Military Installation
- County Boundary

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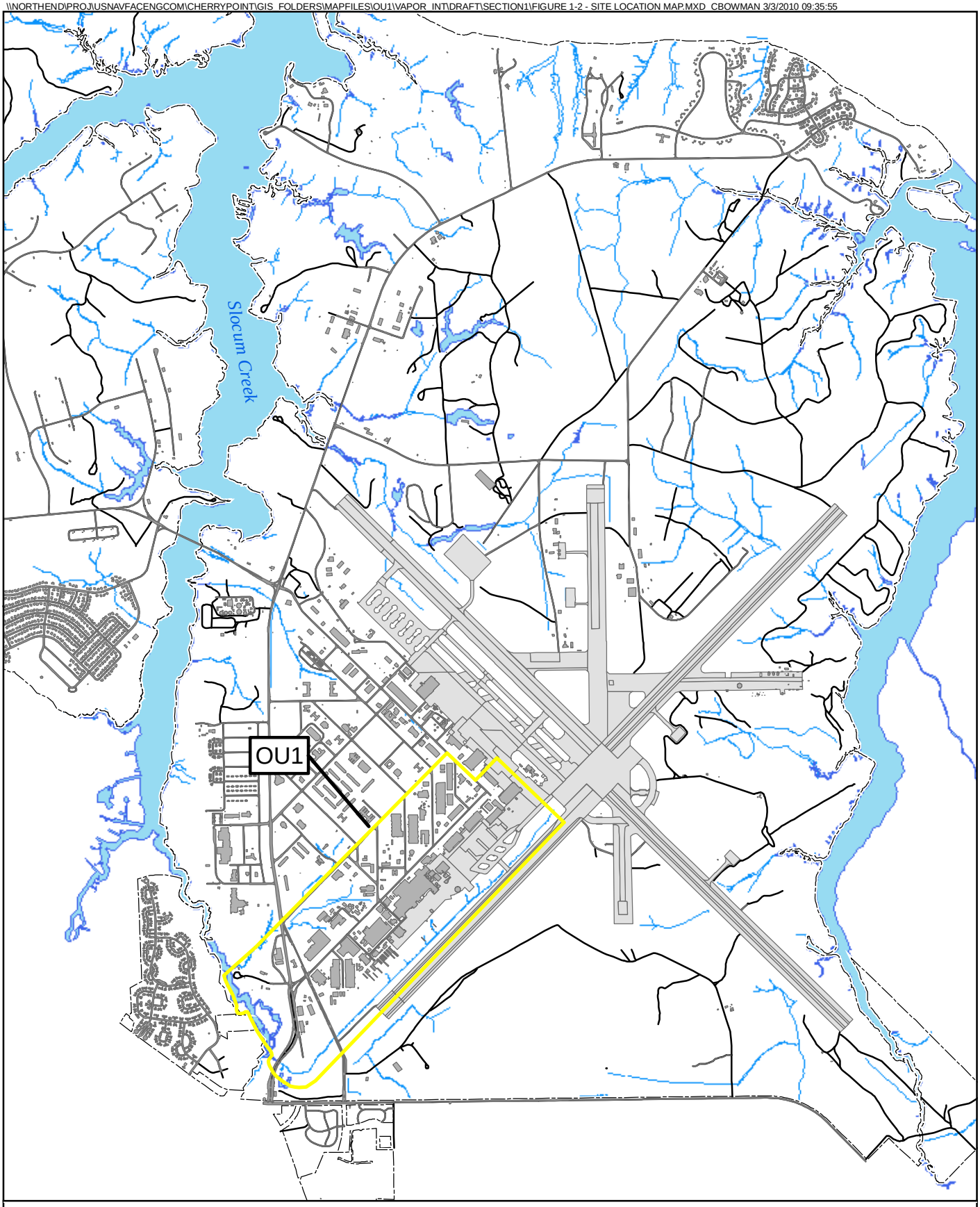
W E
S

0 20,000 40,000
Feet

Figure 1-1
Base Location Map
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

CH2MHILL



Legend

- OU Boundary
- Base Boundary
- Buildings
- Runway
- Road
- Surface Water

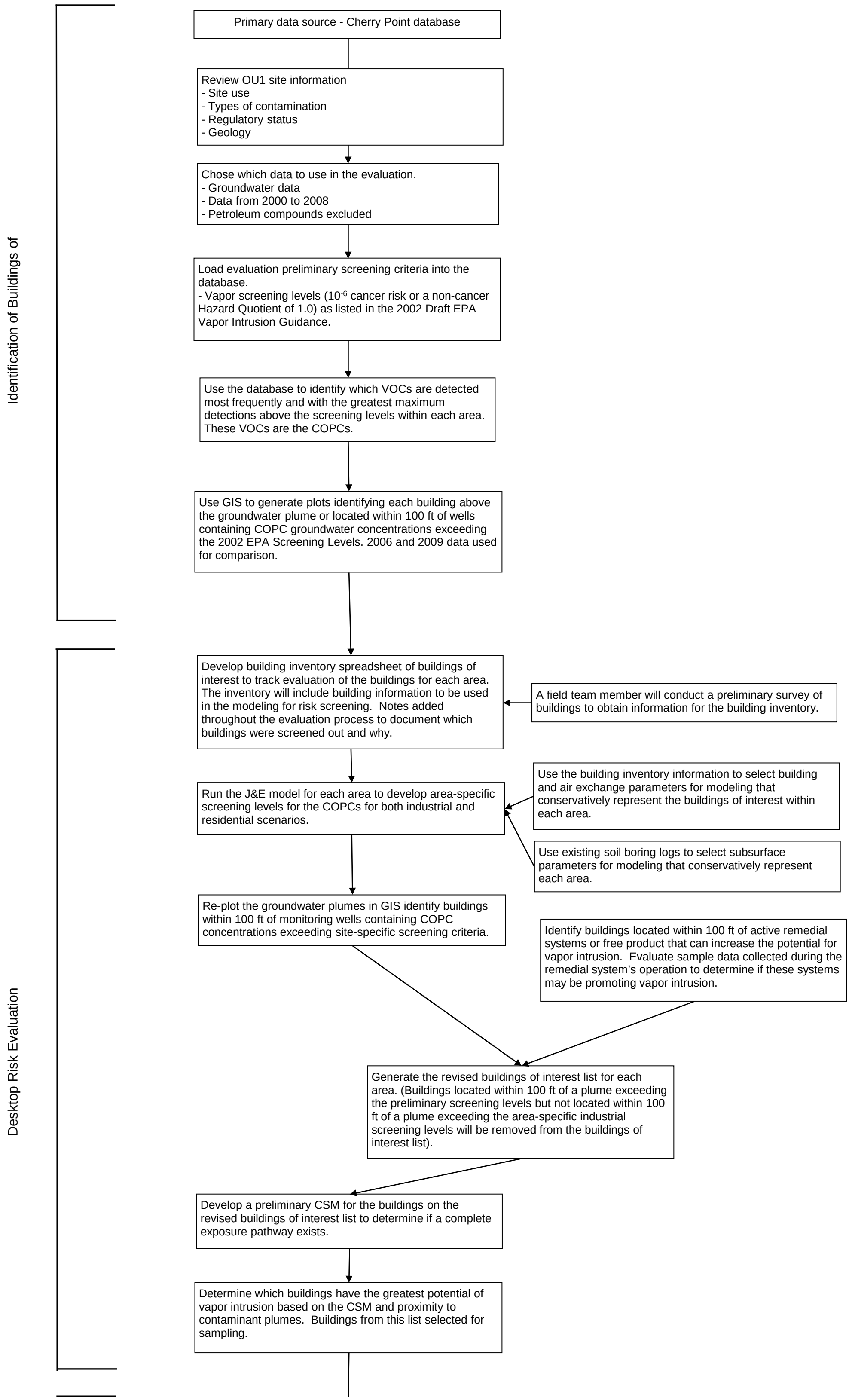
N
W E
S

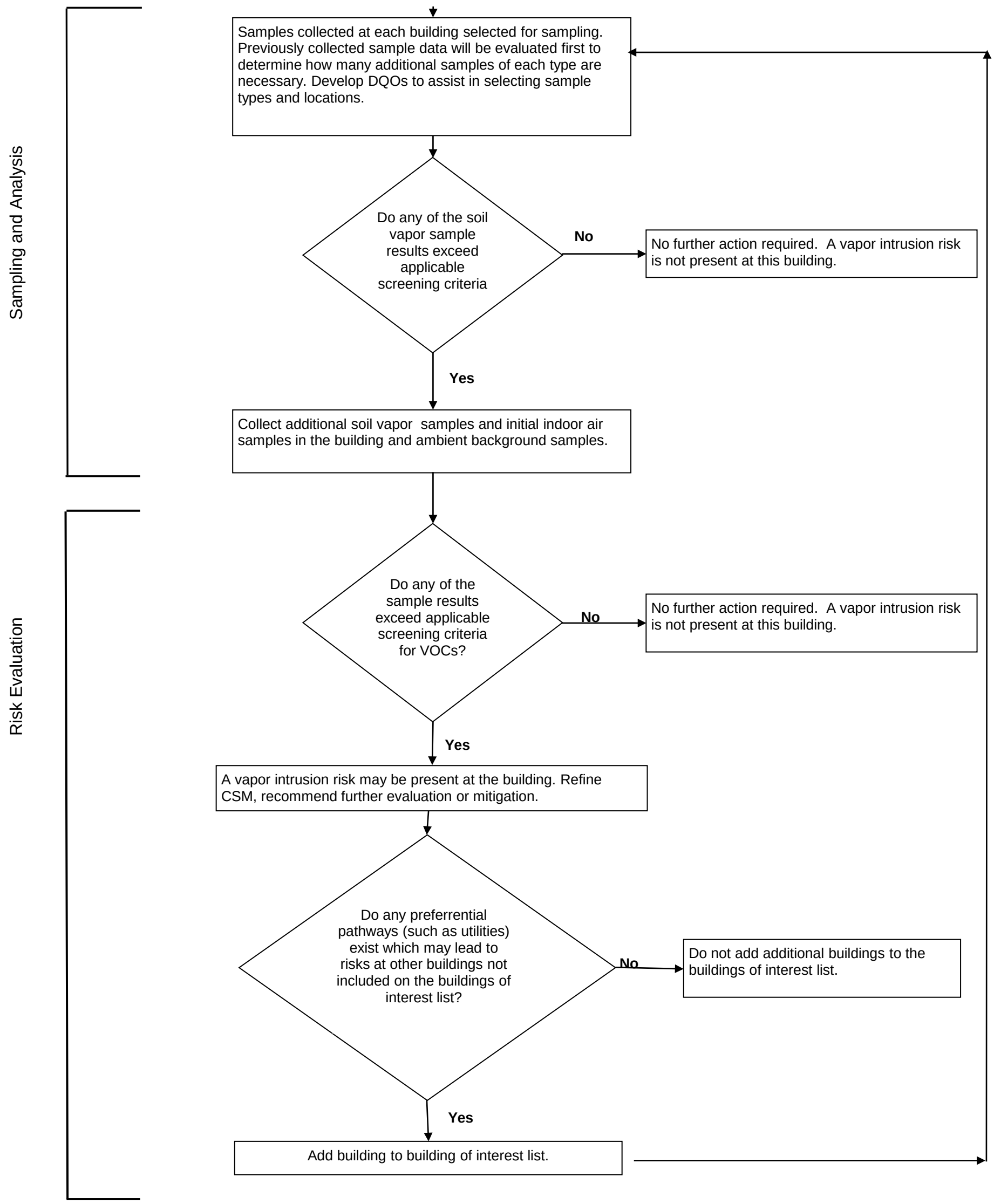
0 1,500 3,000
Feet

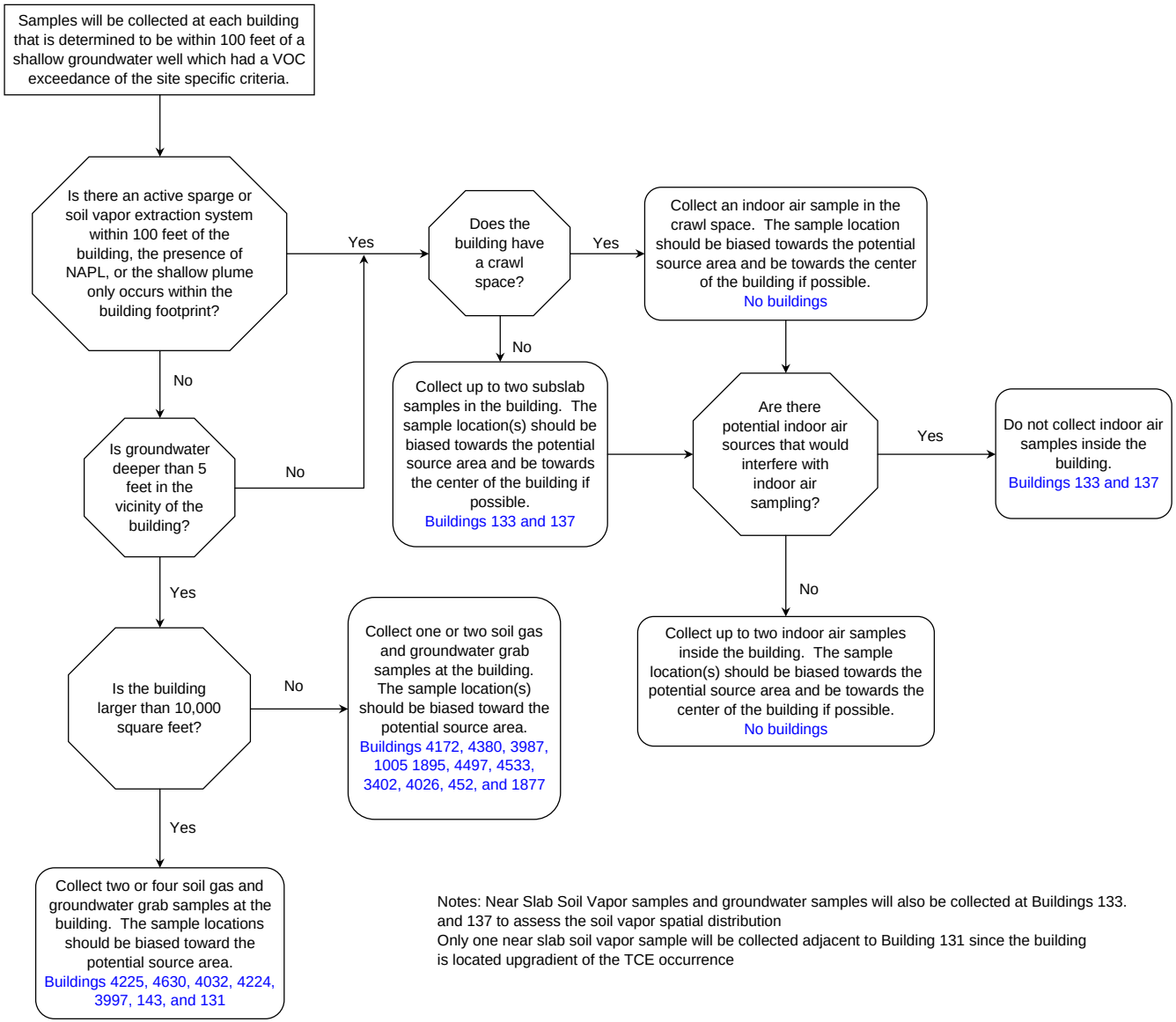
Figure 1-2
OU1 - Site Location Map
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

CH2MHILL

Figure 1-3
Vapor Intrusion Evaluation Approach




Sampling and Analysis
Risk Evaluation
Samples collected at each building selected for sampling. Previously collected sample data will be evaluated first to determine how many additional samples of each type are necessary. Develop DQOs to assist in selecting sample types and locations.
Do any of the soil vapor sample results exceed applicable screening criteria
No
No further action required. A vapor intrusion risk is not present at this building.
Yes
Collect additional soil vapor samples and initial indoor air samples in the building and ambient background samples.
Do any of the sample results exceed applicable screening criteria for VOCs?
No
No further action required. A vapor intrusion risk is not present at this building.
Yes
A vapor intrusion risk may be present at the building. Refine CSM, recommend further evaluation or mitigation.
Do any preferrential pathways (such as utilities) exist which may lead to risks at other buildings not included on the buildings of interest list?
No
Do not add additional buildings to the buildings of interest list.
Yes
Add building to building of interest list.



Notes: Near Slab Soil Vapor samples and groundwater samples will also be collected at Buildings 133. and 137 to assess the soil vapor spatial distribution
Only one near slab soil vapor sample will be collected adjacent to Building 131 since the building is located upgradient of the TCE occurrence

FIGURE 1-4
Field Investigation Decision Logic
Marine Corps Air Station, Cherry Point
Cherry Point, North Carolina

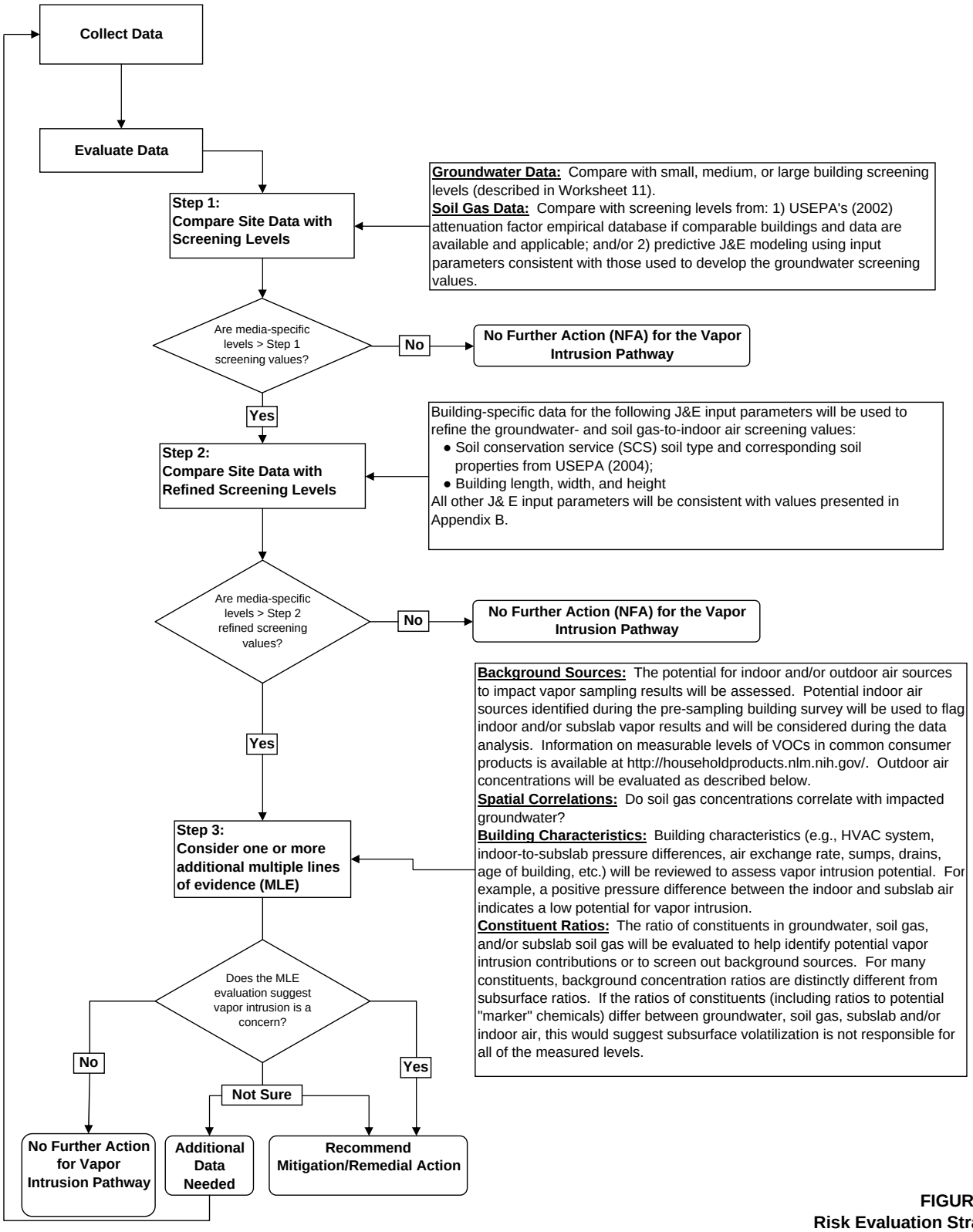


FIGURE 1-5
Risk Evaluation Strategy
(adapted from ITRC [2007])
Marine Corps Air Station, Cherry Point
Cherry Point, North Carolina

SECTION 2

Site Background and Characterization

This section provides a descriptive summary of both MCAS Cherry Point and OU1, including a description and environmental history of the Installation, and the history and current setting of OU1. A more detailed description is provided in the OU1 RI Addendum (CH2M HILL, 2009a).

2.1 Installation Description

MCAS Cherry Point is a 13,164-acre military reservation located adjacent to the city of Havelock in southeastern Craven County, North Carolina (**Figure 1-1**). MCAS Cherry Point was commissioned in 1942 and provides support facilities and services for the Second Marine Aircraft Wing, the Fleet Readiness Center – East (FRCE, formerly Naval Aviation Depot [NADEP]), Combat Service Support Detachment 21 of the Second Marine Logistics Group, the Naval Air Maintenance Training Group Detachment, and the Defense Reutilization & Marketing Office (DRMO). MCAS Cherry Point maintains facilities for training and for supporting the Atlantic Fleet Marine Force aviation units and is designated as a primary aviation supply point.

2.2 OU1 Description and History

OU1 is an industrial area approximately 565 acres in size, located in the southwestern portion of MCAS Cherry Point (**Figure 1-2).** OU1 is bounded by C Street and Sandy Branch to the northwest, portions of the MCAS Cherry Point flightline and runway to the northeast and southeast, and East Prong Slocum Creek to the southwest.

Of the 11 sites identified in the Federal Facilities Agreement (FFA) to be investigated as part of the OU1 RI, 6 were identified as contributing to the OU1 Central Groundwater Plume contamination, as described in the OU1 RI Addendum (CH2M HILL, 2009a). The locations of these sites are shown on **Figure 2-1.** These sites include:

- Site 42 – Industrial Wastewater Treatment Plant (IWTP)
- Site 47 – Industrial Area Sewer System
- Site 51 – Building 137 Former Plating Shop
- Site 52 – Building 133 Former Plating Shop and Ditch
- Site 92 – VOCs in Groundwater near the Stripper Barn
- Site 98 – VOCs in Groundwater near Building 4032

A description of each site is presented below.

2.2.1 Site 42—Industrial Wastewater Treatment Plant

The IWTP is located near the center of OU1, north of A Street. Site 42 specifically consists of the soil and groundwater around the IWTP structure. Waste streams in the Industrial Area Sewer System (Site 47) discharge to the IWTP, which currently discharges treated effluent to the Air Station Sewage Treatment Plant (STP).

Prior to the current connection to the Air Station STP, treated effluent from the IWTP was discharged to Sandy Branch, Tributary #2. Sludge from the IWTP was formerly disposed in a landfill or lagoon storage area (e.g., OU2, Site 10). The Resource Conservation and Recovery Act Facility Assessment (RFA) indicated that the IWTP was used to treat wastes from industrial sources such as metal plating, painting, aircraft maintenance, and vehicle maintenance, as well as stormwater contained in areas with berms. A groundwater extraction and treatment system was installed at OU1 in 1998 to remediate the groundwater VOC plume in the vicinity of FRCE, and the treatment component (packed tower air stripper) was located at the IWTP. As a result of decreasing system efficiency and the potential for interference with ongoing attempts to further define the nature and extent of groundwater contamination beneath OU1 by altering local groundwater gradients, the groundwater extraction and treatment system was shut down in February 2005 (CH2M HILL, 2006). The boundaries of Site 42 are presented on **Figure 2-1**.

2.2.2 Site 47—Industrial Area Sewer System

Site 47 is a system of underground pipes and aboveground drains that transfer industrial wastewater from various parts of FRCE and the surrounding industrial portions of OU1 to the IWTP or STP. Portions of the sewer system were constructed in 1942; the system has been expanded several times to connect facilities that formerly discharged to the sanitary or storm sewer systems. Site 47 only includes the industrial sewers within OU1 that currently discharge to the IWTP (**Figure 2-1**). Industrial processes that discharge (or historically discharged) wastewater to the sewer system include metal plating, metal finishing, solvent degreasing, paint stripping, painting, fuel storage, fueling, aircraft washing, and general maintenance. Concentrated wastes are no longer discharged to the industrial sewers, but are containerized and transported to the IWTP. Leaks have been detected at several locations within the sewer system in the past. Inspections and repairs are conducted as part of the facility's ongoing maintenance process.

An infiltration and leakage study was conducted at Site 47 in 1993 to identify the sewer segments to be repaired or replaced. Soil and groundwater samples were collected to determine if contamination had leaked from the segments. As a result of these studies, certain segments of the sewer system have been repaired (CH2M HILL, 2006).

2.2.3 Site 51—Building 137 Former Plating Shop

Site 51 is a former Plating Shop that was located within Building 137 inside FRCE, in the central portion of OU1. The Plating Shop operated from 1942 to 1990, and consisted of an area of approximately 4,000 square feet (ft^2) that included a 3-ft-deep sump for containment of spillage and tank overflows. The area has been cleaned and renovated, and an autoclave has been constructed over a portion of the former Plating Shop.

The wastes generated in the Plating Shop consisted of plating solution overflow and rinse water containing zinc and chromium that were discharged to the sump. The sump was constructed of steel and set into the concrete pit, which was covered with wooden grating. Concrete piers were present in the sump so that tanks and equipment could be mounted above the sump. The sump discharged to the industrial sewer system (Site 47) until 1987, when the sump was plugged and the Plating Shop converted to a closed-loop system. From then until the Plating Shop was moved in 1990, wastes were transported to the IWTP

(Site 42) in containers for batch treatment (CH2M HILL, 2006). The boundaries of Site 51 are presented on **Figure 2-1**.

2.2.4 Site 52—Building 133 Former Plating Shop and Ditch

Site 52 is a former Plating Shop that was located within Building 133 in FRCE, in the central portion of OU1. The Plating Shop operated from 1942 to 1990, and consisted of an area of approximately 2,000 ft^2 that included a 2.5-ft-deep sump for containment of spillage and tank overflows. In addition, former employees indicated that a ditch was formerly present behind Building 133 that received stormwater flow as well as industrial wastewater discharge from the Plating Shop and other areas within Building 133. This ditch was covered in the 1970s by an addition to Building 133. The Plating Shop area was cleaned and renovated in 1996 and is currently used to process and store non-hazardous parts and supplies.

The wastes generated in the Plating Shop consisted of plating solution overflow and rinse water that discharged to the sump. The sump was constructed of steel and set into the concrete pit, which was covered with wooden grating. Concrete piers were present in the sump so that tanks and equipment could be mounted above the sump. The sump wastes likely discharged to the former ditch behind Building 133 prior to the installation of the industrial sewer system (Site 47). An addition constructed on the southeastern side of the building subsequently covered this ditch. The sump then discharged to the industrial sewer system (Site 47) until 1987, when the sump was plugged and the Plating Shop converted to a closed-loop system. From then until the plating shop was moved in 1990, wastes were transported to the IWTP (Site 42) in containers for batch treatment (CH2M HILL, 2006). The boundaries of Site 52 are presented on **Figure 2-1**.

2.2.5 Site 92—VOCs in Groundwater near the Stripper Barn

Site 92 is a plume of VOC-contaminated groundwater near the Stripper Barn part of Building 137, in the central portion of OU1. The area around the site is covered with buildings and concrete, and portions of the industrial sewer system (Site 47) are located beneath and around the Stripper Barn.

The Stripper Barn is the area where paint is removed from aircraft. In the past, large quantities of solvent were used to remove paint; during the paint removal process, spent solvent flowed into the industrial sewer system. The current paint removal method requires approximately 90 percent less solvent, and spent solvent is captured for proper disposal. Any historical spills that occurred outside the building may have flowed toward storm drains located northeast of the Stripper Barn (CH2M HILL, 2006). The boundaries of Site 92 are presented on **Figure 2-1**.

2.2.6 Site 98—VOCs in Groundwater near Building 4032

Site 98 is a plume of VOC-contaminated groundwater near Building 4032, located southeast of the IWTP in the central portion of OU1. Site 98 was discovered by MCAS Cherry Point personnel during an investigation of USTs at Building 4032 in 1994, and was identified as a new site for inclusion in the FFA in 1999. The area around the site is paved with some grassy areas (CH2M HILL, 2006). The boundaries of Site 98 are presented on **Figure 2-1**.

2.3 Hydrogeology

The hydrogeologic framework to a depth of approximately 500 ft beneath OU1 consists of nine hydrostratigraphic units: five aquifers and four confining units. From shallowest (youngest) to deepest (oldest), the aquifers with associated confining units include the surficial, Yorktown, Pungo River, Upper Castle Hayne, and Lower Castle Hayne aquifers. Each aquifer is separated by the confining unit except where the units are absent or discontinuous.

The surficial aquifer is the first encountered groundwater beneath OU1 (depth of approximately 4 to 21 ft below ground surface [bgs]) and is unconfined. The saturated thickness ranges from approximately 30 to 45 ft beneath OU1, and is controlled by the fine-grained Yorktown confining unit (generally sandy silt) at the base of the aquifer. The surficial aquifer has been evaluated as two different groundwater zones due to differences in aquifer properties: the upper and lower surficial aquifers. The upper surficial aquifer is defined as the upper 10 to 15 ft of saturated thickness, and is generally monitored by wells installed across or near the water table. The lower surficial aquifer is defined as the lower 20 to 30 ft of the aquifer and is monitored by wells installed typically just above the Yorktown confining unit.

The Yorktown aquifer occurs beneath the Yorktown confining unit and is generally a confined to semi-confined aquifer. The saturated thickness is approximately 40 ft and is controlled by the Yorktown confining unit at the top and the Pungo River confining unit at its base, where present.

A regional, Pleistocene-age paleochannel eroded the Yorktown and Pungo River confining units and deposited younger-aged sediments in the southwestern portion of OU1. As a result, the uppermost aquifers may be in direct hydraulic communication within the paleochannel. Groundwater levels northeast of the paleochannel boundary (outside the paleochannel) show a discontinuity across the Yorktown confining unit (which acts as an aquitard) and a downward vertical gradient from the surficial aquifer to the Yorktown aquifer. Groundwater levels southwest of the paleochannel boundary (within the paleochannel) generally show similar groundwater levels between the surficial and Yorktown aquifers and an upward vertical gradient from the Yorktown aquifer to the surficial aquifer. **Figure 2-2** presents the conceptual hydrogeology of OU1.

Groundwater flows generally westward in the upper and lower surficial aquifers toward East Prong Slocum Creek and Sandy Branch, with an average horizontal hydraulic gradient of approximately 0.004 ft/ft (**Figures 2-3 and 2-4**). Groundwater flow appears to have minimal discharge to Sandy Branch Tributaries #1 and #2 and follows along their same general direction. The average linear horizontal groundwater velocity in the upper and lower surficial aquifer is estimated at approximately 0.1 to 0.2 ft/day.

The direction of the vertical hydraulic gradient from the surficial to Yorktown aquifers is downward within the central and northeastern portions of OU1, and upward within the paleochannel located beneath the southwestern portion of OU1.

2.4 Nature and Extent of Contamination

The nature and extent of contamination at OU1 was defined by the OU1 RI Addendum (CH2M HILL, 2009a). However, the OU1 RI Addendum proposed additional monitoring wells to further characterize the extent of cVOCs in the vicinity of Sandy Branch Tributary #2 and another round of groundwater samples from existing monitoring wells to update OU1 conditions. As a result, groundwater samples were collected from existing monitoring wells in the area of the OU1 Central Groundwater Plume and documented in the 2009 OU1 Additional Investigation Activities Technical Memorandum (CH2M HILL, 2010). The plume maps presented to define the nature and extent of contamination in this report are from the 2009 Additional Groundwater Investigation.

The most prevalent cVOCs detected above regulatory standards within the Central Groundwater Plume (in order based on the greatest frequency of exceedances) include trichloroethene (TCE), vinyl chloride (VC), 1,2-dichloroethene (1,2-DCE), 1,1-dichloroethane (1,1-DCA), and 1,1- dichloroethene (1,1-DCE). These chemicals generally exceeded the regulatory standards at a frequency greater than 10 percent. Other CVOCs related to chlorinated solvents detected above regulatory standards, but less frequently, included tetrachloroethene (PCE), 1,1,1-trichloroethane (1,1,1-TCA), 1,1,2,2-tetrachloroethane (1,1,2,2-PCA), and 1,2-dichloroethane (1,2-DCA).

Three distinct plumes of TCE and its degradation products occur within OU1 (**Figures 2-5** through **2-10**). The most elevated TCE concentrations (**Figures 2-5** and **2-6**) were detected in samples collected beneath Building 133 and may be indicative of the presence of dense, nonaqueous phase liquid (DNAPL) TCE. These concentrations were detected primarily within the upper surficial aquifer beneath Building 133 and have not been observed in the lower surficial aquifer. The TCE plume extends from the upper surficial aquifer into the lower surficial aquifer at locations down-gradient of Building 133, and from the western portion of the building over 3,000 ft to East Prong Slocum Creek and Sandy Branch.

Another distinct TCE plume occurs within the upper surficial aquifer beneath Building 137, and extends a few hundred feet to the southwest beneath the building. The plume extends from the upper surficial aquifer to the lower surficial aquifer down-gradient of Building 137 and mixes with the plume that originates beneath the IWTP.

A third TCE plume within the upper surficial aquifer occurs near the IWTP. The TCE plume from this area migrates within the upper and lower surficial aquifers beneath Tributary #2 to Sandy Branch and also joins the larger plume that extends from Building 133.

Detections of 1,2-DCE (**Figures 2-7 and 2-8**) and VC (**Figures 2-9 and 2-10**) were recorded primarily in samples from the same monitoring wells where TCE exceeded the North Carolina Groundwater Quality Standards (NCGWQS). Similar to TCE, the 1,2-DCE and VC contamination extends from the upper surficial aquifer beneath Building 133 to the lower surficial aquifer down-gradient of the building, and further to Sandy Branch and East Prong Slocum Creek.

Concentrations of 1,1-DCE exceeding the NCGWQS were detected primarily in samples collected from a small area within the upper surficial aquifer beneath Building 137, within the lower surficial aquifer down-gradient of Building 137 and up-gradient of the IWTP, and

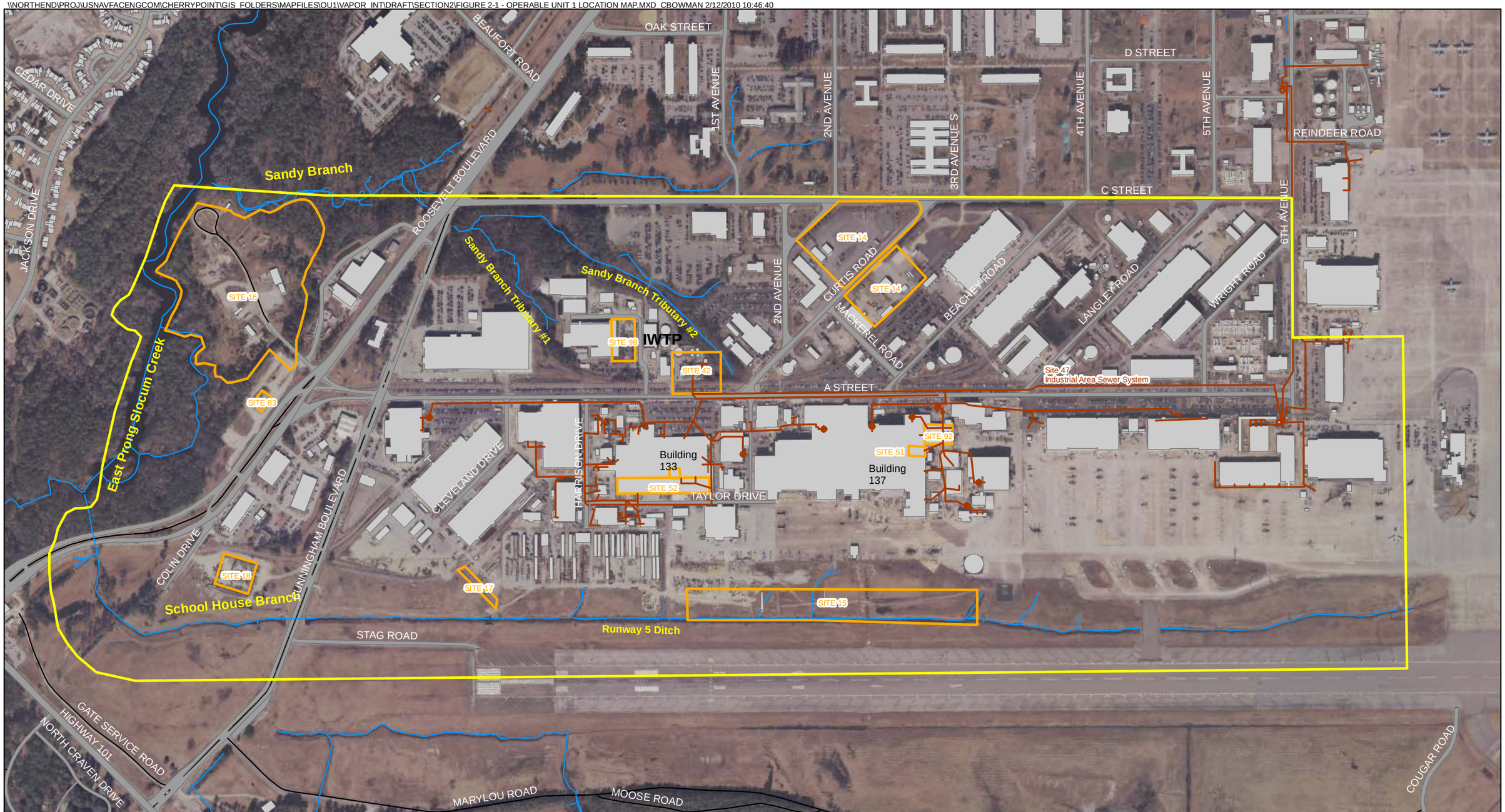
within the upper surficial aquifer beneath the IWTP. Concentrations of 1,1,1-TCA were detected above the NCGWQS at only one monitoring well, which was completed within the upper surficial aquifer at Building 137.

Benzene and other petroleum-related hydrocarbons are being investigated by the Unites States Marine Corps (USMC) Petroleum Oil Lubricant (POL) team. and are not addressed as part of this investigation. However, the presence of petroleum VOCs may contribute to potential vapor intrusion risks. Two separate petroleum plumes occur within the upper surficial aquifer to the northwest and beneath the northwestern portions of Buildings 133 and 137 (**Figures 2-11 and 2-12**) (Catlin, 2008a and 2008b).

2.5 Human Health Risk

The baseline and updated Human Health Risk Assessments (HHRAs) did not evaluate potential risks associated with current and future receptors for inhalation of indoor air impacted by subsurface vapor intrusion. Quantitative estimates of potential risks from the vapor-intrusion-to-indoor-air exposure pathway will be provided at the conclusion of vapor intrusion investigation activities.

\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION2\FIGURE 2-1 - OPERABLE UNIT 1 LOCATION MAP.MXD CBOWMAN 2/12/2010 10:46:40



Legend

- Surface Water
- Industrial Area Sewer System
- Site Boundary
- OU1 Boundary
- Existing Buildings

IWTP - Industrial Wastewater Treatment Plant

N W E S

0 500 1,000 Feet

Figure 2-1
Operable Unit 1 Location Map
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

CH2MHILL

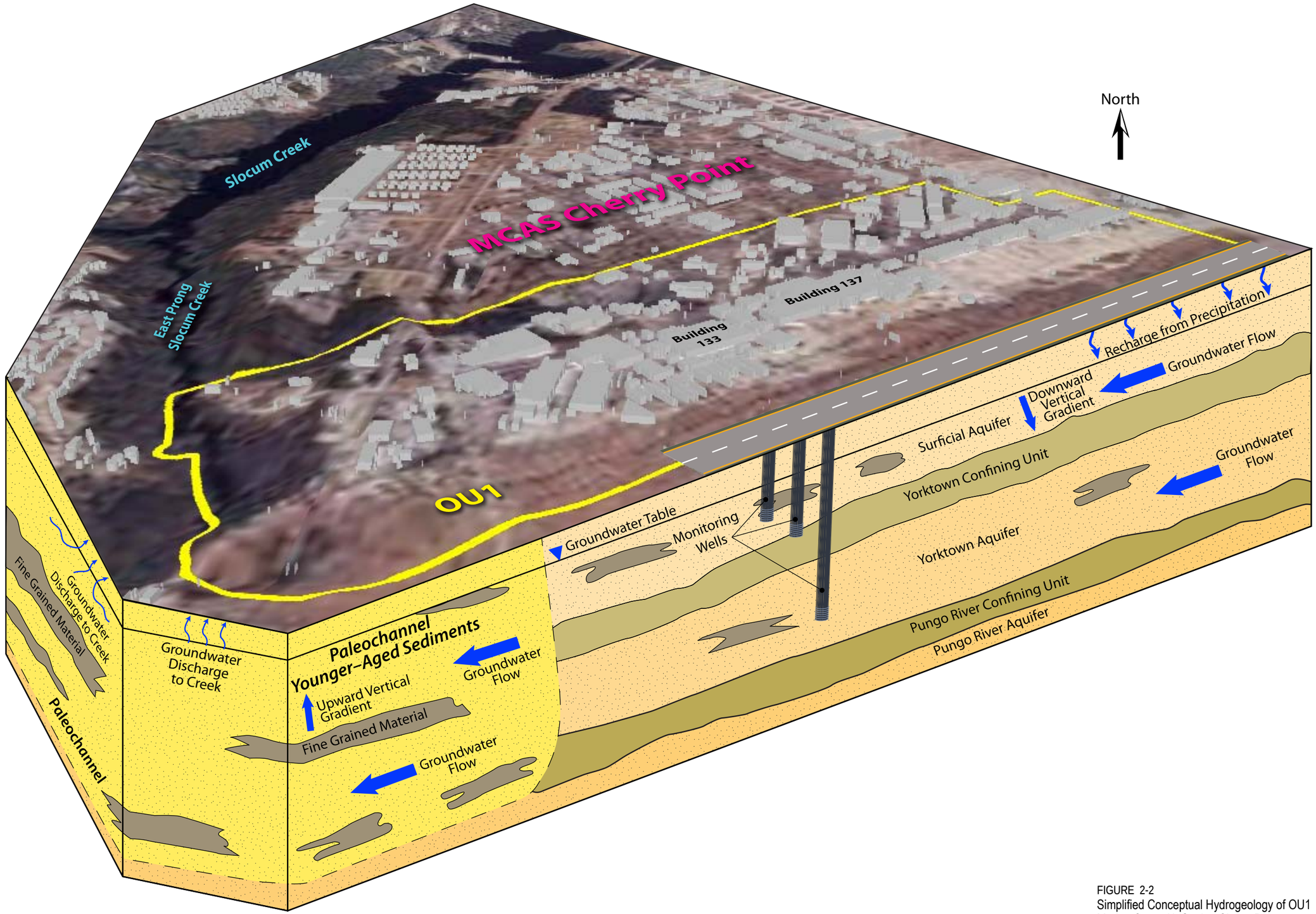


FIGURE 2-2
Simplified Conceptual Hydrogeology of OU1
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION2\FIGURE 2-3 - GW CONTOUR UPPER SURFICIAL.MXD CBOWMAN 3/3/2010 09:38:54

Legend

- Extraction Well
- Monitoring Well - Upper Aquifer
- Groundwater Elevation Contour (ft msl)
- Surface Water
- OU1 Boundary
- Existing Buildings
- Paved

Notes:
1. ft msl - feet (relative to) mean sea level
2. NU - Not used in contouring

N W E S

0 200 400 Feet

Figure 2-3
2009 Groundwater Elevation Map
Upper Surficial Aquifer
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

CH2MHILL

\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION2\FIGURE 2-4 - GW CONTOUR LOWER SURFICIAL .MXD CBOWMAN 3/3/2010 09:41:58

Legend

- Extraction Well
- Monitoring Well - Lower Aquifer
- Groundwater Elevation Contour (ft msl)
- Surface Water
- OU1 Boundary
- Existing Buildings
- Paved

Notes:
1. ft msl - feet (relative to) mean sea level
2. NU - Not used in contouring

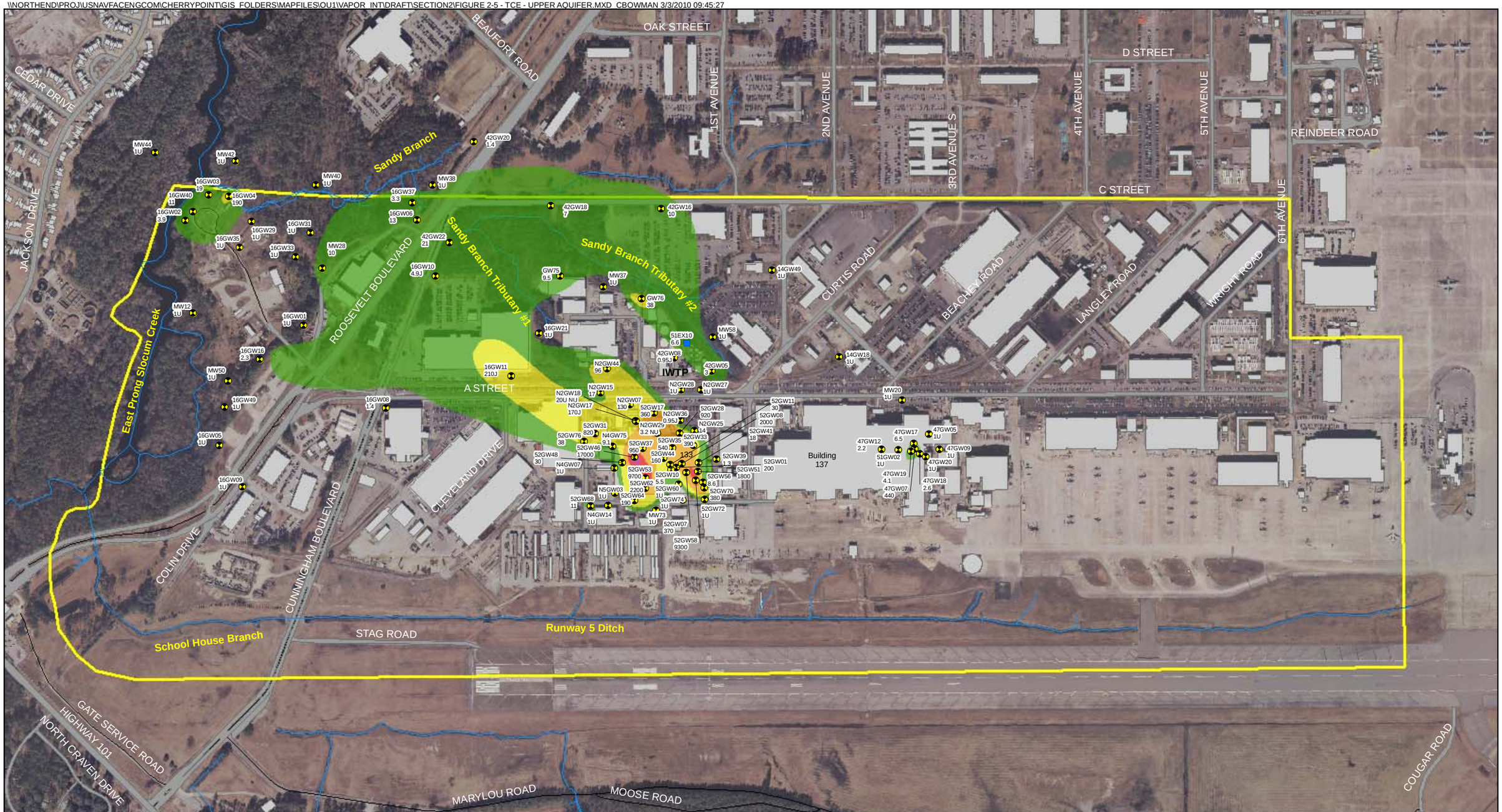
N
W E
S

0 200 400
Feet

Figure 2-4
2009 Groundwater Elevation Map
Lower Surficial Aquifer
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

CH2MHILL

\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION2\FIGURE 2-5 - TCE - UPPER AQUIFER.MXD CBOWMAN 3/3/2010 09:45:27



Legend

- Extraction Well
- Monitoring Well - Upper Aquifer
- Surface Water
- OU1 Boundary
- Existing Buildings
- NC2L - 10x NC2L
- 10x NC2L - 100x NC2L
- 100x NC2L - 1000x NC2L
- 1000x NC2L - 11,000 µg/L
- > 11,000 µg/L

IWTP - Industrial Wastewater Treatment Plant

Notes:
NC2L - North Carolina Groundwater Standard
NC2L = 3 µg/L (Jan 2010)
NU = Not Used
Concentrations are from the Spring 2009 sampling event
µg/L = micrograms per liter
U - analyte not detected above detection limit
J - concentration is estimated

N W E S

0 600 1,200 Feet

Figure 2-5
Trichloroethene (TCE) Isoconcentration Map
Upper Surficial Aquifer
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

CH2MHILL

\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION2\FIGURE 2-6 - TCE - LOWER AQUIFER.MXD CBOWMAN 3/3/2010 09:52:57

Legend

- Extraction Well
- Monitoring Well - Lower Aquifer
- Surface Water
- OU1 Boundary
- Existing Buildings
- NC2L - 10x NC2L
- 10x NC2L - 100x NC2L
- 100x NC2L - 1000x NC2L

Notes:
NC2L - North Carolina Groundwater Standard
NC2L = 3 µg/L (Jan 2010)
NU = Not Used
Concentrations are from Spring 2009 sampling event
µg/L = micrograms per liter
U - analyte not detected above detection limit
J - concentration is estimated

N W E S

0 600 1,200 Feet

Figure 2-6
Trichloroethene (TCE) Isoconcentration Map
Lower Surficial Aquifer
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

IWTP - Industrial Wastewater Treatment Plant

CH2MHILL

\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION2\FIGURE 2-7 - 1_2_DCE - UPPER AQUIFER.MXD CBOWMAN 3/3/2010 09:46:50

Legend

- Extraction Well
- Monitoring Well - Upper Aquifer
- Surface Water
- OU1 Boundary
- Existing Buildings
- NC2L - 10x NC2L
- 10x NC2L - 100x NC2L

Notes:
NC2L - North Carolina Groundwater Standard
NC2L = 70 µg/L (Jan 2010)
NU = Not Used
Concentrations are from the Spring 2009 sampling event
µg/L = micrograms per liter
U - analyte not detected above detection limit
J - concentration is estimated

N W E S

0 600 1,200 Feet

Figure 2-7
1,2-dichloroethene (1,2 DCE) Isoconcentration Map
Upper Surficial Aquifer
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

IWTP - Industrial Wastewater Treatment Plant

CH2MHILL

\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION2\FIGURE 2-8 - 1_2_DCE - LOWER AQUIFER.MXD CBOWMAN 3/3/2010 09:50:35

Legend

- Extraction Well
- Monitoring Well - Lower Aquifer
- Surface Water
- OU1 Boundary
- Existing Buildings
- NC2L - 10x NC2L
- 10 NC2L - 100x NC2L

Notes:
NC2L - North Carolina Groundwater Standard
NC2L = 70 µg/L (Jan 2010)
NU = Not Used
Concentrations are from the Spring 2009 sampling event
µg/L = micrograms per liter
U - analyte not detected above detection limit
J - concentration is estimated

N W E S

0 600 1,200 Feet

Figure 2-8
1,2-Dichloroethene (1,2 DCE) Isoconcentration Map
Lower Surficial Aquifer
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

IWTP - Industrial Wastewater Treatment Plant

CH2MHILL

Legend

- Extraction Well
- Monitoring Well - Upper Aquifer
- Surface Water
- OU1 Boundary
- Existing Buildings
- NC2L - 1000x NC2L
- 1000x NC2L - 10,000x NC2L
- 10,000x NC2L - 100,000 NC2L

Notes:
NC2L - North Carolina Groundwater Standard
NC2L = 0.03 µg/L (Jan 2010)
NU = Not Used
Concentrations are from the Spring 2009 sampling event
µg/L = micrograms per liter
U - analyte not detected above detection limit
J - concentration is estimated

N W E S

0 600 1,200 Feet

Figure 2-9
Vinyl Chloride Isoconcentration Map
Upper Surficial Aquifer
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

IWTP - Industrial Wastewater Treatment Plant

CH2MHILL

\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION2\FIGURE 2-10 - VC - LOWER AQUIFER.MXD CBOWMAN 3/3/2010 09:54:38

Legend

- Extraction Well
- Monitoring Well - Lower Aquifer
- Surface Water
- OU1 Boundary
- Existing Buildings
- NC2L - 1000x NC2L
- 1000x NC2L - 10,000x NC2L
- 10,000x NC2L - 100,000x NC2L

Notes:
NC2L - North Carolina Groundwater Standard
NC2L = 0.03 µg/L (Jan 2010)
NU = Not Used
Concentrations are from the Spring 2009 sampling event
µg/L = micrograms per liter
U - analyte not detected above detection limit
J - concentration is estimated

N W E S

0 600 1,200 Feet

Figure 2-10
Vinyl Chloride Isoconcentration Map
Lower Surficial Aquifer
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

IWTP - Industrial Wastewater Treatment Plant

CH2MHILL

Legend

- Monitoring Wells - Upper Aquifer
- Monitoring Wells in the UST program
- Surface Water
- Above NC2L
- Free Product
- Existing Buildings

0.10 Free Product Thickness (ft)
1.5 Benzene Concentrations (µg/L)

Data and interpretations are from Catlin Engineers and Scientists

References:

Catlin Engineers and Scientists, 2008a
Catlin Engineers and Scientists, 2008b

Notes:
NC2L - North Carolina Groundwater Standard
NC2L = 1 µg/L
NU = Not Used
ft = feet
µg/L = micrograms per liter
U - analyte not detected above detection limit
J - concentration is estimated

N W E S

0 200 400 Feet

Figure 2-11
Benzene Isoconcentration Map
Upper Surficial Aquifer
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

CH2MHILL

\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION2\FIGURE 2-12 - VOC PLUMES - LOWER BENZENE_ZOOM_BOX_ROUND_2.MXD CBOWMAN 3/3/2010 09:59:47

Legend

- Monitoring Wells - Lower Aquifer
- Monitoring Wells in the UST program
- Surface Water
- Inferred
- Above NC2L
- Existing Buildings

Data and interpretations are from Catlin Engineers and Scientists
References:
Catlin Engineers and Scientists, 2008a
Catlin Engineers and Scientists, 2008b

Notes:
NC2L - North Carolina Groundwater Standard
NC2L = 1 µg/L
NU = Not Used
µg/L = micrograms per liter
U - analyte not detected above detection limit

N W E S

0 200 400 Feet

Figure 2-12
Benzene Isoconcentration Map
Lower Surficial Aquifer
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

CH2MHILL

SECTION 3

Investigation Methods and Procedures

In response to the recommendations set forth in the OU1 RI Addendum (CH2M HILL, 2009a), the Partnering Team decided that a vapor intrusion investigation would be conducted to further assess the vapor intrusion pathway at the buildings of interest in OU1. The methods used during the vapor intrusion investigation are consistent with DOD (2009), ITRC (2007), and USEPA (2002) vapor intrusion guidance documents.

3.1 Screening Process

The vapor intrusion investigation approach consisted primarily of four steps: Step 1 – Identification of Buildings of Interest; Step 2 – Desktop Risk Evaluation; Step 3 – Sampling and Analysis; and Step 4 – Data (e.g., Risk) Evaluation. The initial screening process (i.e., Steps 1 and 2) was consistent with the tiered approach described in DOD (2009) and ITRC (2007) vapor intrusion guidance using the results presented in the UFP-SAP (CH2M HILL, 2009b).

The previous section described the nature and extent of the contamination at OU1 based on the most recent groundwater data available (2009). Constituents of potential concern (COPCs) were selected and buildings of interest were selected prior to the completion of the 2009 OU1 Additional Groundwater Investigation (CH2M HILL, 2010) based on the 2006 data presented in the OU1 RI Addendum (CH2M HILL, 2009a). A summary of the screening results is provided in the following sections.

3.1.1 Selection of COPCs

COPCs were identified by comparing historical VOC groundwater data from the upper and lower surficial aquifers against the USEPA (2002) Draft Vapor Intrusion Guidance target groundwater concentrations, which are based on a 1×10^{-6} cancer risk and a non-cancer hazard quotient (HQ) of 1.0. VOCs detected above the screening levels were selected as COPCs. Petroleum-related VOCs (i.e., benzene, chlorobenzene, ethylbenzene, isopropylbenzene, and xylenes) are being addressed under the USMC POL team and are not included in this investigation. Therefore, the risks/hazards inferred by the comparison of Phase I results to the screening levels are based solely on cVOCs. The uncertainty introduced by omitting the petroleum hydrocarbons is addressed in Section 6.

The following VOCs were selected as COPCs (CH2M HILL, 2009b):

- trans-1,2-DCE
- Bromoform
- Chloromethane
- Dichlorodifluoromethane (Freon-12)
- Methylene Chloride
- PCE
- TCE

- VC
- 1,1,1-TCA
- 1,1,2,2-PCA
- 1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-11)
- 1,1,2-Trichloroethane (1,1,2-TCA)
- 1,1-DCA
- 1,1-DCE
- 1,2-DCA
- 1,2-DCE

3.1.2 Identification of Buildings of Interest

Buildings of interest for inclusion in the vapor intrusion investigation were selected by screening COPC historical groundwater data from the upper and lower portions of the surficial aquifer against the USEPA (2002) generic vapor intrusion screening levels. Buildings located above the groundwater plumes or within 100 ft of groundwater monitoring wells with concentrations that exceeded the generic screening levels were selected as buildings of interest. Initially, 80 buildings were identified for further investigation (CH2M HILL, 2009b).

The 2006 plume maps showing the primary COPCs (TCE, 1,2-DCE, and VC) in the upper surficial aquifer are presented as **Figures 3-1** through **3-3**, respectively. These plume maps were used to identify the buildings of interest for inclusion in the vapor intrusion investigation. Buildings located in areas where no contamination was detected in the upper surficial aquifer were removed from the buildings of interest list. Non-occupied buildings were also removed, as this investigation was defined as evaluating the potential for current vapor intrusion migration (CH2M HILL, 2009b). These two screenings reduced the list of buildings of interest from 80 to 41.

Detailed building surveys (site reconnaissance) were conducted at seven buildings considered to have the highest vapor intrusion potential based on the highest shallow groundwater concentrations, presence of DNAPL, and/or location within assumed source areas. General building surveys were performed at the remaining 34 buildings to determine the building type, size, status, occupancy, and construction (slab on grade, materials, windows, etc.).

The detailed survey included building descriptions indicating the size, potential conduits from soil (joints, floor drains, etc.), potential pathways/driving forces (heating, ventilation, and air conditioning [HVAC] systems), and potential indoor sources, as well as an indication of whether any current mitigation systems exist.

The next step consisted of generating site-specific screening levels using USEPA's (2004) version of the Johnson and Ettinger (J&E) (1991) model and comparing the existing 2006 COPC groundwater data to the site-specific screening levels using Geographic Information System (GIS) tools. Three model scenarios were developed based on the size of the industrial buildings: large building (more than 100,000 ft^2), medium buildings (10,000 – 100,000 ft^2), and small buildings (less than 10,000 ft^2). Buildings located within 100 ft of monitoring wells with groundwater concentrations above the large, medium, and small industrial site-specific screening values were selected as buildings that required further

investigation. This refined screening using site-specific screening levels resulted in the identification of 19 buildings for further investigation during the Phase I sampling.

Additional groundwater investigation activities were conducted at OU1 in 2009 based on the proposed future actions described in the OU1 RI Addendum (CH2M HILL, 2009a). The 2009 Additional Groundwater Investigation (CH2M HILL, 2010) took place from March through May 2009 and the results from this event redefined the plume boundaries and led to the addition of two buildings of interest to the vapor intrusion investigation (Buildings 159 and Building 4498). The 2009 plume maps showing the refined plume boundaries are provided as **Figures 2-5** through **2-10**.

3.2 Phase I Field Sampling Event

A field investigation was conducted to assess the potential for vapor intrusion at the 21 buildings of interest. The field activities were conducted in November 2009 and primarily consisted of exterior sampling (i.e., groundwater grab sampling from the top of the water table and co-located exterior soil vapor sampling) adjacent to the 21 buildings. However, interior sampling (i.e., subslab soil vapor sampling) was conducted at Buildings 133 and 137 based on the high source strengths and depth to groundwater (e.g., a DNAPL plume beneath Building 133 and relatively high groundwater concentrations beneath Building 137). Indoor-to-subslab pressure differential monitoring was also conducted at these two OU1 buildings.

3.2.1 Sample Locations

Groundwater, exterior soil vapor, and subslab soil vapor samples were collected during the sampling event in November 2009. The site-wide sampling locations are shown on **Figure 3-4**.

Exterior sampling locations were generally placed in areas between the buildings and the monitoring wells with historical exceedances of the site-specific groundwater screening levels (GWSLs). The groundwater flow direction and the magnitude of the GWSL exceedances were also considered during the selection of sample locations. More exterior samples were collected around the large buildings to increase the spatial coverage. Samples were typically collected within 5 to 15 ft (laterally) of the buildings when practicable, considering above-ground obstructions and underground utility locations. Groundwater samples were collected within 5 ft of the water table and exterior soil vapor samples were collected 1 to 2 ft above the water table. Emphasis was placed on the correlation between the co-located grab groundwater and exterior soil vapor results and not necessarily the correlation with the historical groundwater plume since vapor concentrations above the capillary fringe are known to correlate better with water table concentrations.

As discussed in Section 2.2.4, the VOC releases at Building 133 have been determined to be related to the drainage ditches that were subsequently covered as the building was renovated and expanded. Building 133 was targeted for subslab soil vapor sampling knowing that: 1) the subslab soil vapor concentrations would likely be higher beneath the building based on the interior locations of the primary VOC source areas; 2) the two TCE groundwater "hot spot" plume areas are beneath the building footprint (see Figure 2-5); and 3) exterior soil vapor concentrations (even right above the water table) would likely not

predict subslab soil vapor concentrations. The subslab soil vapor sample locations were generally distributed evenly throughout Building 133 to spatially represent the subsurface soil vapor environment.

As discussed in Section 2.4, there is a distant TCE groundwater plume located entirely beneath Building 137 (Figure 2-5) and for similar reasons as discussed above in addition to the presence of a historical sump within the building, Building 137 was targeted for subslab soil vapor sampling during the Phase I investigation. The subslab soil vapor sample locations were biased to the east side of Building 137 to coincide with the TCE plume.

One additional subslab probe was installed and used at Building 133 and 137 to collect indoor-to-subslab pressure differential data.

3.2.2 Deviations from the UFP-SAP

Based on field conditions, several proposed sampling locations were either re-located or could not be sampled. Proposed and actual sample locations from the sampling event are shown on **Figures 3-5 through 3-13**. **Table 3-1** lists the samples that were proposed in the UFP-SAP and the deviations which occurred during the field event.

The shallow (5 ft bgs) soil vapor probe could not be installed when (1) a dense sandy-clay layer was encountered within the sample interval and prevented an adequate flow rate for vapor sampling or (2) shallow groundwater was encountered at a depth of 6 ft bgs or less in areas covered by a permeable surface (e.g., dirt or grass) or at depths less than 4 ft in areas covered by an impermeable surface (e.g., asphalt). Based on professional judgment, installation at a location with an impermeable surface was not performed at a depth less than 4 ft to avoid short-circuiting of ambient air through cracks in pavement.

In addition, samples could not be collected from select proposed locations due to multiple utilities in the area. When a safe alternate location was not available, the sample was not collected.

The deviations from the UFP-SAP are summarized below:

- Nineteen buildings of interest within OU1 were originally proposed for sampling in the UFP-SAP; however, after the plume boundaries were redefined slightly based on the results from the March-May 2009 Additional Groundwater Investigation event, two additional buildings of interest were added to the investigation.
- Forty-four temporary well groundwater samples and 37 exterior soil vapor samples were collected as opposed to 45 of each specified in UFP-SAP Worksheet #11 (**Table 3-1**).
- Subslab soil vapor probes were installed by CH2M HILL personnel with a rotary hammer drill rather than direct-push technology (DPT). This is standard operating procedure (SOP) for permanent subslab soil vapor probe installation inside buildings.
- Pressure differential monitoring was not performed at each building investigated but was performed at Buildings 133 and 137, where subslab soil vapor samples were collected. This deviation was performed to align with the SOPs.

3.3 Phase I Sample Collection Procedures

The November 2009 sampling event was performed in accordance with the procedures detailed by CH2M HILL (2009c). During the field event, 44 groundwater samples, 37 exterior soil vapor samples, and 8 subslab soil vapor samples were collected and pressure differential monitoring was performed. **Tables 3-2 through 3-5** present the installation and sample collection information from the Phase I field event for each medium sampled. The chain-of-custody records are provided in **Appendix A**.

3.3.1 Site Preparation

Site preparation included establishing proposed sample locations and conducting utility clearance at each proposed exterior temporary well, exterior soil vapor point, and interior subslab soil vapor sample location.

Proposed sampling locations were marked with spray paint on asphalt and grass and masking tape on concrete flooring inside Buildings 133 and 137 on October 19 and 20, 2009. Utility clearance activities were then conducted. Accumark of Ashland, Virginia conducted the utility clearance from October 26 through November 4, 2009.

3.3.2 Groundwater Grab Sampling

Groundwater samples were collected using DPT sampling methods. The direct push work was subcontracted to North Carolina licensed well driller, Probe Technology, Inc. based out of Concord, North Carolina. Hand augering was performed to 5 ft bgs at each DPT sample location to confirm that there were no underground utilities. The DPT boreholes were abandoned by the drillers following North Carolina Department of Environment and Natural Resources (NCDENR, 2007) guidelines by grouting from the bottom of the boring to the ground surface.

At each sampling location, a soil core was collected to determine the depth to the water table. The soil cores were collected using a Geoprobe Macro-Core® Sampler with polyethylene terephalate glycol (PETG) liners. During installation, soil cores were logged to record lithology. The soil boring logs for each investigation area are provided in **Appendix B**.

Groundwater samples were collected from locations around the buildings of interest using the Geoprobe® Screen Point Sampler (stainless-steel retractable screen attached to the DPT rods). The sampler was placed within the top 1 ft of the water table, the interval believed to contain VOCs at the most representative concentrations that may volatilize and migrate through the vadose zone. When insufficient volume was available to collect at this initial interval, the exposed portion of the screen was increased at 1-ft intervals to a maximum of 4 ft, thus drawing groundwater from a larger vertical interval.

The groundwater samples were collected directly through the screen following a low-flow sampling protocol using a peristaltic pump. Field indicator parameters (turbidity, temperature, specific conductance, pH, Eh, and dissolved oxygen [DO]) were measured with a Horiba U-22 and recorded approximately every minute for 5 minutes to obtain a snapshot of the water quality. The groundwater sampling field data sheets, which include the purge data and field indicator parameters recorded, are provided in **Appendix C.**

3.3.3 Exterior Soil Vapor Sampling

Temporary exterior soil vapor sample probes were installed by Probe Technology, Inc. using a Geoprobe® post-run tubing (PRT) system. The procedures for the exterior soil vapor sampling using the Geoprobe® PRT system are presented in the SOPs within the UFP-SAP (CH2M HILL, 2009b). Exterior soil vapor sample locations were co-located with the groundwater sampling locations that were described in Section 3.3.2.

The soil vapor probes consisted of Teflon tubing attached to the drive rod with a drive point adapter. The exterior soil vapor probe screen interval was 1 ft long and the bottom of the screen was located approximately 1 ft above the water table in order to avoid installing within the capillary fringe. The field team verified the probes were not installed within the capillary fringe based on soil moisture content observed in the soil cores obtained at the co-located temporary well-points.

A helium leak check was performed before sampling to ensure that the probe was installed correctly. The probe was purged with a sampling manifold (consisting of stainless steel Swagelok® vapor tight valves and fittings and Teflon tubing) and an air pump. Three probe volumes of soil vapor were purged at approximately 200 milliliters per minute (mL/min) into a Tedlar bag. A photoionization detector (PID) was used to collect field measurements of total VOCs. Exterior soil vapor samples were collected in 1-L Summa™ canisters equipped with flow controllers. The flow controllers were regulated to sample at a rate of 100 mL/min, which resulted in a sample collection period of 10 minutes. Summa™ canisters were filled until the pressure gauge read between -2 and -4 inches of mercury (Hg). The exterior soil vapor sampling field data sheets, which include the vapor meter readings, for each investigation area are provided in **Appendix D**.

3.3.4 Subslab Soil Vapor Sampling

Permanent subslab soil vapor probes were installed in the building foundations at locations at least 50 ft from exterior walls to avoid ambient air infiltration at the perimeter of the slab and away from underground water, sewer, heating, and electrical lines. The subslab probes consisted of stainless steel Swagelok® vapor tight fittings (a length of one-quarter-inch stainless steel tubing [not to extend below the slab], a probe union, a sampling union, and a probe cap). The probes were installed by drilling through the building foundation with a rotary hammer drill and securing the probe in place with Portland cement so that the top of the probe was flush with the top of the foundation. The cement was allowed to dry for 24 hours prior to sampling.

A helium leak check was performed at each location to ensure that the probe was installed correctly. The probe was purged with a sampling manifold (consisting of stainless steel Swagelok® vapor tight valves and fittings and Teflon tubing) and an air pump. Two liters of subslab soil vapor were purged at 200 mL/min into a Tedlar bag. Subslab soil vapor samples were collected in 1-L Summa™ canisters equipped with flow controllers. The flow controllers regulated the sample collection rate to 200 mL/min, which resulted in a sample collection period of 5 minutes. The Summa™ canisters were filled until the pressure gauge read between -2 and -5 inches of Hg. The subslab soil vapor sampling field data sheets, which include the vapor meter readings, for each building are provided in **Appendix E**.

3.3.5 Quality Assurance/Quality Control Sampling

During the field activities, the following quality assurance/quality control (QA/QC) samples were collected in accordance with the UFP-SAP:

Groundwater

- Equipment rinsate blank; 1 per lot of tubing utilized
- Ambient field blank; 1 per week of sampling
- Trip blank; 1 per cooler to the laboratory
- Cooler temperature blank; 1 per cooler to the laboratory
- Field duplicate; 1 per 10 samples per medium
- Matrix spike/matrix spike duplicate (MS/MSD); 1 per 20 samples in set of field samples

Exterior and Subslab Soil Vapor

- Field duplicates; 1 per 10 samples per medium

The duplicate samples were analyzed to verify the reproducibility of the laboratory results and the degree of variability among reported concentrations. The maximum concentrations from the parent and field duplicate sample results were used in this evaluation. All data that were received were usable. Further details on the usability of the data are presented in Section 4.

3.3.6 Pressure Differential Monitoring

Differential pressure data were collected during the November 2009 field event to provide an additional line of evidence for assessing the potential for vapor intrusion at Buildings 133 and 137.

Pressure differential monitoring was performed using a digital micromanometer (Omniguard 4 Differential Pressure Recorder). In Building 133, monitoring began approximately 1 hour after collecting the subslab soil vapor samples. The Omniguard 4 was connected to one of the subslab soil vapor probes (52SG02) and was left to record differential pressure readings every 15 minutes for approximately 3 days.

Pressure differential monitoring was conducted in Building 137 prior to subslab sample collection. An Omniguard 4 was connected to pressure monitoring probe 51PM01 and was left to record differential pressure readings every 15 minutes for approximately 5 days. Pressure differential monitoring was completed approximately 24 hours before sample collection at Building 137 began.

A Solinst Barologger Gold barometric pressure datalogger was also set up near each of the two buildings' pressure monitoring probes to record barometric pressure of the indoor environment once every 15 minutes. In addition, a Davis Vantage Pro 2 weather station was located upwind of Buildings 133 and 137 to measure wind speed, temperature, and outdoor barometric pressure.

The pressure differential data are presented and discussed in Section 5.3.

3.3.7 Building Surveys

Building surveys were completed approximately 1 year before Phase I field activities began at OU1. Building characteristics and conditions pertinent to vapor intrusion were documented, such as building use and occupancy, building dimensions, concrete floor slab condition and type, typical operation of the HVAC system, and the presence of chemicals and/or preferential pathways. The building survey forms are presented in **Appendix F.** The information provided in the building surveys was updated during Phase I field activities for Buildings 133 and 137. These updated building surveys are also presented in **Appendix F.**

3.3.8 Investigation-derived Waste Management

IDW generated from the November 2009 activities consisted of drill cuttings from the DPT soil borings, purge groundwater, decontamination fluids, disposable equipment, and personal protective equipment (PPE). Soils generated during the DPT activities were containerized in two 55-gallon drums, which were temporarily placed in the staging area. The drums were placed on top of secondary containment (poly sheeting and pallets) and covered with secured pieces of poly sheeting. The drums were properly labeled with waterproof marker.

Soil generated during the sampling event was identified as non-hazardous based on the results of waste characterization and was properly disposed of by Envirite of Pennsylvania in York, PA on December 16, 2009.

Aqueous IDW was containerized as it was produced in 5-gallon buckets and transported to and disposed of at the IWTP on an approximately 24- or 48-hour basis. Before any aqueous IDW was deposited at the IWTP for disposal, a letter was provided from the Environmental Affairs office to the field team granting permission to utilize the IWTP for aqueous IDW disposal. This letter and the IDW waste manifest are presented in **Appendix G**.

TABLE 3-1
OU1 Sampling Summary
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock ,NC

Sample Type	Sample Location ID	Sample Collected (Y/N)	Deviations
TW	OU1-14TW01	Y	—
NS	OU1-14NS01	Y	—
TW	OU1-14TW02	Y	—
NS	OU1-14NS02	Y	—
TW	OU1-14TW03	Y	—
NS	OU1-14NS03	Y	—
TW	OU1-14TW04	Y	—
NS	OU1-14NS04	Y	—
TW	OU1-16TW01	Y	—
NS	OU1-16NS01	Y	—
TW	OU1-16TW02	Y	—
NS	OU1-16NS02	Y	—
TW	OU1-16TW03	Y	—
NS	OU1-16NS03	N	3 ft – 7 ft bgs dense sandy clay, 7 ft – 8 ft bgs sand, 8 ft bgs water table – the foot above water table needs to be buffer zone for soil vapor sample – unable to place soil vapor sampler in sandy clay and obtain sample.
TW	OU1-16TW04	Y	—
NS	OU1-16NS04	N	3 ft – 7 ft bgs dense sandy clay, 7 ft – 8 ft bgs sand, 8 ft bgs water table – the foot above water table needs to be buffer zone for soil vapor sample – unable to place soil vapor sampler in sandy clay and obtain sample.
TW	OU1-42TW01	Y	—
NS	OU1-42NS01	N	Water table was encountered at 5 ft bgs and the soil above (3 ft – 5 ft bgs) was dense clay
TW	OU1-42TW02	Y	—
NS	OU1-42NS02	Y	—
TW	OU1-42TW03	Y	—
NS	OU1-42NS03	Y	—
TW	OU1-42TW04	Y	—
NS	OU1-42NS04	Y	—
TW	OU1-42TW05	Y	—
NS	OU1-42NS05	Y	—
TW	OU1-51TW01	Y	—
NS	OU1-51NS01	Y	—
TW	OU1-51TW02	N	Encountered multiple utilities during location activities which prevented sample collection
NS	OU1-51NS02	N	Encountered multiple utilities during location

TABLE 3-1
OU1 Sampling Summary
Vapor Intrusion Report
MCAS Cherry Point, Havelock ,NC

Sample Type	Sample Location ID	Sample Collected (Y/N)	Deviations
			activities which prevented sample collection
TW	OU1-51TW03	Y	—
NS	OU1-51NS03	Y	—
TW	OU1-51TW04	Y	—
NS	OU1-51NS04	Y	—
TW	OU1-51TW05	N	Large steel pipe approximately 2 ft bgs was uncovered during hand augering. Could not re-locate proposed drilling location due to nearby utilities.
NS	OU1-51NS05	N	Large steel pipe approximately 2 ft bgs was uncovered during hand augering. Could not re-locate proposed drilling locations due to nearby utilities.
TW	OU1-51TW06	Y	—
NS	OU1-51NS06	Y	—
TW	OU1-51TW07	N	Was removed as a sample location
NS	OU1-51NS07	N	Was removed as a sample location
TW	OU1-51TW08	Y	—
NS	OU1-51NS08	Y	—
TW	OU1-51TW09	Y	—
NS	OU1-51NS09	Y	—
SG	OU1-51SG01	Y	—
SG	OU1-51SG02	Y	—
SG	OU1-51SG03	Y	—
N/A	OU1-51PM01	Y	—
TW	OU1-52TW01	Y	—
NS	OU1-52NS01	N	Dense sandy clay from 0 to 15 ft bgs; depth to water (DTW) was 13 ft bgs - no interval for proper soil vapor collection
TW	OU1-52TW02	Y	
NS	OU1-52NS02	N	Water encountered at ~7 ft bgs, clay above – no interval for proper soil vapor collection.
TW	OU1-52TW03	Y	—
NS	OU1-52NS03	N	Dense sandy clay from 0 to 15 ft bgs – no interval for proper soil vapor collection
TW	OU1-52TW04	N	Dense sandy clay from 0 to 15 ft bgs; DTW in nearby well ~ 12 ft bgs; well could not produce enough water to sample after 30 minutes
NS	OU1-52NS04	N	Dense sandy clay from 0 to 15 ft bgs – no interval for proper soil vapor collection
TW	OU1-52TW05	Y	—

TABLE 3-1
OU1 Sampling Summary
Vapor Intrusion Report
MCAS Cherry Point, Havelock ,NC

Sample Type	Sample Location ID	Sample Collected (Y/N)	Deviations
NS	OU1-52NS05	Y	—
TW	OU1-52TW06	Y	—
NS	OU1-52NS06	Y	—
TW	OU1-52TW07	Y	—
NS	OU1-52NS07	Y	—
TW	OU1-52TW08	N	Obstruction approximately 2.5 ft bgs was uncovered during hand augering. Could not confirm any utility mark-outs and decided not to risk drilling in this vicinity
NS	OU1-52NS08	N	Obstruction approximately 2.5 ft bgs was uncovered during hand augering. Could not confirm any utility mark-outs and decided not to risk drilling in this vicinity
TW	OU1-52TW09	Y	—
NS	OU1-52NS09	Y	—
TW	OU1-52TW10	Y	—
NS	OU1-52NS10	Y	—
TW	OU1-52TW11	Y	—
NS	OU1-52NS11	Y	—
TW	OU1-52TW12	N	Area inaccessible – could not mark out utilities
NS	OU1-52NS12	N	Area inaccessible – could not mark out utilities
TW	OU1-52TW13	Y	—
NS	OU1-52NS13	Y	—
TW	OU1-52TW14	N	Perched water encountered at ~ 2 ft bgs; placed well screen from 11 – 13 ft bgs based on nearby MW DTW; attempted to purge, well produced a few drops of water, let recharge but no water produced for sampling.
NS	OU1-52NS14	N	Perched water below asphalt down boring– no interval for proper soil vapor collection.
TW	OU1-52TW15	Y	—
NS	OU1-52NS15	Y	—
SG	OU1-52SG01	Y	—
SG	OU1-52SG02	Y	—
SG	OU1-52SG03	Y	—
SG	OU1-52SG04	Y	—
SG	OU1-52SG05	Y	—
N/A	OU1-52PM01	N	Blockage in probe, no air flow; utilized 52SG02 for pressure monitoring
TW	OU1-74TW01	Y	—

TABLE 3-1
OU1 Sampling Summary
Vapor Intrusion Report
MCAS Cherry Point, Havelock ,NC

Sample Type	Sample Location ID	Sample Collected (Y/N)	Deviations
NS	OU1-74NS01	Y	—
TW	OU1-74TW02	Y	—
NS	OU1-74NS02	Y	—
TW	OU1-98TW01	Y	—
NS	OU1-98NS01	Y	—
TW	OU1-98TW02	Y	—
NS	OU1-98NS02	Y	
TW	OU1-98TW03	Y	—
NS	OU1-98NS03	Y	—
TW	OU1-98TW04	Y	—
NS	OU1-98NS04	Y	—
TW	OU1-98TW05	Y	—
NS	OU1-98NS05	N	Water table was encountered at 4 ft bgs
TW	OU1-98TW06	Y	—
NS	OU1-98NS06	Y	—
TW	OU1-98TW07	Y	—
NS	OU1-98NS07	Y	—
TW	OU1-98TW08	Y	—
NS	OU1-98NS08	Y	—
TW	OU1-98TW09	Y	—
NS	OU1-98NS09	Y	—
TW	OU1-98TW10	Y	—
NS	OU1-98NS10	Y	—
TW	OU1-98TW11	Y	—
NS	OU1-98NS11	Y	—
TW	OU1-98TW12	Y	—
NS	OU1-98NS12	Y	—

TABLE 3-2
Summary of OU1 Phase I Subslab Soil Vapor Probe Installation Information
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock ,NC

Probe Location	Sample ID	Slab Depth (inches)	Probe Depth (inches)	Installation Date	Installation Time
OU1-51SG01	OU1-51SG01-09D	10	9	11/16/2009	14:00
OU1-51SG02	OU1-51SG02-09D	10	9	11/16/2009	13:50
OU1-51SG03	OU1-51SG03-09D	8	7	11/16/2009	15:30
51PM01	N/A	10	9	11/16/2009	15:10
OU1-52SG01	OU1-52SG01-09D	12	11	11/16/2009	16:25
OU1-52SG02	OU1-52SG02-09D	6	6	11/17/2009	9:00
OU1-52SG03	OU1-52SG03-09D	6	6	11/17/2009	9:40
OU1-52SG04	OU1-52SG04-09D	6	6	11/16/2009	14:00
OU1-52SG05	OU1-52SG05-09D	6	6	11/16/2009	16:50
OU1-52SG05	OU1-52SG05-09DP	6	6	11/16/2009	16:50
52PM01	N/A	6	4	11/17/2009	8:20

Notes:
N/A = sample not collected

TABLE 3-3
Summary of OU1 Phase I Subslab Soil Vapor Probe Sampling Information
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock ,NC

Sample Location	Sample ID	Leak Check (ppm He)	Total VOCs (ppm)	Canister ID	Flow Controller ID	Sample Start Date	Sample Start Time	Initial Canister Pressure (" Hg)	Sample End Date	Sample End Time	Final Canister Pressure (" Hg)
OU1-51SG01	OU1-51SG01-09D	0	13.2	6574	K100	11/18/2009	14:59	-32	11/19/2009	15:40	-8
OU1-51SG02	OU1-51SG02-09D	0	20	93055	K316		15:15	-32		16:00	-6.5
OU1-51SG03	OU1-51SG03-09D	0	38	12329	K177		15:07	-32		15:32	-7.5
OU1-52SG01	OU1-52SG01-09D	0	5.0	6392	K151		13:46	-29.5		12:36	-7
OU1-52SG02	OU1-52SG02-09D	600	4.4	2644	K347		13:37	-32		12:39	-7.5
OU1-52SG03	OU1-52SG03-09D	525	7.0	2951	K349		14:24	-32		12:45	-8
OU1-52SG04	OU1-52SG04-09D	500	50	92042	K157		14:14	-32		13:24	-8
OU1-52SG05	OU1-52SG05-09D	100	1.0	1332	K256		14:06	-30		7:10	-4
OU1-52SG05	OU1-52SG05-09DP	100	1.0	1140	K212		14:06	-32		13:09	-8

Notes:
ppm = parts per millions
He = Helium

TABLE 3-4
Summary of OU1 Phase I Near-Slab Soil Vapor Probe Sampling Information
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock ,NC

Sample Location	Sample ID	Probe Depth (ft bgs)	Installation Date	Leak Check (ppm He)	Total VOCs (ppm)	Canister ID	Flow Controller ID	Sample Date	Sample Start Time	Initial Canister Pressure (" Hg)	Sample End Time	Final Canister Pressure (" Hg)
OU1-14NS01	OU1-14NS01-6-7-09D	6-7	11/21/2009	25	40	L-A7057	33	11/21/2009	13:05	-29.5	13:17	-3
OU1-14NS02	OU1-14NS02-5-6-09D	5-6	11/21/2009	50	20	L-5144	05	11/21/2009	14:28	-29	14:41	-3.5
OU1-14NS03	OU1-14NS03-7-8-09D	7-8	11/21/2009	0	15	L-5112	74	11/21/2009	9:46	-30	9:59	-3
OU1-14NS04	OU1-14NS04-6-7-09D	6-7	11/21/2009	50	280	SL-1218	145	11/21/2009	10:41	-29	10:53	-2.5
OU1-16NS01	OU1-16NS01-7-8-09D	7-8	11/8/2009	0	245	L-5183	203	11/8/2009	16:50	-29.5	17:01	-3
OU1-16NS02	OU1-16NS02-3-4-09D	3-4	11/9/2009	0	135	L-5170	89	11/9/2009	10:50	-29	11:00	-4
OU1-16NS03	OU1-16NS03	N/A	11/9/2009	N/A	N/A	N/A	N/A	11/9/2009	N/A	N/A	N/A	N/A
OU1-16NS04	OU1-16NS04	N/A	11/9/2009	N/A	N/A	N/A	N/A	11/9/2009	N/A	N/A	N/A	N/A
OU1-42NS01	OU1-42NS01	N/A	11/6/2009	N/A	N/A	N/A	N/A	11/6/2009	N/A	N/A	N/A	N/A
OU1-42NS02	OU1-42NS02-5-6-09D	5-6	11/6/2009	0	0.8	L-3834	240	11/6/2009	14:29	-29.5	14:39	-4
OU1-42NS03	OU1-42NS03-6-7-09D	6-7	11/6/2009	0	1.5	L-5168	120	11/6/2009	10:35	-29.5	10:46	-3
OU1-42NS04	OU1-42NS04-6-7-09D	6-7	11/6/2009	0	0.9	L-A7056	169	11/6/2009	11:46	-30	11:57	-4
OU1-42NS05	OU1-42NS05-7-8-09D	7-8	11/6/2009	0.0	0.5	L-4147	125	11/6/2009	9:16	-30	9:26	-3
OU1-42NS05	OU1-42NS05-7-8-09DP	7-8	11/6/2009			L-5186	64	11/6/2009	9:16	-30	9:26	-3
OU1-51NS01	OU1-51NS01-3-4-09D	3-4	11/7/2009	0	1.2	L-4153	32	11/7/2009	9:48	-30	9:58	-4
OU1-51NS03	OU1-51NS03-6-7-09D	6-7	11/10/2009	0	20	L-A7116	194	11/10/2009	8:38	-29.5	8:46	-3
OU1-51NS04	OU1-51NS04-4.5-5.5-09D	4.5-5.5	11/10/2009	0	21.5	L-A7166	137	11/10/2009	9:38	-30	9:48	-3
OU1-51NS05	OU1-51NS05	N/A	11/10/2009	N/A	N/A	N/A	N/A	11/10/2009	N/A	N/A	N/A	N/A
OU1-51NS06	OU1-51NS06-5-6-09D	5-6	11/10/2009	0	23.6	L-A7077	50	11/10/2009	13:53	-29	14:02	-4
OU1-51NS07	OU1-51NS07	N/A	11/10/2009	N/A	N/A	N/A	N/A	11/10/2009	N/A	N/A	N/A	N/A
OU1-51NS08	OU1-51NS08-6-7-09D	6-7	11/10/2009	25	19.5	L-5196	66	11/10/2009	15:02	-29	15:12	-3
OU1-51NS09	OU1-51NS09-6-7-09D	6-7	11/20/2009	500	200	L-5156	77	11/20/2009	12:01	-29	12:11	-3
OU1-52NS01	OU1-52NS01	N/A	11/8/2009	N/A	N/A	N/A	N/A	11/8/2009	N/A	N/A	N/A	N/A
OU1-52NS02	OU1-52NS02	N/A	11/7/2009	N/A	N/A	N/A	N/A	11/7/2009	N/A	N/A	N/A	N/A
OU1-52NS03	OU1-52NS03	N/A	11/7/2009	N/A	N/A	N/A	N/A	11/7/2009	N/A	N/A	N/A	N/A
OU1-52NS04	OU1-52NS04	N/A	11/7/2009	N/A	N/A	N/A	N/A	11/7/2009	N/A	N/A	N/A	N/A
OU1-52NS05	OU1-52NS05-8-9-09D	8-9	11/8/2009	0	116	L-5150	115	11/8/2009	10:59	-30	11:07	-3
OU1-52NS06	OU1-52NS06-9-10-09D	9-10	11/8/2009	0	55	L-5134	195	11/8/2009	14:33	-29	14:43	-3
OU1-52NS07	OU1-52NS07-8-9-09D	8-9	11/8/2009	100	358	L-8176	204	11/8/2009	12:06	-29	12:17	-3
OU1-52NS08	OU1-52NS08	N/A	11/10/2009	N/A	N/A	N/A	N/A	11/10/2009	N/A	N/A	N/A	N/A
OU1-52NS09	OU1-52NS09-5-6-09D	5-6	11/9/2009	0	--	L-A7212	19	11/9/2009	16:07	-29	16:15	-3.5
OU1-52NS10	OU1-52NS10-4-5-09D	4-5	11/9/2009	0	3.9	L-A7170	116	11/9/2009	14:49	-29.5	14:59	-2.5
OU1-52NS11	OU1-52NS11-6-7-09D	6-7	11/9/2009	0	16	L-A7058	189	11/9/2009	13:27	-30	13:37	-4
OU1-52NS11	OU1-52NS11-6-7-09DP	6-7	11/9/2009			SL-1228	145	11/9/2009	13:27	-28.5	13:38	-3
OU1-52NS13	OU1-52NS13-10-11-09D	10-11	11/7/2009	750	2.5	SL-1216	65	11/7/2009	11:05	-30	11:15	-4
OU1-52NS14	OU1-52NS14	N/A	11/8/2009	N/A	N/A	N/A	N/A	11/8/2009	N/A	N/A	N/A	N/A
OU1-52NS15	OU1-52NS15-4-5-09D	4-5	11/20/2009	900	227	L-A7206	100	11/20/2009	10:25	-29.5	10:33	-4
OU1-52NS15	OU1-52NS15-4-5-09DP	4-5	11/20/2009			L-A7165	46	11/20/2009	10:25	-29	10:35	-4
OU1-52TW04	OU1-52TW04	N/A	11/7/2009	N/A	N/A	N/A	N/A	11/7/2009	N/A	N/A	N/A	N/A
OU1-52TW14	OU1-52TW14	N/A	11/8/2009	N/A	N/A	N/A	N/A	11/8/2009	N/A	N/A	N/A	N/A
OU1-74NS01	OU1-74NS01-7-8-09D	7-8	11/21/2009	0	40	L-A7209	59	11/21/2009	8:17	-30	8:28	-3.5
OU1-74NS02	OU1-74NS02-6-7-09D	6-7	11/20/2009	0	95	L-A7168	42	11/20/2009	16:03	-29	16:14	-3
OU1-98NS01	OU1-98NS01-5-6-09D	5-6	11/3/2009	0	0	L-5105	141	11/3/2009	16:07	-30	16:17	-3
OU1-98NS02	OU1-98NS02-6-7-09D	6-7	11/3/2009	0	2.8	L-3841	68	11/3/2009	12:48	-30	13:00	-3
OU1-98NS03	OU1-98NS03-3-4-09D	3-4	11/4/2009	0	0	L-8197	113	11/4/2009	8:36	-29.5	8:48	-2
OU1-98NS04	OU1-98NS04-5-6-09D	5-6	11/4/2009	0	0	L-5129	24	11/4/2009	13:16	-29	13:25	-4
OU1-98NS05	OU1-98NS05	N/A	11/4/2009	N/A	N/A	N/A	N/A	11/4/2009	N/A	N/A	N/A	N/A

TABLE 3-4
Summary of OU1 Phase I Near-Slab Soil Vapor Probe Sampling Information
Vapor Intrusion Report
MCAS Cherry Point, Havelock ,NC

Sample Location	Sample ID	Probe Depth (ft bgs)	Installation Date	Leak Check (ppm He)	Total VOCs (ppm)	Canister ID	Flow Controller ID	Sample Date	Sample Start Time	Initial Canister Pressure (" Hg)	Sample End Time	Final Canister Pressure (" Hg)
OU1-98NS06	OU1-98NS06-5-6-09D	5-6	11/4/2009	0	0	L-5182	12	11/4/2009	10:21	-30	10:29	-4
OU1-98NS07	OU1-98NS07-4.5-5.5-09D	4.5-5.5	11/3/2009	0	0	L-8189	103	11/3/2009	11:03	-30	11:13	-3
OU1-98NS07	OU1-98NS07-4.5-5.5-09DP	4.5-5.5	11/3/2009			L-5130	153	11/3/2009	11:03	-30	11:12	-4
OU1-98NS08	OU1-98NS08-4.5-5.5-09D	4.5-5.5	11/2/2009	0	2.8	L-5188	39	11/2/2009	15:34	-29	15:49	-2
OU1-98NS09	OU1-98NS09-6-7-09D	6-7	11/5/2009	0	1.6	L-5193	76	11/5/2009	9:35	-30	9:45	-4
OU1-98NS10	OU1-98NS10-11-12-09D	11-12	11/5/2009	5000	0.8	L-5148	14	11/5/2009	15:35	-30	15:47	-4
OU1-98NS11	OU1-98NS11-6-7-09D	6-7	11/5/2009	0	3.2	SL-1215	37	11/5/2009	7:58	-29.5	8:08	-3
OU1-98NS12	OU1-98NS12-9-10-09D	9-10	11/5/2009	0	4.7	L-A7176	70	11/5/2009	11:08	-29.5	11:18	-3.5

TABLE 3-5
Summary of OU1 Phase I Groundwater Grab Sampling Information
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock ,NC

Sample Location	Sample ID	Approximate Depth Sample Collected (ft bgs)	Well Screen Interval (ft bgs)	Sample Date	Sample Time
OU1-14TW01	OU1-14TW01-09D	10	9-12	11/21/09	12:55
OU1-14TW02	OU1-14TW02-09D	9	9-12	11/21/09	14:05
OU1-14TW03	OU1-14TW03-09D	10	9-12	11/21/09	9:35
OU1-14TW04	OU1-14TW04-09D	10	9-12	11/21/09	10:40
OU1-16TW01	OU1-16TW01-09D	10	10-13	11/8/2009	16:42
OU1-16TW02	OU1-16TW02-09D	9.5	9-13	11/9/2009	10:26
OU1-16TW03	OU1-16TW03-09D	9	8-12	11/9/2009	9:24
OU1-16TW04	OU1-16TW04-09D	10.5	9-13	11/9/2009	8:25
OU1-42TW01	OU1-42TW01-09D	6.8	5-7	11/6/2009	15:39
OU1-42TW02	OU1-42TW02-09D	7	7-9	11/6/2009	14:01
OU1-42TW03	OU1-42TW03-09D	9	9-11	11/6/2009	10:15
OU1-42TW04	OU1-42TW04-09D	10	8-12	11/6/2009	11:40
OU1-42TW05	OU1-42TW05-09D	9	9-11	11/6/2009	8:37
OU1-42TW05	OU1-42TW05-09DP	9	9-11	11/6/2009	8:42
OU1-51TW01	OU1-51TW01-09D	5	5-7	11/7/2009	9:40
OU1-51TW03	OU1-51TW03-09D	9	8-12	11/10/2009	8:31
OU1-51TW04	OU1-51TW04-09D	9	8-12	11/10/2009	9:30
OU1-51TW05	OU1-51TW05	N/A	N/A	N/A	N/A
OU1-51TW06	OU1-51TW06-09D	9	8-12	11/10/2009	10:58
OU1-51TW06	OU1-51TW06-09DP	9	8-12	11/10/2009	11:03
OU1-51TW07	OU1-51TW07	N/A	N/A	N/A	N/A
OU1-51TW08	OU1-51TW08-09D	8.5	8-12	11/10/2009	14:53
OU1-51TW09	OU1-51TW09-09D	9.5	9-11	11/20/2009	12:00
OU1-51TW09	OU1-51TW09-09DP	9.5	9-11	11/20/2009	12:05
OU1-52TW01	OU1-52TW01-09D	13.5	13-17	11/8/2009	15:42
OU1-52TW02	OU1-52TW02-09D	5	5-7	11/7/2009	14:10
OU1-52TW03	OU1-52TW03-09D	15	13-15	11/7/2009	15:25
OU1-52TW04	OU1-52TW04	N/A	N/A	N/A	N/A
OU1-52TW05	OU1-52TW05-09D	11.8	10-12	11/8/2009	10:50
OU1-52TW06	OU1-52TW06-09D	11.5	10-14	11/8/2009	14:31
OU1-52TW06	OU1-52TW06-09DP	11.5	10-14	11/8/2009	14:36
OU1-52TW07	OU1-52TW07-09D	10.5	9-13	11/8/2009	11:53
OU1-52TW08	OU1-52TW08	N/A	N/A	N/A	N/A
OU1-52TW09	OU1-52TW09-09D	8	7-9	11/9/2009	15:57
OU1-52TW10	OU1-52TW10-09D	8	6-10	11/9/2009	14:48

TABLE 3-5
Summary of OU1 Phase I Groundwater Grab Sampling Information
Vapor Intrusion Report
MCAS Cherry Point, Havelock ,NC

Sample Location	Sample ID	Approximate Depth Sample Collected (ft bgs)	Well Screen Interval (ft bgs)	Sample Date	Sample Time
OU1-52TW11	OU1-52TW11-09D	9	8.5-12.5	11/9/2009	13:17
OU1-52TW13	OU1-52TW13-09D	12	12-14	11/7/2009	11:00
OU1-52TW14	OU1-52TW14	N/A	N/A	N/A	N/A
OU1-52TW15	OU1-52TW15-09D	10.5	10-11	11/20/2009	9:35
OU1-74TW01	OU1-74TW01-09D	10	9-11	11/21/2009	8:20
OU1-74TW02	OU1-74TW02-09D	9.5	9-11	11/20/2009	15:55
OU1-98TW05	OU1-98TW05-09D	5	4-8	11/4/2009	14:35
OU1-98TW09	OU1-98TW09-09D	13	13-15	11/5/2009	9:40
OU1-98TW10	OU1-98TW10-09D	14	14-16	11/5/2009	14:55
OU1-98TW11	OU1-98TW11-09D	13	13-15	11/5/2009	7:57
OU1-98TW12	OU1-98TW12-09D	13	13-15	11/5/2009	11:15
OU1-98TW01	OU1-98TW01-09D	7	7-8	11/3/2009	15:52
OU1-98TW02	OU1-98TW02-09D	6	6-7	11/3/2009	14:02
OU1-98TW03	OU1-98TW03-09D	6	6-7	11/4/2009	8:07
OU1-98TW04	OU1-98TW04-09D	5	5-6	11/4/2009	13:00
OU1-98TW06	OU1-98TW06-09D	7	7-8	11/4/2009	9:55
OU1-98TW07	OU1-98TW07-09D	6.5	6-8	11/3/2009	13:29
OU1-98TW08	OU1-98TW08-09D	6	6-10	11/3/2009	12:47
OU1-98TW08	OU1-98TW08-09DP	6	6-10	11/3/2009	12:52
OU1-EB	OU1-EB-110309	N/A	N/A	11/3/2009	14:25
OU1-EB	OU1-EB-110709	N/A	N/A	11/7/2009	15:00
OU1-EB	OU1-EB-111009	N/A	N/A	11/10/2009	16:00
OU1-EB	OU1-EB-112009	N/A	N/A	11/20/2009	16:15
OU1-FB	OU1-FB-110309	N/A	N/A	11/3/2009	14:30
OU1-FB	OU1-FB-111009	N/A	N/A	11/10/2009	16:05
OU1-FB	OU1-FB-112009	N/A	N/A	11/20/2009	16:30
OU1-TB	OU1-TB-110409	N/A	N/A	11/4/2009	16:00
OU1-TB	OU1-TB-110909	N/A	N/A	11/9/2009	7:00
OU1-TB	OU1-TB-111109	N/A	N/A	11/10/2009	7:00
OU1-TB	OU1-TB-112309	N/A	N/A	11/23/2009	7:00

Notes:
N/A = sample not collected
ft bgs = feet below ground surface

\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION3\FIGURE 3-1 - VOC PLUMES - UPPER TCE.MXD CBOWMAN 3/4/2010 11:57:18

Legend

- Extraction Well
- Monitoring Well - Upper Aquifer
- Surface Water
- Inferred
- OU1 Boundary
- Existing Buildings

IWTP - Industrial Wastewater Treatment Plant

- NC2L - 10x NC2L
- 10x NC2L - 100 x NC2L
- 100x NC2L - 1000x NC2L
- 1000x NC2L - 11,000 µg/L
- > 11,000 µg/L

Notes:
NC2L - North Carolina Groundwater Standard
NC2L = 2.8 µg/L
NU = Not Used
Concentrations are from most recent groundwater sampling event, if applicable (majority of the concentrations are from the Spring 2006 sampling event)
µg/L = micrograms per liter
U - analyte not detected above detection limit
J - concentration is estimated

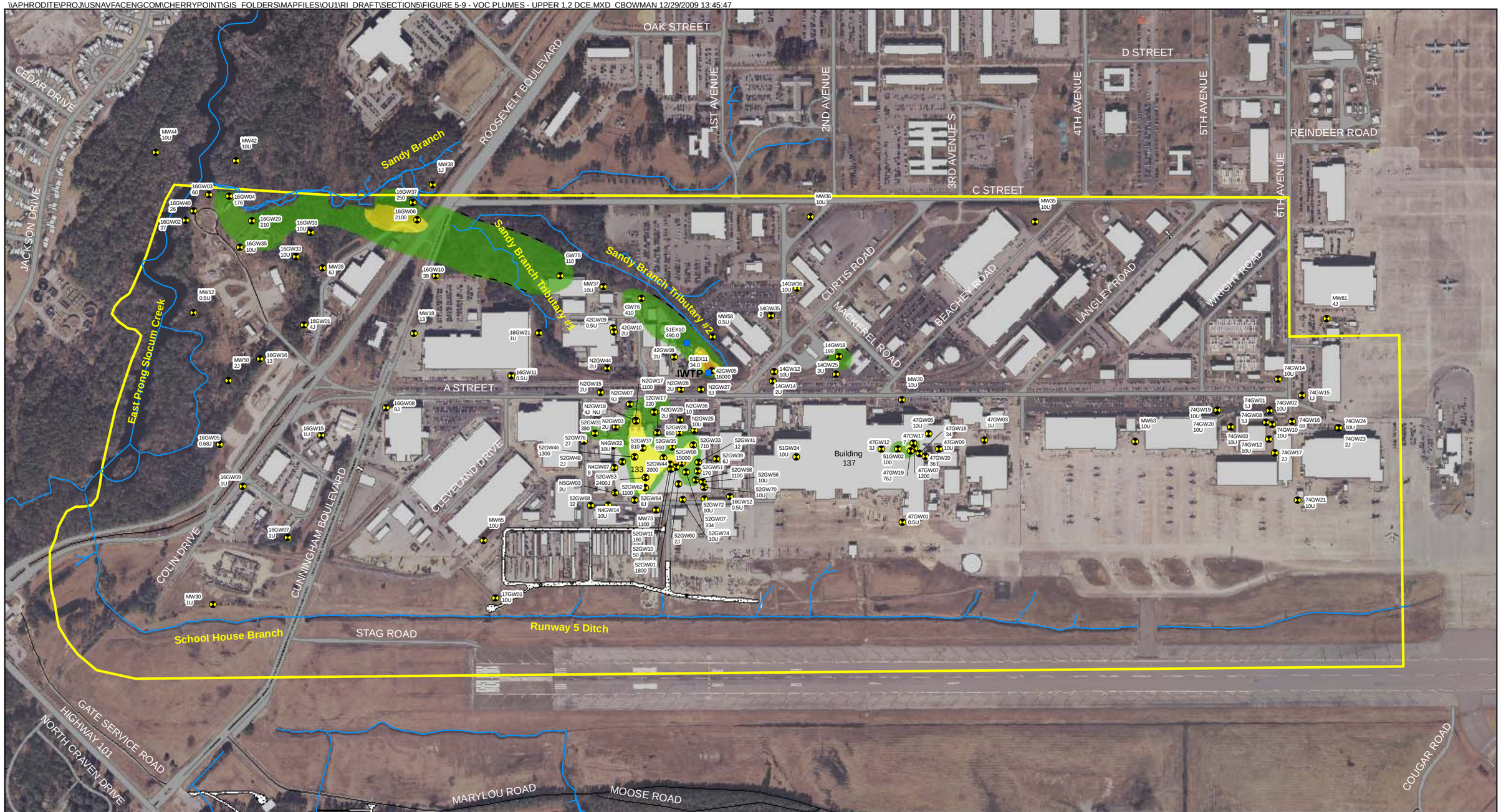
N S E W

0 600 1,200 Feet

Figure 3-1
Trichloroethene (TCE) Isoconcentration Map
Upper Surficial Aquifer
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

CH2MHILL

\\APHRODITE\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\RI_DRAFT\SECTION5\FIGURE 5-9 - VOC PLUMES - UPPER 1,2 DCE.MXD CBOWMAN 12/29/2009 13:45:47



Legend

- Extraction Well
- Monitoring Well - Upper Aquifer
- Surface Water
- Inferred
- OU1 Boundary
- Existing Buildings

IWTP - Industrial Wastewater Treatment Plant

- NC2L - 10x NC2L
- 10x NC2L - 100x NC2L
- 100x NC2L - 1000x NC2L

Notes:
NC2L - North Carolina Groundwater Standard
NC2L = 70 µg/L
NU = Not Used
DNAPL - Dense Non Aqueous Phase Liquid
Concentrations are from most recent groundwater sampling event, if applicable (majority of the concentrations are from the Spring 2006 sampling event)
µg/L = micrograms per liter
U - analyte not detected above detection limit
J - concentration is estimated

N S E

0 600 1,200 Feet

Figure 3-2
1,2-Dichloroethene (1,2 DCE) Isoconcentration Map
Upper Surficial Aquifer
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

CH2MHILL

\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION3\FIGURE 3-3 - VOC PLUMES - UPPER VINYL CHLORIDE.MXD CBOWMAN 3/4/2010 11:13:34

Legend

- Extraction Well
- Monitoring Well - Upper Aquifer
- Surface Water
- Inferred
- OU1 Boundary
- Existing Buildings

IWTP - Industrial Wastewater Treatment Plant

- NC2L - 1000x NC2L
- 1000x NC2L - 10,000x NC2L
- 10,000x NC2L - 100,000x NC2L
- 100,000x NC2L - 500,000x NC2L

Notes:
NC2L - North Carolina Groundwater Standard
NC2L = 0.015 µg/L
NU = Not Used
DNAPL - Dense Non Aqueous Phase Liquid
Concentrations are from most recent groundwater sampling event, if applicable (majority of the concentrations are from the Spring 2006 sampling event)
µg/L = micrograms per liter
U - analyte not detected above detection limit
J - concentration is estimated

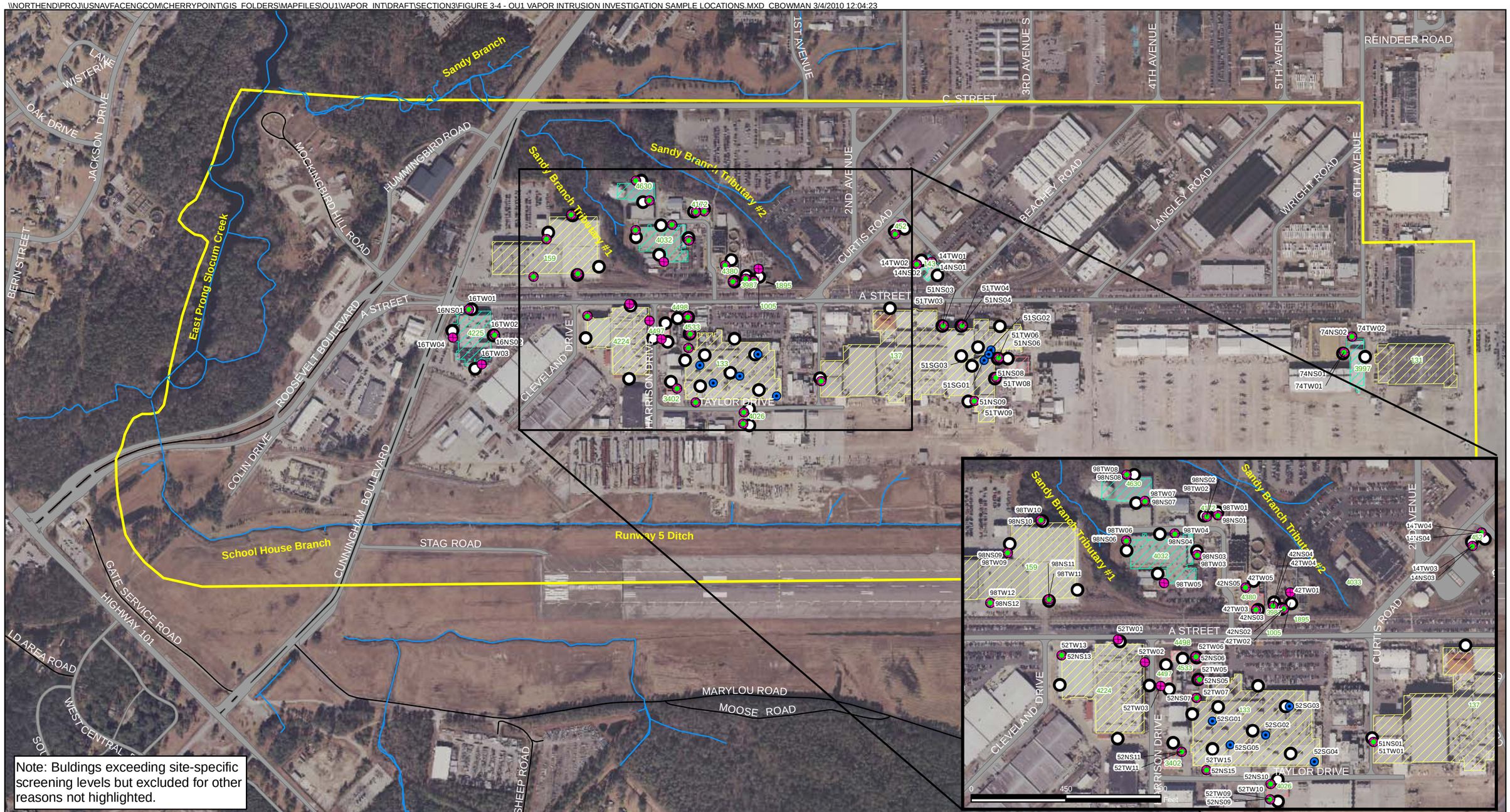
N W E S

0 600 1,200 Feet

Figure 3-3
Vinyl Chloride Isoconcentration Map
Upper Surficial Aquifer
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

CH2MHILL

\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION3\FIGURE 3-4 - OU1 VAPOR INTRUSION INVESTIGATION SAMPLE LOCATIONS.MXD CBOWMAN 3/4/2010 12:04:23



Legend

- Near Slab Soil Gas Sample Location
- Sub Slab Soil Gas Sample Location
- Temporary Well Location
- Proposed Sample Locations
- Surface Water
- OU1 Boundary
- Buildings within 100 ft of Monitoring Wells Exceeding Small Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Medium Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Large Building Criteria

N W E S

0 600 1,200 Feet

Figure 3-4
OU1 Vapor Intrusion Investigation Sample Locations
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

CH2MHILL

\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION3\FIGURE 3-5 - BUILDING 159 OU1 VAPOR INTRUSION SAMPLING LOCS.MXD CBOWMAN 3/4/2010 12:06:46

Legend

- Near Slab Soil Gas Sample Location
- Sub Slab Soil Gas Sample Location
- Temporary Well Location
- Proposed Sample Locations
- Surface Water
- Water Line
- Wastewater Line
- Storm Sewer Line
- Industrial Waste Line
- Heating and Cooling Line
- Fuel Line
- Electrical Cable Line
- OU1 Boundary
- Buildings within 100 ft of Monitoring Wells Exceeding Small Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Medium Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Large Building Criteria
- 98TW02 - Sample not collected

N S E W

0 100 200 Feet

Figure 3-5
Building 159
OU1 Vapor Intrusion Sampling Locations
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

CH2MHILL

\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION3\FIGURE 3-6 - BUILDINGS 4032, 4172, & 4630 OU1 VAPOR INTRUSION SAMPLING LOCS.MXD CBOWMAN 3/4/2010 12:09:23

Legend

- Near Slab Soil Gas Sample Location
- Sub Slab Soil Gas Sample Location
- Temporary Well Location
- Proposed Sample Locations
- Surface Water
- Water Line
- Wastewater Line
- Storm Sewer Line
- Industrial Waste Line
- Heating and Cooling Line
- Fuel Line
- Electrical Cable Line
- OU1 Boundary
- Buildings within 100 ft of Monitoring Wells Exceeding Small Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Medium Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Large Building Criteria
- 98TW02 - Sample not collected

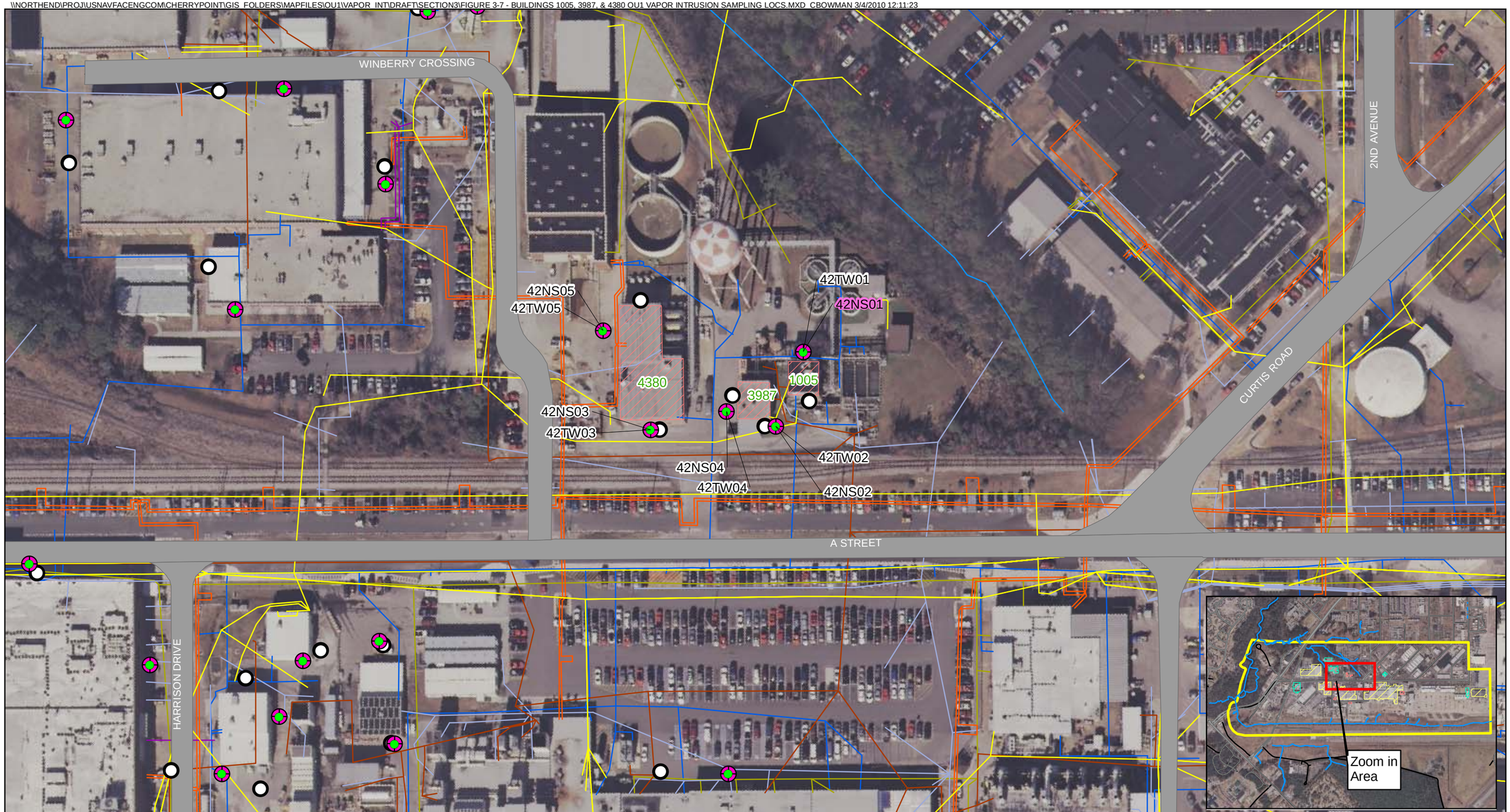
N W E S

0 100 200 Feet

Figure 3-6
Buildings 4032, 4172, & 4630
OU1 Vapor Intrusion Sampling Locations
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

CH2MHILL

\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION3\FIGURE 3-7 - BUILDINGS 1005, 3987, & 4380 OU1 VAPOR INTRUSION SAMPLING LOCS.MXD CBOWMAN 3/4/2010 12:11:23



Legend

- Near Slab Soil Gas Sample Location
- Sub Slab Soil Gas Sample Location
- Temporary Well Location
- Proposed Sample Locations
- Surface Water
- Water Line
- Wastewater Line
- Storm Sewer Line
- Industrial Waste Line
- Heating and Cooling Line
- Fuel Line
- Electrical Cable Line
- OU1 Boundary
- Buildings within 100 ft of Monitoring Wells Exceeding Small Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Medium Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Large Building Criteria
- 98TW02 - Sample not collected

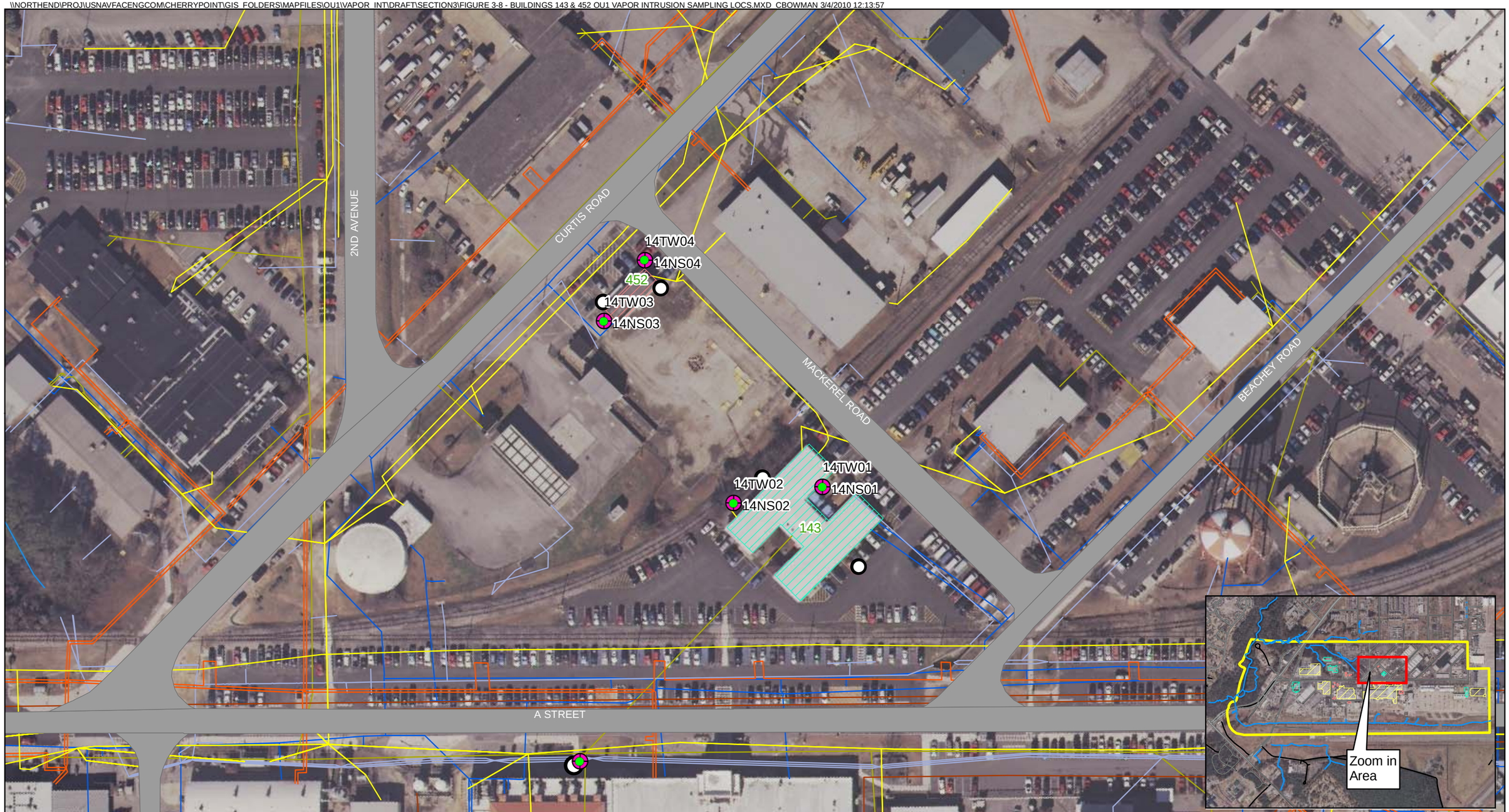
N W E S

0 100 200 Feet

Figure 3-7
Buildings 1005, 3987, & 4380
OU1 Vapor Intrusion Sampling Locations
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

CH2MHILL

\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION3\FIGURE 3-8 - BUILDINGS 143 & 452 OU1 VAPOR INTRUSION SAMPLING LOCS.MXD CBOWMAN 3/4/2010 12:13:57



Legend

- Near Slab Soil Gas Sample Location
- Sub Slab Soil Gas Sample Location
- Temporary Well Location
- Proposed Sample Locations
- Surface Water
- Water Line
- Wastewater Line
- Storm Sewer Line
- Industrial Waste Line
- Heating and Cooling Line
- Fuel Line
- Electrical Cable Line
- OU1 Boundary
- Buildings within 100 ft of Monitoring Wells Exceeding Small Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Medium Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Large Building Criteria
- 98TW02 - Sample not collected

N S E

0 100 200 Feet

Figure 3-8
Buildings 143 & 452
OU1 Vapor Intrusion Sampling Locations
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

CH2MHILL

\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION3\FIGURE 3-9 - BUILDING 4225 OU1 VAPOR INTRUSION SAMPLING LOCS.MXD CBOWMAN 3/4/2010 12:16:44

Legend

- Near Slab Soil Gas Sample Location
- Sub Slab Soil Gas Sample Location
- Temporary Well Location
- Proposed Sample Locations
- Surface Water
- Water Line
- Wastewater Line
- Storm Sewer Line
- Industrial Waste Line
- Heating and Cooling Line
- Fuel Line
- Electrical Cable Line
- OU1 Boundary
- Buildings within 100 ft of Monitoring Wells Exceeding Small Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Medium Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Large Building Criteria
- 98TW02 - Sample not collected

N S E W

0 100 200 Feet

Figure 3-9
Building 4225
OU1 Vapor Intrusion Sampling Locations
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

CH2MHILL

\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION3\FIGURE 3-10 - BUILDING 4224 OU1 VAPOR INTRUSION SAMPLING LOCS.MXD CBOWMAN 3/4/2010 12:20:17

Legend

- Near Slab Soil Gas Sample Location
- Sub Slab Soil Gas Sample Location
- Temporary Well Location
- Proposed Sample Locations
- Surface Water
- Water Line
- Wastewater Line
- Storm Sewer Line
- Industrial Waste Line
- Heating and Cooling Line
- Fuel Line
- Electrical Cable Line
- Buildings within 100 ft of Monitoring Wells Exceeding Small Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Medium Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Large Building Criteria
- OU1 Boundary
- 98TW02 - Sample not collected

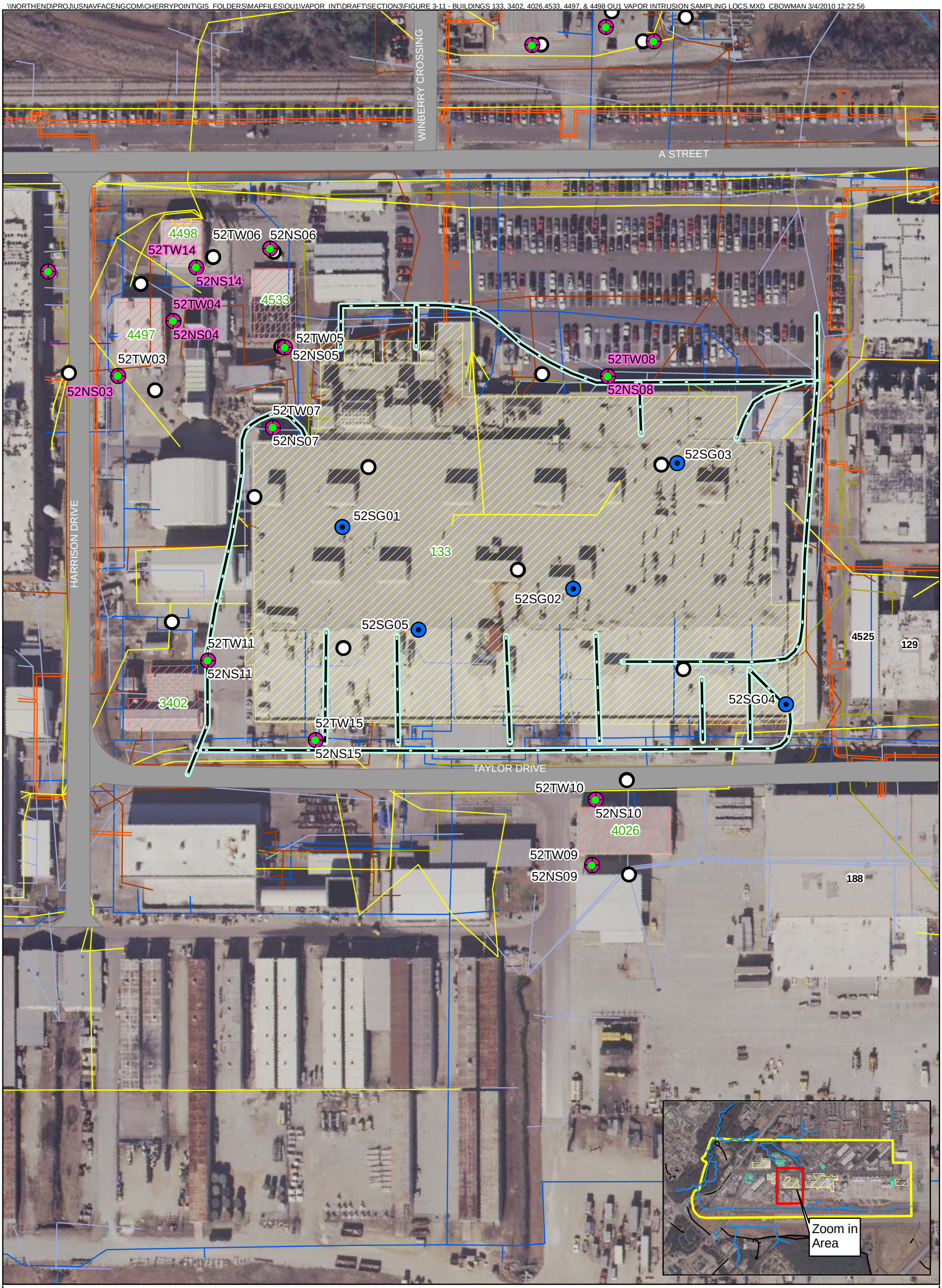
N W E S

0 50 100 Feet

Figure 3-10
Building 4224
OU1 Vapor Intrusion Sampling Locations
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

CH2MHILL

\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION3\FIGURE 3-11 - BUILDINGS 133, 3402, 4026,4533, 4497, & 4498 OU1 VAPOR INTRUSION SAMPLING LOCS.MXD CBOWMAN 3/4/2010 12:22:56



Legend

- Near Slab Soil Gas Sample Location
- Sub Slab Soil Gas Sample Location
- Temporary Well Location
- Proposed Sample Locations
- Surface Water
- Water Line
- Wastewater Line
- Conceptual Locations of 1940s storm drainage
- Storm Sewer Line
- Industrial Waste Line
- Heating and Cooling Line
- Fuel Line
- Electrical Cable Line
- Buildings within 100 ft of Monitoring Wells Exceeding Small Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Medium Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Large Building Criteria
- OU1 Boundary

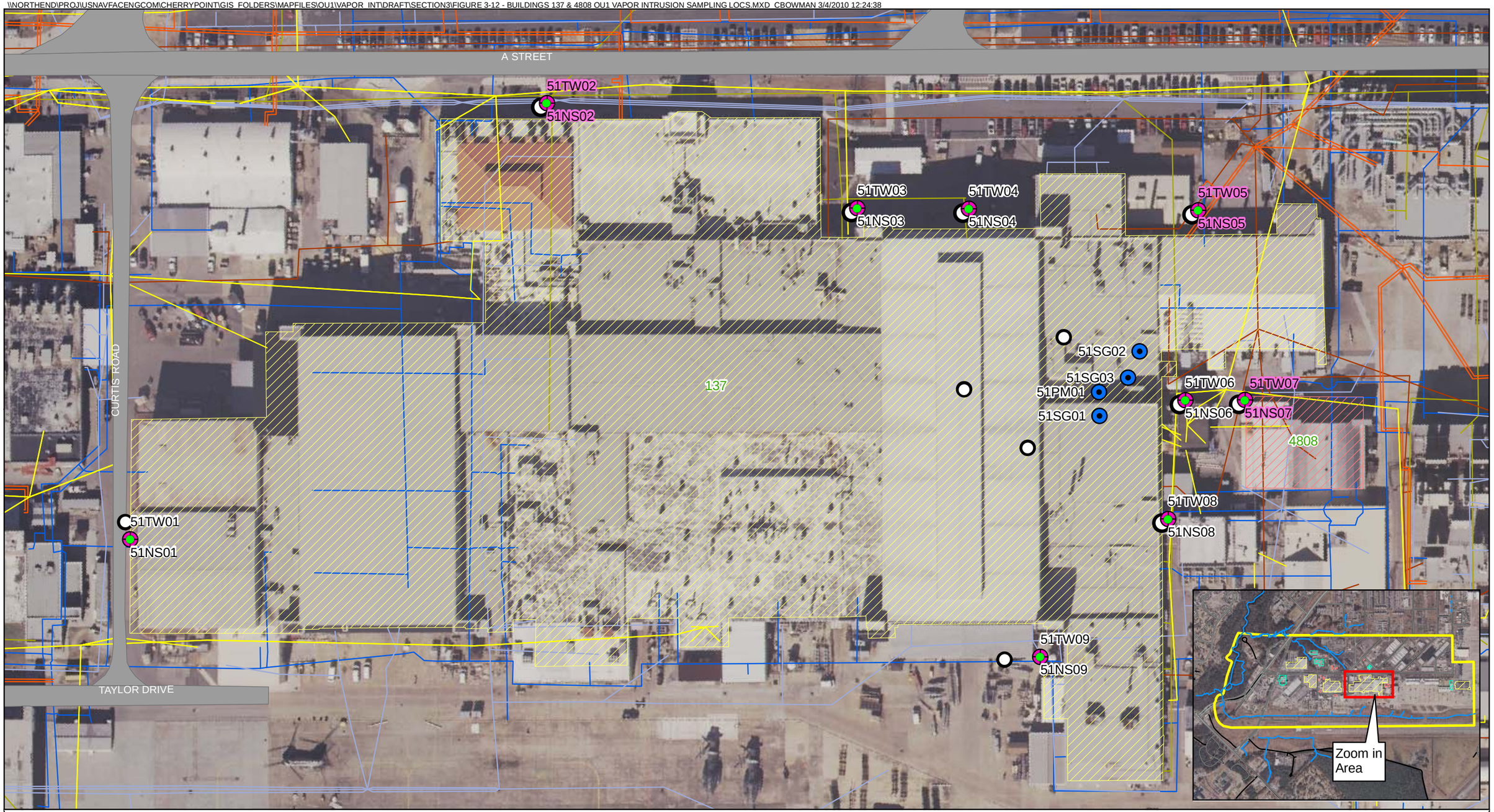
98TW02 - Sample not collected

0 50 100 Feet

Figure 3-11
Buildings 133, 3402, 4026,4533, 4497, & 4498
OU1 Vapor Intrusion Sampling Locations
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

CH2MHILL

\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION3\FIGURE 3-12 - BUILDINGS 137 & 4808 OU1 VAPOR INTRUSION SAMPLING LOCS.MXD CBOWMAN 3/4/2010 12:24:38



Legend

- Near Slab Soil Gas Sample Location
- Sub Slab Soil Gas Sample Location
- Temporary Well Location
- Proposed Sample Locations
- Surface Water
- Water Line
- Wastewater Line
- Storm Sewer Line
- Industrial Waste Line
- Heating and Cooling Line
- Fuel Line
- Electrical Cable Line
- OU1 Boundary
- Buildings within 100 ft of Monitoring Wells Exceeding Small Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Medium Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Large Building Criteria
- 98TW02 - Sample not collected

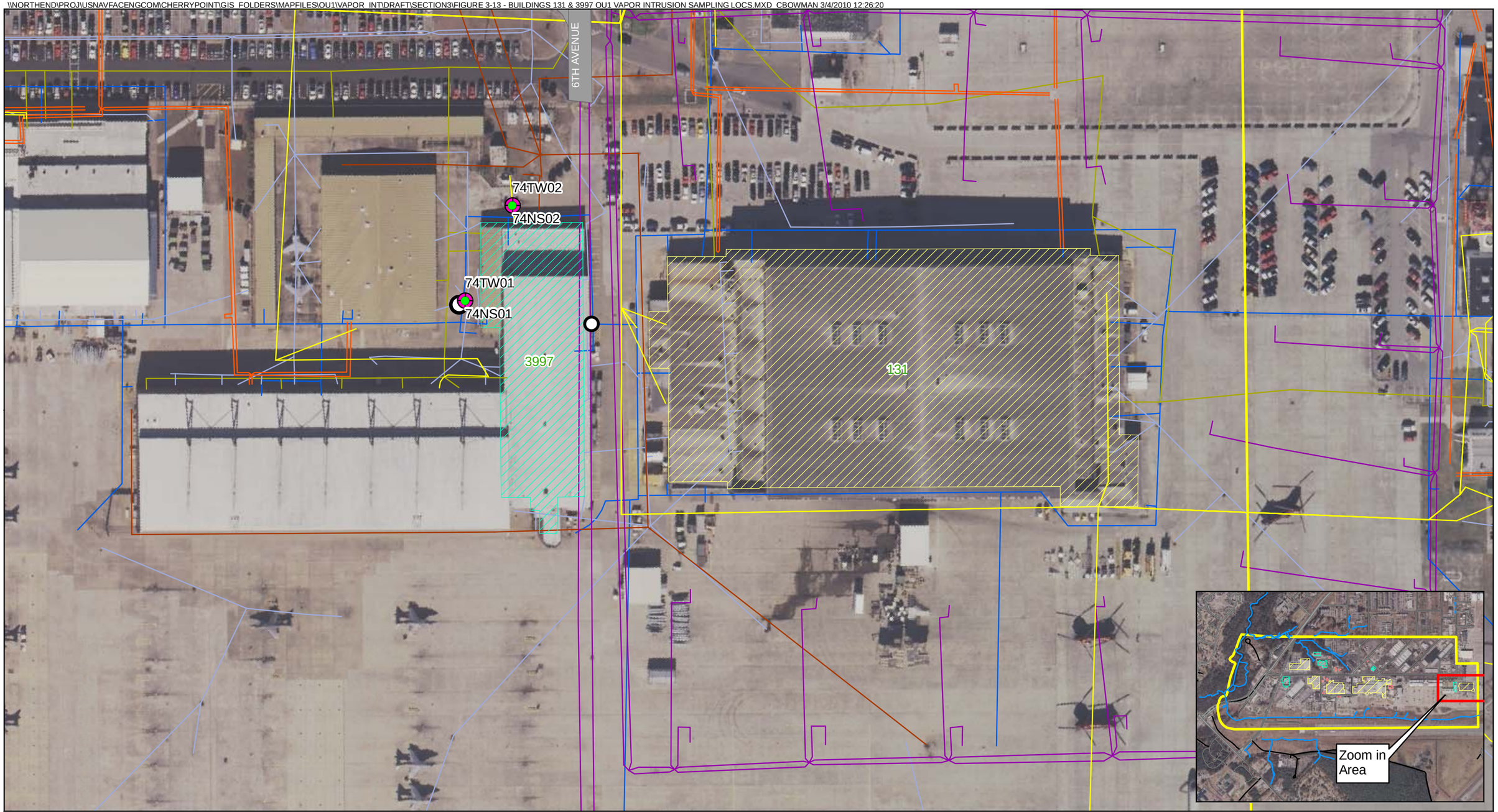
N S E W

0 100 200 Feet

Figure 3-12
Buildings 137 & 4808
OU1 Vapor Intrusion Sampling Locations
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

CH2MHILL

\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION3\FIGURE 3-13 - BUILDINGS 131 & 3997 OU1 VAPOR INTRUSION SAMPLING LOCS.MXD CBOWMAN 3/4/2010 12:26:20



Legend

- Near Slab Soil Gas Sample Location
- Sub Slab Soil Gas Sample Location
- Temporary Well Location
- Proposed Sample Locations
- Surface Water
- Water Line
- Wastewater Line
- Storm Sewer Line
- Industrial Waste Line
- Heating and Cooling Line
- Fuel Line
- Electrical Cable Line
- OU1 Boundary
- Buildings within 100 ft of Monitoring Wells Exceeding Small Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Medium Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Large Building Criteria

N W E S

0 100 200 Feet

Figure 3-13
Buildings 131 & 3997
OU1 Vapor Intrusion Sampling Locations
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

CH2MHILL

SECTION 4

Quality Assurance

4.1 Data Quality Evaluation

The data quality evaluation assesses the effect of the overall analytical process on the "availability" of the analytical data. "Availability" in this context refers to whether results can be used by the project team based on their analytical soundness. If a result is analytically sound, it is available for use by the project team.

Evaluation of laboratory performance is a check for compliance with the method requirements. Additionally, an independent, third-party validator conducted a review of the laboratory data to assess whether the analytical methods were within required control limits at the time of analysis. Evaluation of potential matrix interferences involves the review of several areas of results, including surrogate spike recoveries, matrix spike recoveries, and duplicate sample results.

The data evaluation and validation is a multi-tiered process. The process begins with an internal laboratory review, continues with an independent review by a third-party validator, and ends with an overall review by the Navy contractor project chemistry team. While only the data validator is allowed to apply qualifiers to the data, the process provides a medium for essential communication between the laboratory, validator, and project team, and allows for data quality to be thoroughly evaluated. Details of the data quality evaluation are presented in **Appendix H**.

All data collected during the OU 1 vapor intrusion investigation were found to be of exceptional quality. No data were rejected due to QA/QC deficiencies and all data are available for use by the project team.

4.2 Elevated Detection Limits

Detection limits for the COPCs in several soil gas samples exceeded the screening criteria (Section 6). These elevated detection limits result in uncertainty in drawing conclusions about the vapor intrusion pathway. The following paragraphs summarize the laboratory's process of establishing detection limits and potential reasons for the elevated detection limits at OU1.

Prior to air sample analysis by TO-15, the pressure of the Summa™ canisters is measured. If the pressure is lower than the ideal working range (approximately -10 to -20" Hg), the laboratory pressurizes the canister, thereby diluting the sample. The laboratory uses the initial and final canister pressures to calculate the dilution factor. This dilution raises the quantitation limits for all constituents.

Additionally, before air sample analysis, the samples are first screened using a dedicated Gas Chromatograph/ Mass Spectrometer (GC/MS). If one or more constituents are found over the analytical instrument's calibration curve, a dilution is performed to bring them

within the acceptable range. The samples are then analyzed at the appropriate dilutions; however, secondary dilutions are sometimes necessary. Dilutions raise the quantitation limits for all constituents, including those which are reported as non-detect.

Dilutions may be required based on the presence of either target or non-target constituents. For example, samples OU1-51SG02-09D and OU1-51SG03-09D were diluted by the laboratory because the concentration of the target compound 1,1,1-TCA exceeded the instrument's calibration range in the original analysis. These samples were reanalyzed to attain acceptable results within the calibration range. The presence of non-target compounds caused dilutions in several samples as well (e.g., samples OU1-52NS05-09D and OU1-52NS06-09D). These non-target dilutions may be due to the presence of petroleum hydrocarbons being addressed by the MCAS POL team.

As a result of dilutions, several constituents were non-detect in soil gas samples with quantitation limits greater than the screening criteria. However, according to the UFP-SAP, if a laboratory's quantitation limit for a specific constituent is greater than the corresponding project action limit (PAL) and this specific constituent is non-detect, the analyte will be considered not present.

SECTION 5

Data Evaluation

The groundwater, exterior soil vapor, and subslab soil vapor data were compared to the risk-based screening levels to evaluate the potential for vapor intrusion impacts. This section documents selection of the screening levels and presents a brief summary of the Phase I data.

5.1 Screening Levels

The purpose of this section is to summarize the groundwater and soil vapor screening levels used to evaluate the historical and Phase I data.

5.1.1 Use of Phase I Data to Evaluate the Modeled Site-Specific Groundwater Screening Levels

Site-specific groundwater levels were calculated using USEPA's (2004) version of the J&E model (1991) and were used to select the 21 buildings of interest for Phase I sampling (CH2M HILL, 2009b). The modeling assumptions and detailed calculations are documented in the UFP-SAP and are not repeated herein. However, in order to address the potential uncertainties in the modeled screening levels, data from co-located Phase I groundwater and exterior soil vapor samples were used to "reality-check" the site-specific modeled screening levels used during the work planning phase.

Co-located groundwater and exterior soil vapor data collected concurrently during Phase I near select buildings (Buildings 4225, 3402, and 3997) were used to evaluate the modeled site-specific GWSLs. Groundwater depth and groundwater concentrations for constituents detected in both groundwater and soil vapor were used as inputs in the USEPA (2004) advanced groundwater J&E model to predict indoor air concentrations, with all other input parameters consistent with those documented in the UFP-SAP.

The predicted indoor air concentrations and other input were then used in the advanced soil vapor J&E model to back-calculate modeled depth-specific soil vapor concentrations. The modeled soil vapor concentrations were then compared with measured soil vapor concentrations (**Table 5-1**). As shown in **Table 5-1**, the groundwater-to-soil vapor modeled concentrations both over- and under-estimated the Phase I measured soil vapor concentrations. Because of this uncertainty and to prevent premature elimination of buildings of interest, the Phase I data were compared to screening levels calculated using methods consistent with USEPA (2002), USEPA (2009) air regional screening levels (RSLs), and the USEPA (2002) default generic shallow soil-vapor-to-indoor-air attenuation factor (AF) (1E-01) and groundwater-to-indoor-air AF (1E-03). These calculations are discussed Section 5.1.2.

5.1.2 Calculation of Generic Screening Levels

Generic screening levels were calculated for groundwater, exterior soil vapor, and subslab soil vapor based on the USEPA (2009) RSLs as described further below. The RSLs were

developed by USEPA (2009) using a 10^{-6} target excess lifetime cancer risk (ELCR) and target non-cancer HQ of 1.0.

Industrial screening levels (based on the industrial air RSLs) were used to evaluate the current industrial scenario(s) at OU1. This is appropriate because these buildings are currently used as offices, processing plants, workshops, and warehouses.

The generic screening levels are provided in **Table 5-2**.

Generic Groundwater Screening Levels

Generic GWSLs were calculated using the methodology in Appendix D of the *Draft Vapor Intrusion Guidance* (USEPA, 2002) for calculating target groundwater concentrations corresponding to target indoor air concentrations. The groundwater vapor intrusion screening level (i.e., GWSL) corresponding to a chemical's target indoor air concentration is calculated by dividing the target indoor air concentration (i.e., the indoor air RSL) by the USEPA (2002 and 2008) default AF (1E-03) and then converting the vapor concentration to an equivalent groundwater concentration assuming equilibrium between the aqueous and vapor phases at the water table. The equation is presented below:

$$C_{gw}\ [\mu g/L] = [C_{target,ia}\ (ppbv)*MW/24.45]\mu g/m^3 * 10^{-3}\ m^3/L * 1/H'_{TS} *1/\alpha$$

where,

Cgw	=	target groundwater concentration (i.e., GWSL),
$C_{target,ia}$	=	target indoor air concentration (i.e., RSLs for residential and industrial air),
MW	=	molecular weight (g/mole)
α	=	AF (ratio of indoor air concentration to source vapor concentration; 1E-03), and
H'_{TS}	=	Henry's Law Constant at system (groundwater) temperature (dimensionless)

The dimensionless form of the Henry's Law Constant at the system temperature (i.e., at the average groundwater temperature) is estimated using the following equation:

$$H'_{TS} = \frac{\exp\left[-\frac{\Delta H_{v,TS}}{RT_s}\left(\frac{1}{T_S}-\frac{1}{T_R}\right)\right]H_R}{RT_S}$$

where,

H'_{TS}	=	Henry's Law Constant at the system temperature (dimensionless)
Hv,TS	=	Enthalpy of vaporization at the system temperature (cal/mol)
T_S	=	System temperature (°K)
T_R	=	Henry's Law Constant reference temperature (°K)
H_R	=	Henry's Law Constant at the reference temperature (atm- m^3/mol)
R_C	=	Gas constant (= 1.9872 cal/mol - °K)
R	=	Gas constant (= 8.205 E-05 atm-m^3/mol-°K)

The enthalpy of vaporization at the system temperature is calculated using the following equation:

$$\Delta H_{v,TS} = \Delta H_{v,b} \left[\frac{\left(1 - T_S/T_C\right)}{\left(1 - T_B/T_C\right)} \right]^n$$

where,

Hv,TS	=	Enthalpy of vaporization at the system temperature (cal/mol)
Hv,b	=	Enthalpy of vaporization at the normal boiling point (cal/mol)
TS	=	System temperature (°K)
TC	=	Critical temperature (°K)
TB	=	Normal boiling point (°K)
n	=	Constant (unitless)

Generic Exterior Soil Vapor Screening Levels

The generic exterior soil vapor screening levels (SVSLs) were calculated by applying USEPA's (2002 and 2008) default shallow (< 6 ft bgs) soil-vapor-to-indoor-air AF of 0.1 or deep (> 6 ft bgs) soil-vapor-to-indoor-air AF of 0.01 to the industrial air RSLs. The industrial exterior soil vapor SVSLs for the non-carcinogenic COPCs were adjusted to a HQ of 0.1 (divided by 10) to account for additive effects.

Generic Subslab Soil Vapor Screening Levels

The generic subslab soil vapor SVSLs were calculated by applying USEPA's (2002 and 2008) default subslab soil-vapor-to-indoor-air AF of 0.1 to the industrial air RSLs. The industrial subslab SVSLs for the non-carcinogenic COPCs were adjusted to a HQ of 0.1 (divided by 10) to account for additive effects.

5.2 Phase I Data Comparison to Risk-Based Screening Levels

Groundwater grab, exterior soil vapor, and subslab soil vapor analytical data collected during Phase I were compared to the generic screening levels. The results of these comparisons are shown in **Tables 5-3** through **5-6** and **Figures 5-1** through **5-9**. Based on the results of this comparison, there are select buildings at OU1 where the vapor intrusion pathway cannot be included a significant exposure pathway. The results of the comparisons are discussed for each building in Section 6.

5.2.1 Groundwater Grab Data

A total of 44 groundwater grab samples were collected at OU1 during Phase I and the analytical data were compared to the generic GWSLs. The results of these comparisons are presented in **Table 5-3**. VC and 1,2-DCA were detected above their respective GWSLs at one location. In addition, the reporting limits for 1,1,2,2-PCA, 1,1-DCA, TCE, and VC each exceeded the GWSLs at one or more locations, resulting in limited uncertainty in the evaluation.

5.2.2 Exterior Shallow Soil Vapor Data

A total of 15 exterior shallow soil vapor samples were collected during Phase I, and the analytical data were compared to the shallow SVSLs. The results of these comparisons are

presented in **Table 5-4.** Concentrations of 1,1,2,2-TCA, chloromethane, PCE, and VC exceeded the shallow SVSLs at one or more locations. There is limited uncertainty in the conclusions for select COPCs (1,1,2,2,-PCA, 1,1-DCA, 1,1-DCE, Freon-12, methylene chloride, PCE, trans-1,2-DCE, TCE, and VC) due to the reporting limit exceeding the shallow SVSLs at several locations.

5.2.3 Exterior Deep Soil Vapor Data

A total of 24 exterior deep soil vapor samples were collected during Phase I, and the analytical data were compared to the deep SVSLs. The results of these comparisons are presented in **Table 5-5.** Freon-113, 1,1-DCA, 1,1-DCE, and VC were detected above the deep SVSLs at one or more locations. There is limited uncertainty in the conclusions for select COPCs (1,1,2,2,-PCA, 1,1-DCA, 1,1-DCE, chloromethane, Freon-12, methylene chloride, PCE, trans-1,2-DCE, TCE, and VC) due to the reporting limit exceeding the deep SVSLs at several locations.

5.2.4 Subslab Soil Vapor Data

The subslab soil vapor analytical data from the five samples collected in Building 133 and the three samples collected in Building 137 during Phase I were compared to the subslab SVSLs. The results of these comparisons are presented in **Table 5-6.**

In Building 133, TCE was detected at three of the five locations above the subslab SVSL. PCE was detected above the subslab SVSL at four of the five locations and trans-1,2-DCE was detected at one location at a concentration which exceeded the subslab SVSLs. TCE was detected at OU1-52SG04-09D at a concentration of 100,000 µg/m^3, which was outside of the acceptable industrial ELCR range of 10-6 to 10-4 (61 to 6,100 µg/m^3). PCE and trans-1,2-DCE were not detected outside of the acceptable ELCR range of 10-6 to 10-4.

In Building 137, 1,1-DCA, 1,1-DCE, and TCE were detected at all three locations at concentrations which exceeded the subslab SVSLs. Concentrations of 1,1,1-TCA were detected above the subslab SVSL at two of the three locations, and PCE and trans-1,2-DCE were detected at one location each above the subslab SVSLs.

There is limited uncertainty in the conclusions for select COPCs (1,1,2,2,-PCA, 1,1-DCA, chloromethane, methylene chloride, PCE, trans-1,2-DCE, and VC) due to the reporting limit being greater than the shallow SVSLs at several locations.

5.3 Indoor-to-Subslab Pressure Differential Data

Pressure gradient measurements between the inside of the structure and the subslab can be useful in interpreting subslab and indoor data and assessing the potential for migration of VOCs detected in the subslab into the indoor air. As discussed in ITRC (2007), a default negative pressure of 4 Pascals (Pa) between the indoor and subslab is typically assumed, suggesting that there is always an advective flow of vapors into a structure. However, a number of presentations have been given at USEPA-sponsored vapor intrusion workshops (http://iavi.rti.org/WorkshopsAndConferences.cfm) to support the conclusion that pressure differences between the indoor and subslab may be positive, negative, or fluctuate between the two (i.e., the building "breathes").

A summary of the Phase I pressure differential monitoring results from Buildings 133 and 137 is provided in **Tables 5-7 and 5-8**, respectively. The pressure differential data were graphed over time for each of these buildings (**Figures 5-10 and 5-11**). There are no regulatory screening levels for interpreting differential pressure measurements. However, pressure differences between the indoors and the subslab can be interpreted using USEPA (1993) guidance for radon mitigation. Although radon is not a COPC under this investigation, the radon mitigation guidance provides information on interpretation of pressure differential readings. An interpretation matrix for differential pressure results based on USEPA (1993) radon reduction techniques technical guidance is presented in **Table 5-9.** Per USEPA (1993), a structure is assumed to be positively pressurized with consistent pressure differences between 6- and 9-Pa and soil vapor intrusion into a structure is prevented. There is a potential transient (intermittent) or significant driver for vapor intrusion with pressure differences less than 5 Pa (**Table 5-9**).

Weather station data (e.g., barometric pressure, temperature, and wind) were collected from November 19, 2009 through November 22, 2009, which coincided with the monitoring of subslab pressure differences. The results of the weather station data collection are presented in **Appendix I**. Temperature ranged from 48° to 78°F, barometric pressure ranged from 29.90 to 30.18 inches Hg, winds were generally out of the east/northeast with wind speeds ranging from 0 to 9 miles per hour, and 0.21 inch of precipitation was recorded over the 4 days.

5.3.1 Building 133

The average indoor-to-subslab differential pressure in Building 133 during Phase I ranged from a minimum of -5.8 Pa to a maximum of 4.3 Pa. The average maximum and minimum differential pressure measurements over the entire monitoring period (November 19, 2009 through November 22, 2009) and during working and night-time hours are shown in **Table 5-7. Figure 5-10** shows the relationship between the differential pressure data at minimum and maximum data points over time for each of the 4 days of monitoring.

Generally, the building's indoor-to-subslab pressure difference can be interpreted as highly variable, with measurements both above and below zero (**Figure 5-10**). Consistent with the criteria listed in the interpretation matrix of **Table 5-9,** there is a potential, intermittent driver for vapor intrusion into the building. The correlation between indoor-to-subslab pressure differences and indoor and outdoor barometric pressures was inconclusive/insignificant (**Figure 5-10**).

5.3.2 Building 137

The average indoor-to-subslab differential pressure in Building 137 during Phase I ranged from a minimum of -1.5 Pa to a maximum of 1.0 Pa. The average maximum and minimum differential pressure measurements over the entire monitoring period (November 17, 2009 through November 22, 2009) and during working and night-time hours are shown in **Table 5-8**. **Figure 5-11** shows the relationship between the differential pressure data at minimum and maximum data points over time for each of the 6 days of monitoring.

Generally, the building's indoor-to-subslab pressure differences can be interpreted as being relatively neutral, with slightly negative and positive measurements at times (**Figure 5-11**). As a result, there is a potential intermittent driver for vapor intrusion into the building.

The correlation between indoor-to-subslab pressure differences and indoor and outdoor barometric pressures was inconclusive/insignificant (**Figure 5-11**).

TABLE 5-1
Validation of Johnson and Ettinger Model Input Parameters used to Calculate Site-Specific Groundwater Screening Levels
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock ,NC

Building Number	Co-located Sample ID	Chemical[1]	Measured Groundwater Result[2] (µg/L)	Modeled Soil Gas Result[3] (µg/m^3)	Measured Soil Gas Result[2] (µg/m^3)	Comment
4225	OU1-16TW02-09D/OU1-16NS02-3-4-09D	trans-1,2-Dichloroethene	150	15,386	46	Model over-estimated soil gas concentration
3402	OU1-52TW11-09D/OU1-52NS11-6-7-09D	Vinyl chloride	4.5	2,114	7,200	Model under-estimated soil gas concentration
3402	OU1-52TW11-09D/OU1-52NS11P-6-7-09D	Vinyl chloride	4.5	2,114	4,700	Model under-estimated soil gas concentration
3997	OU1-74TW02-09D/OU1-74NS02-6-7-09D	1,1,2-TC-1,2,2-TFE (Freon-113)	270	2,486,579	10,000,000 E	Model under-estimated soil gas concentration
3997	OU1-74TW02-09D/OU1-74NS02-6-7-09D	1,1-Dichloroethane	210	22,009	140,000	Model under-estimated soil gas concentration
3997	OU1-74TW02-09D/OU1-74NS02-6-7-09D	1,1-Dichloroethene	17	9,016	9,900	Model under-estimated soil gas concentration

[1] Chemicals detected in co-located groundwater and exterior soil gas samples from Phase I (November 2009) sampling event.
[2] Analytical results from Phase 1 (November 2009) sampling event.
[3] Soil gas concentrations estimated from measured groundwater concentrations via the Johnson and Ettinger model. Model input parameters were presented in the Final Sampling and Analysis Plan Vapor Intrusion Investigation Operable Unit 1 (CH2M HILL, 2009).

TABLE 5-2
Generic Screening Levels
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock ,NC

COPC	Industrial GWSL (ug/L)	Industrial Shallow SVSL (<6 ft bgs) and Subslab SVSL(ug/m^3)	Industrial Deep SVSL (>6 ft bgs) (ug/m^3)
1,1,1-TCA	3,700	22,000	220,000
1,1,2,2-TPCA	19	2.1	21
Freon-113	730	130,000	1,300,000
1,1,2-TCA	29	7.7	77
1,1-DCA	39	77	770
1,1-DCE	93	880	8,800
1,2-DCA	12	4.7	47
Bromoform	680	110	1,100
Chloromethane	120	390	3,900
Freon-12	7.8	880	8,800
Methylene chloride	240	260	2,600
PCE	3.5	21	210
trans-1,2-DCE	180	260	2,600
TCE	19	61	610
VC	2.7	28	280

ug/L = micrograms per liter; ug/m^3 = micrograms per cubic meter

TABLE 5-3
Summary of OU1 Phase I Groundwater Grab Analytical Results
Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Sample ID	CLEAN GWSL	OU1-14TW01-09D	OU1-14TW02-09D	OU1-14TW03-09D	OU1-14TW04-09D	OU1-16TW01-09D	OU1-16TW02-09D	OU1-16TW03-09D	OU1-16TW04-09D
Sample Date	Industrial	11/21/09	11/21/09	11/21/09	11/21/09	11/8/09	11/9/09	11/9/09	11/9/09
Chemical Name									
Volatile Organic Compounds (UG/L)									
1,1,2,2-Tetrachloroethane	19	1 U	1 U	66 U	1 U	1 U	3.1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	730	2 U	2 U	130 U	2 U	2 U	6.2 U	2 U	2 U
1,1-Dichloroethane	39	1 U	1 U	66 U	1 U	1 U	3.1 U	1 U	1 U
1,1-Dichloroethene	93	1 U	1 U	66 U	1 U	1 U	3.1 U	1 U	1 U
trans-1,2-Dichloroethene	180	1 U	1 U	66 U	1 U	1 U	**150**	1 U	1 U
Trichloroethene	19	1 U	1 U	66 U	1 U	1 U	**13**	1 U	1 U
Vinyl chloride	2.7	2 U	2 U	130 U	2 U	2 U	6.2 U	2 U	2 U

Notes:

Shading indicates exceedance

Bold indicates detection

U - The material was analyzed for, but not detected

UG/L - Micrograms per liter

TABLE 5-3
Summary of OU1 Phase I Groundwater Grab Analytical Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Sample ID	CLEAN GWSL	OU1-42TW01-09D	OU1-42TW02-09D	OU1-42TW03-09D	OU1-42TW04-09D	OU1-42TW05-09D	OU1-42TW05P-09D	OU1-51TW01-09D	OU1-51TW03-09D
Sample Date	Industrial	11/6/09	11/6/09	11/6/09	11/6/09	11/6/09	11/6/09	11/7/09	11/10/09
Chemical Name									
Volatile Organic Compounds (UG/L)									
1,1,2,2-Tetrachloroethane	19	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	730	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,1-Dichloroethane	39	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**4.8**
1,1-Dichloroethene	93	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	180	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	19	1 U	1 U	1 U	**1.4**	1 U	1 U	1 U	1 U
Vinyl chloride	2.7	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U

Notes:

Shading indicates exceedance

Bold indicates detection

U - The material was analyzed for, but not detected

UG/L - Micrograms per liter

TABLE 5-3
Summary of OU1 Phase I Groundwater Grab Analytical Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Sample ID	CLEAN GWSL	OU1-51TW04-09D	OU1-51TW06-09D	OU1-51TW06P-09D	OU1-51TW08-09D	OU1-51TW09-09D	OU1-51TW09P-09D	OU1-52TW01-09D	OU1-52TW02-09D
Sample Date	Industrial	11/10/09	11/10/09	11/10/09	11/10/09	11/20/09	11/20/09	11/8/09	11/7/09
Chemical Name									
Volatile Organic Compounds (UG/L)									
1,1,2,2-Tetrachloroethane	19	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	730	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,1-Dichloroethane	39	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	93	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	180	1 U	**1.8**	**1.8**	1 U	1 U	1 U	1 U	1 U
Trichloroethene	19	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride	2.7	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U

Notes:

Shading indicates exceedance

Bold indicates detection

U - The material was analyzed for, but not detected

UG/L - Micrograms per liter

TABLE 5-3
Summary of OU1 Phase I Groundwater Grab Analytical Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Sample ID	CLEAN GWSL	OU1-52TW03-09	OU1-52TW05-09D	OU1-52TW06-09D	OU1-52TW06P-09D	OU1-52TW07-09D	OU1-52TW09-09D	OU1-52TW10-09D	OU1-52TW11-09D
Sample Date	Industrial	11/7/09	11/8/09	11/8/09	11/8/09	11/8/09	11/9/09	11/9/09	11/9/09
Chemical Name									
Volatile Organic Compounds (UG/L)									
1,1,2,2-Tetrachloroethane	19	40 U	10 U	40 U	36 U	10 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	730	80 U	20 U	80 U	71 U	20 U	2 U	2 U	2 U
1,1-Dichloroethane	39	40 U	10 U	40 U	36 U	10 U	1 U	1 U	1 U
1,1-Dichloroethene	93	40 U	10 U	40 U	36 U	10 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	180	**160**	10 U	40 U	36 U	10 U	1 U	1 U	1 U
Trichloroethene	19	40 U	10 U	40 U	36 U	10 U	1 U	1 U	1 U
Vinyl chloride	2.7	80 U	20 U	80 U	71 U	20 U	2 U	2 U	**4.5**

Notes:

Shading indicates exceedance

Bold indicates detection

U - The material was analyzed for, but not detected

UG/L - Micrograms per liter

TABLE 5-3
Summary of OU1 Phase I Groundwater Grab Analytical Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Sample ID	CLEAN GWSL	OU1-52TW13-09D	OU1-52TW15-09D	OU1-74TW01-09D	OU1-74TW02-09D	OU1-98TW01-09D	OU1-98TW02-09D	OU1-98TW03-09D	OU1-98TW04-09D
Sample Date	Industrial	11/7/09	11/20/09	11/21/09	11/20/09	11/3/09	11/3/09	11/4/09	11/4/09
Chemical Name									
Volatile Organic Compounds (UG/L)									
1,1,2,2-Tetrachloroethane	19	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	730	2 U	2 U	2 U	**270**	2 U	2 U	2 U	2 U
1,1-Dichloroethane	39	1 U	1 U	1 U	**210**	1 U	1 U	1 U	1 U
1,1-Dichloroethene	93	1 U	1 U	1 U	**17**	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	180	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U
Trichloroethene	19	1 U	1 U	**1.2**	10 U	1 U	1 U	1 U	1 U
Vinyl chloride	2.7	2 U	2 U	2 U	20 U	2 U	2 U	2 U	2 U

Notes:

Shading indicates exceedance

Bold indicates detection

U - The material was analyzed for, but not detected

UG/L - Micrograms per liter

TABLE 5-3
Summary of OU1 Phase I Groundwater Grab Analytical Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Sample ID	CLEAN GWSL	OU1-98TW05-09D	OU1-98TW06-09D	OU1-98TW07-09D	OU1-98TW08-09D	OU1-98TW08P-09D	OU1-98TW09-09D	OU1-98TW10-09D	OU1-98TW11-09D
Sample Date	Industrial	11/4/09	11/4/09	11/3/09	11/3/09	11/3/09	11/5/09	11/5/09	11/5/09
Chemical Name									
Volatile Organic Compounds (UG/L)									
1,1,2,2-Tetrachloroethane	19	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	730	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,1-Dichloroethane	39	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	93	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	180	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	19	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride	2.7	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U

Notes:

Shading indicates exceedance

Bold indicates detection

U - The material was analyzed for, but not detected

UG/L - Micrograms per liter

TABLE 5-3
Summary of OU1 Phase I Groundwater Grab Analytical Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Sample ID	CLEAN GWSL	OU1-98TW12-09D
Sample Date	Industrial	11/5/09
Chemical Name		
Volatile Organic Compounds (UG/L)		
1,1,2,2-Tetrachloroethane	19	**1**
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	730	2 U
1,1-Dichloroethane	39	1 U
1,1-Dichloroethene	93	1 U
trans-1,2-Dichloroethene	180	1 U
Trichloroethene	19	1 U
Vinyl chloride	2.7	2 U

Notes:

Shading indicates exceedance

Bold indicates detection

U - The material was analyzed for, but not detected

UG/L - Micrograms per liter

TABLE 5-4
Summary of OU1 Phase I Shallow Near-Slab Soil Vapor Analytical Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Sample ID	CLEAN SL Shallow SG Industrial Air	OU1-14NS02-5-6-09D	OU1-16NS02-3-4-09D	OU1-42NS02-5-6-09D	OU1-51NS01-3-4-09D	OU1-51NS04-4.5-5.5-09D	OU1-51NS06-5-6-09D	OU1-52NS09-5-6-09D
Sample Date		11/21/09	11/9/09	11/6/09	11/7/09	11/10/09	11/10/09	11/9/09
Chemical Name								
Volatile Organic Compounds (UG/M3)								
1,1,1-Trichloroethane	22000	4.4 U	**53**	**10**	4.4 U	**100**	**12**	2000 U
1,1,2,2-Tetrachloroethane	2.1	**16**	27 U	5.5 U	5.5 U	5.5 U	5.5 U	2500 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	130000	**220**	31 U	**6.4**	6.1 U	**12**	**13**	2800 U
1,1-Dichloroethane	77	**4.1**	16 U	3.2 U	3.2 U	3.2 U	3.2 U	1500 U
1,1-Dichloroethene	880	3.2 U	16 U	3.2 U	3.2 U	3.2 U	3.2 U	1400 U
Chloromethane	390	4.1 U	21 U	4.1 U	4.1 U	4.1 U	4.1 U	**30,000**
Dichlorodifluoromethane (Freon-12)	880	4 U	**24**	4 U	4 U	4 U	4 U	1800 U
Methylene chloride	260	**9.2**	35 U	6.9 U	6.9 U	**9.9**	6.9 U	3100 U
Tetrachloroethene	21	5.4 U	**78**	5.4 U	**71**	5.4 U	5.4 U	2500 U
trans-1,2-Dichloroethene	260	3.2 U	**46**	3.2 U	3.2 U	3.2 U	3.2 U	1400 U
Trichloroethene	61	**7**	11 U	2.1 U	2.1 U	2.1 U	2.1 U	970 U
Vinyl chloride	28	2 U	**110**	2 U	2 U	**2.5**	**4.6**	920 U

Notes:

Shading indicates exceedance

Bold indicates detections

J - Analyte present. Reported value may or may not be accurate or precise

U - The material was analyzed for, but not detected

UG/M3 - Micrograms per cubic meter

TABLE 5-4
Summary of OU1 Phase I Shallow Near-Slab Soil Vapor Analytical Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Sample ID	CLEAN SL Shallow SG Industrial Air	OU1-52NS10-4-5-09D	OU1-52NS15-4-5-09D	OU1-52NS15P-4-5-09D	OU1-98NS01-5-6-09D	OU1-98NS03-3-4-09D	OU1-98NS04-5-6-09D	OU1-98NS06-5-6-09D
Sample Date		11/9/09	11/20/09	11/20/09	11/3/09	11/4/09	11/4/09	11/4/09
Chemical Name								
Volatile Organic Compounds (UG/M3)								
1,1,1-Trichloroethane	22000	1700 U	11 U	11 U	4.4 U	4.4 U	4.4 U	11 U
1,1,2,2-Tetrachloroethane	2.1	2200 U	14 U	14 U	5.5 U	5.5 U	5.5 U	14 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	130000	2500 U	**93 J**	**100 J**	6.1 U	6.1 U	6.1 U	15 U
1,1-Dichloroethane	77	1300 U	8.1 U	8.1 U	3.2 U	3.2 U	3.2 U	8.1 U
1,1-Dichloroethene	880	1300 U	7.9 U	7.9 U	3.2 U	3.2 U	3.2 U	7.9 U
Chloromethane	390	**18,000**	10 U	10 U	4.1 U	4.1 U	4.1 U	10 U
Dichlorodifluoromethane (Freon-12)	880	1600 U	9.9 U	9.9 U	4 U	4 U	4 U	9.9 U
Methylene chloride	260	2800 U	17 U	17 U	6.9 U	6.9 U	6.9 U	17 U
Tetrachloroethene	21	2200 U	14 U	14 U	5.4 U	5.4 U	5.4 U	14 U
trans-1,2-Dichloroethene	260	1300 U	7.9 U	7.9 U	3.2 U	3.2 U	3.2 U	7.9 U
Trichloroethene	61	860 U	5.4 U	5.4 U	2.1 U	2.1 U	2.1 U	5.4 U
Vinyl chloride	28	820 U	5.1 U	5.1 U	2 U	2 U	2 U	**9.8**

Notes:

Shading indicates exceedance

Bold indicates detections

J - Analyte present. Reported value may or may not be accurate or precise

U - The material was analyzed for, but not detected

UG/M3 - Micrograms per cubic meter

TABLE 5-4
Summary of OU1 Phase I Shallow Near-Slab Soil Vapor Analytical Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Sample ID	CLEAN SL Shallow SG Industrial Air	OU1-98NS07-4.5-5.5-09D	OU1-98NS07P-4.5-5.5-09D	OU1-98NS08-4.5-5.5-09D
Sample Date		11/3/09	11/3/09	11/2/09
Chemical Name				
Volatile Organic Compounds (UG/M3)				
1,1,1-Trichloroethane	22000	20 U	20 U	4.4 U
1,1,2,2-Tetrachloroethane	2.1	25 U	25 U	5.5 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	130000	28 U	28 U	6.1 U
1,1-Dichloroethane	77	15 U	15 U	3.2 U
1,1-Dichloroethene	880	14 U	14 U	3.2 U
Chloromethane	390	19 U	19 U	4.1 U
Dichlorodifluoromethane (Freon-12)	880	18 U	18 U	4 U
Methylene chloride	260	32 U	32 U	6.9 U
Tetrachloroethene	21	25 U	25 U	5.4 U
trans-1,2-Dichloroethene	260	14 U	14 U	3.2 U
Trichloroethene	61	9.8 U	9.8 U	2.1 U
Vinyl chloride	28	9.3 U	9.3 U	2 U

Notes:

Shading indicates exceedance

Bold indicates detections

J - Analyte present. Reported value may or may not be accurate or precise

U - The material was analyzed for, but not detected

UG/M3 - Micrograms per cubic meter

TABLE 5-5
Summary of OU1 Phase I Deep Near-Slab Soil Vapor Analytical Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Sample ID	CLEAN SL Deep	OU1-14NS01-6-7-09D	OU1-14NS03-7-8-09D	OU1-14NS04-6-7-09D	OU1-16NS01-7-8-09D	OU1-42NS03-6-7-09D	OU1-42NS04-6-7-09D	OU1-42NS05-7-8-09D	OU1-42NS05P-7-8-09D
Sample Date	SG Industrial Air	11/21/09	11/21/09	11/21/09	11/8/09	11/6/09	11/6/09	11/6/09	11/6/09
Chemical Name									
Volatile Organic Compounds (UG/M3)									
1,1,1-Trichloroethane	220000	**5.1**	**7.9**	110 U	22 U	4.4 U	**34**	4.4 U	4.4 U
1,1,2,2-Tetrachloroethane	21	5.5 U	5.5 U	140 U	27 U	5.5 U	5.5 U	5.5 U	5.5 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	1300000	**490**	**720**	**4,000**	31 U	6.1 U	**19**	6.1 U	6.1 U
1,1-Dichloroethane	770	**7.9**	**12**	85 U	16 U	3.2 U	3.2 U	3.2 U	3.2 U
1,1-Dichloroethene	8800	3.2 U	3.2 U	83 U	16 U	3.2 U	3.2 U	3.2 U	3.2 U
Chloromethane	3900	4.1 U	4.1 U	110 U	21 U	4.1 U	4.1 U	4.1 U	4.1 U
Dichlorodifluoromethane (Freon-12)	8800	4 U	**4.4**	100 U	**38**	**30**	4 U	**310**	**410**
Methylene chloride	2600	6.9 U	6.9 U	180 U	35 U	6.9 U	6.9 U	6.9 U	6.9 U
Tetrachloroethene	210	**6.3**	5.4 U	140 U	27 U	5.4 U	5.4 U	5.4 U	5.4 U
trans-1,2-Dichloroethene	2600	3.2 U	3.2 U	83 U	16 U	3.2 U	3.2 U	3.2 U	3.2 U
Trichloroethene	610	2.1 U	2.1 U	56 U	11 U	2.1 U	2.1 U	2.1 U	2.1 U
Vinyl chloride	280	2 U	2 U	54 U	**25**	2 U	2 U	**5.1**	2 U

Notes:

Shading indicates exceedance

Bold indicates detection

J - Analyte present. Reported value may or may not be accurate or precise

U - The material was analyzed for, but not detected

UG/M3 - Micrograms per cubic meter

TABLE 5-5
Summary of OU1 Phase I Deep Near-Slab Soil Vapor Analytical Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Sample ID	CLEAN SL Deep	OU1-51NS03-6-7-09D	OU1-51NS08-6-7-09D	OU1-51NS09-6-7-09D	OU1-52NS05-8-9-09D	OU1-52NS06-8-9-09D	OU1-52NS07-8-9-09D	OU1-52NS11-6-7-09D	OU1-52NS11P-6-7-09D
Sample Date	SG Industrial Air	11/10/09	11/10/09	11/20/09	11/8/09	11/8/09	11/8/09	11/9/09	11/9/09
Chemical Name									
Volatile Organic Compounds (UG/M3)									
1,1,1-Trichloroethane	220000	4.4 U	4.4 U	22 U	4200 U	13000 U	370 U	70 U	76 U
1,1,2,2-Tetrachloroethane	21	5.5 U	5.5 U	27 U	5200 U	16000 U	470 U	88 U	96 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	1300000	**31**	**14**	**43**	5800 U	18000 U	520 U	**450**	**400**
1,1-Dichloroethane	770	3.2 U	3.2 U	16 U	3100 U	9400 U	280 U	**94**	**61**
1,1-Dichloroethene	8800	3.2 U	3.2 U	16 U	3000 U	9200 U	270 U	**170**	**130**
Chloromethane	3900	4.1 U	4.1 U	21 U	3900 U	12000 U	350 U	66 U	72 U
Dichlorodifluoromethane (Freon-12)	8800	4 U	4 U	20 U	3800 U	12000 U	340 U	**330**	**290**
Methylene chloride	2600	**14**	6.9 U	**36**	6600 U	20000 U	590 U	110 U	120 U
Tetrachloroethene	210	5.4 U	5.4 U	27 U	5200 U	16000 U	460 U	87 U	95 U
trans-1,2-Dichloroethene	2600	3.2 U	3.2 U	16 U	3000 U	9200 U	270 U	**94**	**69**
Trichloroethene	610	**2.3**	2.1 U	11 U	2000 U	6300 U	180 U	**64**	**59**
Vinyl chloride	280	**92**	2 UJ	10 U	1900 U	6000 U	170 U	**7,200**	**4,700 J**

Notes:

Shading indicates exceedance

Bold indicates detection

J - Analyte present. Reported value may or may not be accurate or precise

U - The material was analyzed for, but not detected

UG/M3 - Micrograms per cubic meter

TABLE 5-5
Summary of OU1 Phase I Deep Near-Slab Soil Vapor Analytical Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Sample ID	CLEAN SL Deep	OU1-52NS13-10-11-09D	OU1-74NS01-7-8-09D	OU1-74NS02-6-7-09D	OU1-98NS02-6-7-09D	OU1-98NS09-6-7-09D	OU1-98NS10-11-12-09D	OU1-98NS11-6-7-09D	OU1-98NS12-9-10-09D
Sample Date	SG Industrial Air	11/7/09	11/21/09	11/20/09	11/3/09	11/5/09	11/5/09	11/5/09	11/5/09
Chemical Name									
Volatile Organic Compounds (UG/M3)									
1,1,1-Trichloroethane	220000	4.4 U	**82**	**49,000**	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U
1,1,2,2-Tetrachloroethane	21	5.5 U	27 U	7400 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	1300000	**15**	**59,000**	**11,000,000**	**1,700**	**65**	6.1 U	6.1 U	**16**
1,1-Dichloroethane	770	3.2 U	**200**	**140,000**	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U
1,1-Dichloroethene	8800	3.2 U	16 U	**9,900**	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U
Chloromethane	3900	4.1 U	21 U	5500 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U
Dichlorodifluoromethane (Freon-12)	8800	4 U	**560**	5300 U	4 U	**28**	**8.2**	**190**	**250**
Methylene chloride	2600	**7.3**	35 U	9300 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U
Tetrachloroethene	210	5.4 U	27 U	7300 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
trans-1,2-Dichloroethene	2600	3.2 U	16 U	4300 U	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U
Trichloroethene	610	2.1 U	11 U	2900 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
Vinyl chloride	280	2 U	10 U	2700 U	2 U	2 U	**12 J**	2 U	2 U

Notes:

Shading indicates exceedance

Bold indicates detection

J - Analyte present. Reported value may or may not be accurate or precise

U - The material was analyzed for, but not detected

UG/M3 - Micrograms per cubic meter

TABLE 5-6
Summary of OU1 Phase I Subslab Soil Vapor Analytical Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Sample ID	CLEAN SL Shallow	OU1-51SG01-09D	OU1-51SG02-09D	OU1-51SG03-09D	OU1-52SG01-09D	OU1-52SG02-09D	OU1-52SG03-09D	OU1-52SG04-09D	OU1-52SG05-09D	OU1-52SG05P-09D
Sample Date	SG Industrial Air	11/19/09	11/19/09	11/19/09	11/19/09	11/19/09	11/19/09	11/19/09	11/19/09	11/19/09
Chemical Name										
Volatile Organic Compounds (UG/M3)										
1,1,1-Trichloroethane	22000	**120,000**	**10,000**	**530,000**	4.4 U	43 U	**30**	**1,100**	1.1 U	4.3 U
1,1,2,2-Tetrachloroethane	2.1	890 U	24 U	740 U	5.5 U	54 U	26 U	890 U	1.4 U	5.5 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	130000	990 U	27 U	820 U	**78**	**120**	**630**	990 U	**41**	**71**
1,1-Dichloroethane	77	**55,000**	**3,700**	**96,000**	3.2 U	32 U	16 U	520 U	0.81 U	3.2 U
1,1-Dichloroethene	880	**11,000**	**1,200**	**23,000**	3.2 U	31 U	15 U	510 U	0.79 U	3.1 U
Chloromethane	390	670 U	18 U	550 U	4.1 U	41 U	20 U	670 U	1 U	4.1 U
Dichlorodifluoromethane (Freon-12)	880	640 U	18 U	530 U	4 U	39 U	19 U	640 U	**1.2**	3.9 U
Methylene chloride	260	1100 U	**72**	930 U	**8**	69 U	33 U	1100 U	1.7 U	6.9 U
Tetrachloroethene	21	880 U	**38**	730 U	**46**	54 U	**140**	**1,300**	**2.9**	5.4 U
trans-1,2-Dichloroethene	260	510 U	**38**	**1,300**	3.2 U	31 U	15 U	**2,300**	**13**	**5.4**
Trichloroethene	61	**1,800**	**3,100**	**61,000**	2.1 U	**6,000**	**3,300**	**100,000**	**180**	**280**
Vinyl chloride	28	330 U	9.1 U	270 U	2 U	20 U	9.9 U	330 U	0.51 U	2 U

Notes:
Shading indicates exceedance
Bold indicates detection
U - The material was analyzed for, but not detected
UG/M3 - Micrograms per cubic meter

TABLE 5-7
Summary of Building 133 Phase I Pressure Differential Monitoring Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Averages over all measurements: [b]

Maximum Differential Pressure:	2.7 Pa
Minimum Differential Pressure:	-3.3 Pa

Averages during Work Hours and Night Time: [c]

		Work Hours, Daily 10-hour Average Pressure Difference (7 am to 5 pm)		Night Time, Daily 14-hour Average Pressure Difference (5 pm to 7 am)	
Date	**Time**	**max (Pa)**	**min (Pa)**	**max (Pa)**	**min (Pa)**
11/19/2009	average	1.77	-1.32	1.91	-1.49
11/20/2009	average	3.13	-3.54	1.67	-4.33
11/21/2009	average	2.85	-4.63	4.04	-3.35
11/22/2009	average	3.63	-3.43	N/A	N/A
	Median:	2.99	-3.49	1.91	-3.35

Date	Time	Date + Time	Maximum Differential Pressure[d] [Pa]	Minimum Differential Pressure[d] [Pa]	Average Pressure [Pa]
11/19/2009	14:28	11/19/09 14:28	1	-2	-0.5
11/19/2009	14:43	11/19/09 14:43	1	-2	-0.5
11/19/2009	14:58	11/19/09 14:58	1.5	-2	-0.25
11/19/2009	15:13	11/19/09 15:13	1.5	-5	-1.75
11/19/2009	15:28	11/19/09 15:28	2.5	-2	0.25
11/19/2009	15:43	11/19/09 15:43	3.5	0.5	2
11/19/2009	15:58	11/19/09 15:58	3.5	1	2.25
11/19/2009	16:13	11/19/09 16:13	1.5	-1.5	0
11/19/2009	16:28	11/19/09 16:28	1	-1	0
11/19/2009	16:43	11/19/09 16:43	2	0	1
11/19/2009	16:58	11/19/09 16:58	0.5	-0.5	0
11/19/2009	17:13	11/19/09 17:13	2	-1	0.5
11/19/2009	17:28	11/19/09 17:28	1.5	-0.5	0.5
11/19/2009	17:43	11/19/09 17:43	2	0.5	1.25
11/19/2009	17:58	11/19/09 17:58	2	-1	0.5
11/19/2009	18:13	11/19/09 18:13	2.5	0	1.25
11/19/2009	18:28	11/19/09 18:28	2.5	0.5	1.5
11/19/2009	18:43	11/19/09 18:43	2	0	1
11/19/2009	18:58	11/19/09 18:58	2.5	-2.5	0
11/19/2009	19:13	11/19/09 19:13	2.5	-1.5	0.5
11/19/2009	19:28	11/19/09 19:28	0	-2	-1
11/19/2009	19:43	11/19/09 19:43	1.5	-1.5	0
11/19/2009	19:58	11/19/09 19:58	2	-3	-0.5
11/19/2009	20:13	11/19/09 20:13	3	-3.5	-0.25
11/19/2009	20:28	11/19/09 20:28	4	-1	1.5
11/19/2009	20:43	11/19/09 20:43	3	-3	0
11/19/2009	20:58	11/19/09 20:58	7	-6.5	0.25
11/19/2009	21:13	11/19/09 21:13	6	-0.5	2.75
11/19/2009	21:28	11/19/09 21:28	2	-3	-0.5
11/19/2009	21:43	11/19/09 21:43	1	-3.5	-1.25
11/19/2009	21:58	11/19/09 21:58	2	-0.5	0.75

Date	Time	Date + Time	Indoor Barometric Pressure (ft)	Indoor Barometric Pressure (in) [e]	Temperature (°C)
11/19/2009	14:15	11/19/09 14:15	2.85	34.20	24.89
11/19/2009	14:30	11/19/09 14:30	2.83	33.96	25.11
11/19/2009	14:45	11/19/09 14:45	2.85	34.20	25.00
11/19/2009	15:00	11/19/09 15:00	2.85	34.20	24.93
11/19/2009	15:15	11/19/09 15:15	2.84	34.08	24.90
11/19/2009	15:30	11/19/09 15:30	2.85	34.20	24.94
11/19/2009	15:45	11/19/09 15:45	2.85	34.20	24.91
11/19/2009	16:00	11/19/09 16:00	2.86	34.32	24.93
11/19/2009	16:15	11/19/09 16:15	2.85	34.20	24.93
11/19/2009	16:30	11/19/09 16:30	2.86	34.32	24.95
11/19/2009	16:45	11/19/09 16:45	2.86	34.32	24.97
11/19/2009	17:00	11/19/09 17:00	2.86	34.32	24.94
11/19/2009	17:15	11/19/09 17:15	2.86	34.32	24.97
11/19/2009	17:30	11/19/09 17:30	2.87	34.44	24.95
11/19/2009	17:45	11/19/09 17:45	2.86	34.32	24.98
11/19/2009	18:00	11/19/09 18:00	2.86	34.32	24.97
11/19/2009	18:15	11/19/09 18:15	2.88	34.56	24.95
11/19/2009	18:30	11/19/09 18:30	2.89	34.68	24.97
11/19/2009	18:45	11/19/09 18:45	2.89	34.68	24.97
11/19/2009	19:00	11/19/09 19:00	2.89	34.68	24.93
11/19/2009	19:15	11/19/09 19:15	2.9	34.80	24.88
11/19/2009	19:30	11/19/09 19:30	2.89	34.68	24.80
11/19/2009	19:45	11/19/09 19:45	2.89	34.68	24.73
11/19/2009	20:00	11/19/09 20:00	2.89	34.68	24.63
11/19/2009	20:15	11/19/09 20:15	2.91	34.92	24.62
11/19/2009	20:30	11/19/09 20:30	2.87	34.44	24.64
11/19/2009	20:45	11/19/09 20:45	2.89	34.68	24.59
11/19/2009	21:00	11/19/09 21:00	2.87	34.44	24.57
11/19/2009	21:15	11/19/09 21:15	2.89	34.68	24.54
11/19/2009	21:30	11/19/09 21:30	2.88	34.56	24.51
11/19/2009	21:45	11/19/09 21:45	2.86	34.32	24.61

Date	Time	Date + Time	Outdoor Barometric Pressure (in)
11/19/2009	8:00	11/19/09 8:00	30.11
11/19/2009	8:15	11/19/09 8:15	30.11
11/19/2009	8:30	11/19/09 8:30	30.11
11/19/2009	8:45	11/19/09 8:45	30.12
11/19/2009	9:00	11/19/09 9:00	30.11
11/19/2009	9:15	11/19/09 9:15	30.11
11/19/2009	9:30	11/19/09 9:30	30.11
11/19/2009	9:45	11/19/09 9:45	30.11
11/19/2009	10:00	11/19/09 10:00	30.11
11/19/2009	10:15	11/19/09 10:15	30.11
11/19/2009	10:30	11/19/09 10:30	30.09
11/19/2009	10:45	11/19/09 10:45	30.09
11/19/2009	11:00	11/19/09 11:00	30.09
11/19/2009	11:15	11/19/09 11:15	30.08
11/19/2009	11:30	11/19/09 11:30	30.08
11/19/2009	11:45	11/19/09 11:45	30.07
11/19/2009	12:00	11/19/09 12:00	30.07
11/19/2009	12:15	11/19/09 12:15	30.06
11/19/2009	12:30	11/19/09 12:30	30.05
11/19/2009	12:45	11/19/09 12:45	30.05
11/19/2009	13:00	11/19/09 13:00	30.04
11/19/2009	13:15	11/19/09 13:15	30.04
11/19/2009	13:30	11/19/09 13:30	30.03
11/19/2009	13:45	11/19/09 13:45	30.03
11/19/2009	14:00	11/19/09 14:00	30.03
11/19/2009	14:15	11/19/09 14:15	30.03
11/19/2009	14:30	11/19/09 14:30	30.03
11/19/2009	14:45	11/19/09 14:45	30.02
11/19/2009	15:00	11/19/09 15:00	30.03
11/19/2009	15:15	11/19/09 15:15	30.03
11/19/2009	15:30	11/19/09 15:30	30.03

TABLE 5-7
Summary of Building 133 Phase I Pressure Differential Monitoring Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Date	Time	Date + Time	Maximum Differential Pressure[d] [Pa]	Minimum Differential Pressure[d] [Pa]	Average Pressure [Pa]
11/19/2009	22:13	11/19/09 22:13	1	-5	-2
11/19/2009	22:28	11/19/09 22:28	0	-2.5	-1.25
11/19/2009	22:43	11/19/09 22:43	0	-1	-0.5
11/19/2009	22:58	11/19/09 22:58	0.5	-1.5	-0.5
11/19/2009	23:13	11/19/09 23:13	1	-1	0
11/19/2009	23:28	11/19/09 23:28	0	-2	-1
11/19/2009	23:43	11/19/09 23:43	0.5	-2	-0.75
11/19/2009	23:58	11/19/09 23:58	-0.5	-2.5	-1.5
11/20/2009	00:13	11/20/09 0:13	-0.5	-2.5	-1.5
11/20/2009	00:28	11/20/09 0:28	1.5	-2.5	-0.5
11/20/2009	00:43	11/20/09 0:43	1	-1.5	-0.25
11/20/2009	00:58	11/20/09 0:58	-0.5	-2	-1.25
11/20/2009	01:13	11/20/09 1:13	0	-2.5	-1.25
11/20/2009	01:28	11/20/09 1:28	0.5	-2	-0.75
11/20/2009	01:43	11/20/09 1:43	2.5	-0.5	1
11/20/2009	01:58	11/20/09 1:58	3.5	-1	1.25
11/20/2009	02:13	11/20/09 2:13	3	-4	-0.5
11/20/2009	02:28	11/20/09 2:28	1	-2.5	-0.75
11/20/2009	02:43	11/20/09 2:43	2	-3.5	-0.75
11/20/2009	02:58	11/20/09 2:58	0.5	-1.5	-0.5
11/20/2009	03:13	11/20/09 3:13	1	-3	-1
11/20/2009	03:28	11/20/09 3:28	1.5	0	0.75
11/20/2009	03:43	11/20/09 3:43	0.5	-2.5	-1
11/20/2009	03:58	11/20/09 3:58	3.5	-1	1.25
11/20/2009	04:13	11/20/09 4:13	1.5	-1.5	0
11/20/2009	04:28	11/20/09 4:28	2	-1	0.5
11/20/2009	04:43	11/20/09 4:43	3	0	1.5
11/20/2009	04:58	11/20/09 4:58	2	-1	0.5
11/20/2009	05:13	11/20/09 5:13	3	0.5	1.75
11/20/2009	05:28	11/20/09 5:28	2	0.5	1.25
11/20/2009	05:43	11/20/09 5:43	4.5	1.5	3
11/20/2009	05:58	11/20/09 5:58	3.5	1	2.25
11/20/2009	06:13	11/20/09 6:13	3	1	2
11/20/2009	06:28	11/20/09 6:28	2.5	0	1.25
11/20/2009	06:43	11/20/09 6:43	3.5	-1	1.25
11/20/2009	06:58	11/20/09 6:58	2	0	1
11/20/2009	07:13	11/20/09 7:13	2	-0.5	0.75
11/20/2009	07:28	11/20/09 7:28	3	-6	-1.5
11/20/2009	07:43	11/20/09 7:43	1.5	-3	-0.75
11/20/2009	07:58	11/20/09 7:58	3.5	-3	0.25
11/20/2009	08:13	11/20/09 8:13	4	-2	1
11/20/2009	08:28	11/20/09 8:28	4.5	-1	1.75
11/20/2009	08:43	11/20/09 8:43	4.5	-4	0.25
11/20/2009	08:58	11/20/09 8:58	4.5	-3.5	0.5
11/20/2009	09:13	11/20/09 9:13	2	-3	-0.5
11/20/2009	09:28	11/20/09 9:28	2	-4.5	-1.25

Date	Time	Date + Time	Indoor Barometric Pressure (ft)	Indoor Barometric Pressure (in)[e]	Temperature (°C)
11/19/2009	22:00	11/19/09 22:00	2.88	34.56	24.68
11/19/2009	22:15	11/19/09 22:15	2.86	34.32	24.75
11/19/2009	22:30	11/19/09 22:30	2.87	34.44	24.79
11/19/2009	22:45	11/19/09 22:45	2.86	34.32	24.82
11/19/2009	23:00	11/19/09 23:00	2.86	34.32	24.84
11/19/2009	23:15	11/19/09 23:15	2.86	34.32	24.84
11/19/2009	23:30	11/19/09 23:30	2.85	34.20	24.81
11/19/2009	23:45	11/19/09 23:45	2.85	34.20	24.81
11/20/2009	0:00	11/20/09 0:00	2.84	34.08	24.79
11/20/2009	0:15	11/20/09 0:15	2.85	34.20	24.74
11/20/2009	0:30	11/20/09 0:30	2.85	34.20	24.73
11/20/2009	0:45	11/20/09 0:45	2.83	33.96	24.67
11/20/2009	1:00	11/20/09 1:00	2.83	33.96	24.68
11/20/2009	1:15	11/20/09 1:15	2.83	33.96	24.71
11/20/2009	1:30	11/20/09 1:30	2.83	33.96	24.68
11/20/2009	1:45	11/20/09 1:45	2.84	34.08	24.71
11/20/2009	2:00	11/20/09 2:00	2.83	33.96	24.77
11/20/2009	2:15	11/20/09 2:15	2.82	33.84	24.79
11/20/2009	2:30	11/20/09 2:30	2.83	33.96	24.77
11/20/2009	2:45	11/20/09 2:45	2.83	33.96	24.81
11/20/2009	3:00	11/20/09 3:00	2.82	33.84	24.83
11/20/2009	3:15	11/20/09 3:15	2.82	33.84	24.84
11/20/2009	3:30	11/20/09 3:30	2.82	33.84	24.87
11/20/2009	3:45	11/20/09 3:45	2.82	33.84	24.88
11/20/2009	4:00	11/20/09 4:00	2.82	33.84	24.87
11/20/2009	4:15	11/20/09 4:15	2.82	33.84	24.93
11/20/2009	4:30	11/20/09 4:30	2.83	33.96	24.95
11/20/2009	4:45	11/20/09 4:45	2.81	33.72	24.94
11/20/2009	5:00	11/20/09 5:00	2.82	33.84	24.96
11/20/2009	5:15	11/20/09 5:15	2.84	34.08	24.97
11/20/2009	5:30	11/20/09 5:30	2.84	34.08	24.94
11/20/2009	5:45	11/20/09 5:45	2.84	34.08	24.92
11/20/2009	6:00	11/20/09 6:00	2.86	34.32	24.87
11/20/2009	6:15	11/20/09 6:15	2.86	34.32	24.86
11/20/2009	6:30	11/20/09 6:30	2.87	34.44	24.85
11/20/2009	6:45	11/20/09 6:45	2.86	34.32	24.79
11/20/2009	7:00	11/20/09 7:00	2.86	34.32	24.79
11/20/2009	7:15	11/20/09 7:15	2.87	34.44	24.78
11/20/2009	7:30	11/20/09 7:30	2.86	34.32	24.71
11/20/2009	7:45	11/20/09 7:45	2.86	34.32	24.63
11/20/2009	8:00	11/20/09 8:00	2.86	34.32	24.60
11/20/2009	8:15	11/20/09 8:15	2.86	34.32	24.57
11/20/2009	8:30	11/20/09 8:30	2.88	34.56	24.57
11/20/2009	8:45	11/20/09 8:45	2.88	34.56	24.49
11/20/2009	9:00	11/20/09 9:00	2.88	34.56	24.45
11/20/2009	9:15	11/20/09 9:15	2.89	34.68	24.47

Date	Time	Date + Time	Outdoor Barometric Pressure (in)
11/19/2009	15:45	11/19/09 15:45	30.04
11/19/2009	16:00	11/19/09 16:00	30.04
11/19/2009	16:15	11/19/09 16:15	30.04
11/19/2009	16:30	11/19/09 16:30	30.04
11/19/2009	16:45	11/19/09 16:45	30.04
11/19/2009	17:00	11/19/09 17:00	30.04
11/19/2009	17:15	11/19/09 17:15	30.04
11/19/2009	17:30	11/19/09 17:30	30.04
11/19/2009	17:45	11/19/09 17:45	30.05
11/19/2009	18:00	11/19/09 18:00	30.05
11/19/2009	18:15	11/19/09 18:15	30.05
11/19/2009	18:30	11/19/09 18:30	30.05
11/19/2009	18:45	11/19/09 18:45	30.06
11/19/2009	19:00	11/19/09 19:00	30.06
11/19/2009	19:15	11/19/09 19:15	30.06
11/19/2009	19:30	11/19/09 19:30	30.06
11/19/2009	19:45	11/19/09 19:45	30.06
11/19/2009	20:00	11/19/09 20:00	30.05
11/19/2009	20:15	11/19/09 20:15	30.05
11/19/2009	20:30	11/19/09 20:30	30.06
11/19/2009	20:45	11/19/09 20:45	30.05
11/19/2009	21:00	11/19/09 21:00	30.05
11/19/2009	21:15	11/19/09 21:15	30.05
11/19/2009	21:30	11/19/09 21:30	30.05
11/19/2009	21:45	11/19/09 21:45	30.05
11/19/2009	22:00	11/19/09 22:00	30.04
11/19/2009	22:15	11/19/09 22:15	30.04
11/19/2009	22:30	11/19/09 22:30	30.04
11/19/2009	22:45	11/19/09 22:45	30.04
11/19/2009	23:00	11/19/09 23:00	30.03
11/19/2009	23:15	11/19/09 23:15	30.03
11/19/2009	23:30	11/19/09 23:30	30.03
11/19/2009	23:45	11/19/09 23:45	30.03
11/20/2009	0:00	11/20/09 0:00	30.02
11/20/2009	0:15	11/20/09 0:15	30.02
11/20/2009	0:30	11/20/09 0:30	30.01
11/20/2009	0:45	11/20/09 0:45	30.01
11/20/2009	1:00	11/20/09 1:00	30.01
11/20/2009	1:15	11/20/09 1:15	30.00
11/20/2009	1:30	11/20/09 1:30	30.00
11/20/2009	1:45	11/20/09 1:45	30.00
11/20/2009	2:00	11/20/09 2:00	30.01
11/20/2009	2:15	11/20/09 2:15	30.00
11/20/2009	2:30	11/20/09 2:30	30.00
11/20/2009	2:45	11/20/09 2:45	30.00
11/20/2009	3:00	11/20/09 3:00	30.00

TABLE 5-7
Summary of Building 133 Phase I Pressure Differential Monitoring Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Date	Time	Date + Time	Maximum Differential Pressure[d] [Pa]	Minimum Differential Pressure[d] [Pa]	Average Pressure [Pa]
11/20/2009	09:43	11/20/09 9:43	4	-2.5	0.75
11/20/2009	09:58	11/20/09 9:58	0.5	-5	-2.25
11/20/2009	10:13	11/20/09 10:13	4.5	-5.5	-0.5
11/20/2009	10:28	11/20/09 10:28	4	-1	1.5
11/20/2009	10:43	11/20/09 10:43	3	-3.5	-0.25
11/20/2009	10:58	11/20/09 10:58	2.5	-5	-1.25
11/20/2009	11:13	11/20/09 11:13	5	-3	1
11/20/2009	11:28	11/20/09 11:28	3.5	-3.5	0
11/20/2009	11:43	11/20/09 11:43	2.5	-2.5	0
11/20/2009	11:58	11/20/09 11:58	0	-3.5	-1.75
11/20/2009	12:13	11/20/09 12:13	0	-6	-3
11/20/2009	12:28	11/20/09 12:28	0	-6.5	-3.25
11/20/2009	12:43	11/20/09 12:43	5	-6	-0.5
11/20/2009	12:58	11/20/09 12:58	2.5	-3.5	-0.5
11/20/2009	13:13	11/20/09 13:13	0.5	-4	-1.75
11/20/2009	13:28	11/20/09 13:28	1	-3.5	-1.25
11/20/2009	13:43	11/20/09 13:43	3	-3	0
11/20/2009	13:58	11/20/09 13:58	1.5	-3.5	-1
11/20/2009	14:13	11/20/09 14:13	3.5	-2.5	0.5
11/20/2009	14:28	11/20/09 14:28	2.5	-3.5	-0.5
11/20/2009	14:43	11/20/09 14:43	3	-3	0
11/20/2009	14:58	11/20/09 14:58	5.5	-0.5	2.5
11/20/2009	15:13	11/20/09 15:13	7	-1	3
11/20/2009	15:28	11/20/09 15:28	7	0	3.5
11/20/2009	15:43	11/20/09 15:43	9.5	-5.5	2
11/20/2009	15:58	11/20/09 15:58	4.5	-7.5	-1.5
11/20/2009	16:13	11/20/09 16:13	0	-5	-2.5
11/20/2009	16:28	11/20/09 16:28	0	-5	-2.5
11/20/2009	16:43	11/20/09 16:43	6	-4.5	0.75
11/20/2009	16:58	11/20/09 16:58	2	-2	0
11/20/2009	17:13	11/20/09 17:13	3	-4	-0.5
11/20/2009	17:28	11/20/09 17:28	0.5	-5	-2.25
11/20/2009	17:43	11/20/09 17:43	6.5	-2	2.25
11/20/2009	17:58	11/20/09 17:58	5.5	-1	2.25
11/20/2009	18:13	11/20/09 18:13	4.5	-1.5	1.5
11/20/2009	18:28	11/20/09 18:28	2.5	0	1.25
11/20/2009	18:43	11/20/09 18:43	5	1	3
11/20/2009	18:58	11/20/09 18:58	4	-0.5	1.75
11/20/2009	19:13	11/20/09 19:13	4.5	-1.5	1.5
11/20/2009	19:28	11/20/09 19:28	3.5	-3.5	0
11/20/2009	19:43	11/20/09 19:43	2.5	-4	-0.75
11/20/2009	19:58	11/20/09 19:58	0.5	-4.5	-2
11/20/2009	20:13	11/20/09 20:13	4.5	-1	1.75
11/20/2009	20:28	11/20/09 20:28	1.5	-4	-1.25
11/20/2009	20:43	11/20/09 20:43	2.5	-0.5	1
11/20/2009	20:58	11/20/09 20:58	3.5	-1.5	1

Date	Time	Date + Time	Indoor Barometric Pressure (ft)	Indoor Barometric Pressure (in)[e]	Temperature (°C)
11/20/2009	9:30	11/20/09 9:30	2.89	34.68	24.43
11/20/2009	9:45	11/20/09 9:45	2.89	34.68	24.44
11/20/2009	10:00	11/20/09 10:00	2.87	34.44	24.42
11/20/2009	10:15	11/20/09 10:15	2.89	34.68	24.38
11/20/2009	10:30	11/20/09 10:30	2.89	34.68	24.37
11/20/2009	10:45	11/20/09 10:45	2.87	34.44	24.40
11/20/2009	11:00	11/20/09 11:00	2.88	34.56	24.47
11/20/2009	11:15	11/20/09 11:15	2.88	34.56	24.56
11/20/2009	11:30	11/20/09 11:30	2.86	34.32	24.49
11/20/2009	11:45	11/20/09 11:45	2.87	34.44	24.47
11/20/2009	12:00	11/20/09 12:00	2.87	34.44	24.43
11/20/2009	12:15	11/20/09 12:15	2.86	34.32	24.36
11/20/2009	12:30	11/20/09 12:30	2.85	34.20	24.32
11/20/2009	12:45	11/20/09 12:45	2.86	34.32	24.22
11/20/2009	13:00	11/20/09 13:00	2.86	34.32	24.19
11/20/2009	13:15	11/20/09 13:15	2.85	34.20	23.97
11/20/2009	13:30	11/20/09 13:30	2.85	34.20	23.82
11/20/2009	13:45	11/20/09 13:45	2.84	34.08	23.77
11/20/2009	14:00	11/20/09 14:00	2.84	34.08	23.70
11/20/2009	14:15	11/20/09 14:15	2.84	34.08	23.59
11/20/2009	14:30	11/20/09 14:30	2.85	34.20	23.55
11/20/2009	14:45	11/20/09 14:45	2.85	34.20	23.60
11/20/2009	15:00	11/20/09 15:00	2.87	34.44	23.69
11/20/2009	15:15	11/20/09 15:15	2.87	34.44	23.75
11/20/2009	15:30	11/20/09 15:30	2.9	34.80	23.87
11/20/2009	15:45	11/20/09 15:45	2.87	34.44	23.89
11/20/2009	16:00	11/20/09 16:00	2.87	34.44	23.97
11/20/2009	16:15	11/20/09 16:15	2.86	34.32	24.04
11/20/2009	16:30	11/20/09 16:30	2.86	34.32	24.13
11/20/2009	16:45	11/20/09 16:45	2.86	34.32	24.14
11/20/2009	17:00	11/20/09 17:00	2.86	34.32	24.21
11/20/2009	17:15	11/20/09 17:15	2.87	34.44	24.25
11/20/2009	17:30	11/20/09 17:30	2.86	34.32	24.24
11/20/2009	17:45	11/20/09 17:45	2.87	34.44	24.24
11/20/2009	18:00	11/20/09 18:00	2.88	34.56	24.25
11/20/2009	18:15	11/20/09 18:15	2.9	34.80	24.27
11/20/2009	18:30	11/20/09 18:30	2.88	34.56	24.29
11/20/2009	18:45	11/20/09 18:45	2.9	34.80	24.33
11/20/2009	19:00	11/20/09 19:00	2.9	34.80	24.33
11/20/2009	19:15	11/20/09 19:15	2.9	34.80	24.33
11/20/2009	19:30	11/20/09 19:30	2.9	34.80	24.36
11/20/2009	19:45	11/20/09 19:45	2.9	34.80	24.37
11/20/2009	20:00	11/20/09 20:00	2.9	34.80	24.45
11/20/2009	20:15	11/20/09 20:15	2.92	35.04	24.51
11/20/2009	20:30	11/20/09 20:30	2.9	34.80	24.52
11/20/2009	20:45	11/20/09 20:45	2.92	35.04	24.55

Date	Time	Date + Time	Outdoor Barometric Pressure (in)
11/20/2009	3:15	11/20/09 3:15	30.00
11/20/2009	3:30	11/20/09 3:30	30.00
11/20/2009	3:45	11/20/09 3:45	30.00
11/20/2009	4:00	11/20/09 4:00	30.00
11/20/2009	4:15	11/20/09 4:15	30.00
11/20/2009	4:30	11/20/09 4:30	30.00
11/20/2009	4:45	11/20/09 4:45	30.00
11/20/2009	5:00	11/20/09 5:00	30.00
11/20/2009	5:15	11/20/09 5:15	30.01
11/20/2009	5:30	11/20/09 5:30	30.01
11/20/2009	5:45	11/20/09 5:45	30.02
11/20/2009	6:00	11/20/09 6:00	30.03
11/20/2009	6:15	11/20/09 6:15	30.03
11/20/2009	6:30	11/20/09 6:30	30.04
11/20/2009	6:45	11/20/09 6:45	30.04
11/20/2009	7:00	11/20/09 7:00	30.04
11/20/2009	7:15	11/20/09 7:15	30.05
11/20/2009	7:30	11/20/09 7:30	30.04
11/20/2009	7:45	11/20/09 7:45	30.04
11/20/2009	8:00	11/20/09 8:00	30.04
11/20/2009	8:15	11/20/09 8:15	30.04
11/20/2009	8:30	11/20/09 8:30	30.05
11/20/2009	8:45	11/20/09 8:45	30.06
11/20/2009	9:00	11/20/09 9:00	30.06
11/20/2009	9:15	11/20/09 9:15	30.06
11/20/2009	9:30	11/20/09 9:30	30.06
11/20/2009	9:45	11/20/09 9:45	30.06
11/20/2009	10:00	11/20/09 10:00	30.05
11/20/2009	10:15	11/20/09 10:15	30.05
11/20/2009	10:30	11/20/09 10:30	30.06
11/20/2009	10:45	11/20/09 10:45	30.05
11/20/2009	11:00	11/20/09 11:00	30.05
11/20/2009	11:15	11/20/09 11:15	30.06
11/20/2009	11:30	11/20/09 11:30	30.05
11/20/2009	11:45	11/20/09 11:45	30.05
11/20/2009	12:00	11/20/09 12:00	30.05
11/20/2009	12:15	11/20/09 12:15	30.04
11/20/2009	12:30	11/20/09 12:30	30.03
11/20/2009	12:45	11/20/09 12:45	30.03
11/20/2009	13:00	11/20/09 13:00	30.03
11/20/2009	13:15	11/20/09 13:15	30.30
11/20/2009	13:30	11/20/09 13:30	30.03
11/20/2009	13:45	11/20/09 13:45	30.03
11/20/2009	14:00	11/20/09 14:00	30.03
11/20/2009	14:15	11/20/09 14:15	30.03
11/20/2009	14:30	11/20/09 14:30	30.03

TABLE 5-7
Summary of Building 133 Phase I Pressure Differential Monitoring Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Date	Time	Date + Time	Maximum Differential Pressure[d] [Pa]	Minimum Differential Pressure[d] [Pa]	Average Pressure [Pa]
11/20/2009	21:13	11/20/09 21:13	2.5	-2.5	0
11/20/2009	21:28	11/20/09 21:28	0.5	-3	-1.25
11/20/2009	21:43	11/20/09 21:43	0.5	-4.5	-2
11/20/2009	21:58	11/20/09 21:58	3.5	-1	1.25
11/20/2009	22:13	11/20/09 22:13	4.5	0	2.25
11/20/2009	22:28	11/20/09 22:28	2.5	-2	0.25
11/20/2009	22:43	11/20/09 22:43	1.5	-3	-0.75
11/20/2009	22:58	11/20/09 22:58	3	-4	-0.5
11/20/2009	23:13	11/20/09 23:13	5	-5.5	-0.25
11/20/2009	23:28	11/20/09 23:28	2.5	-2	0.25
11/20/2009	23:43	11/20/09 23:43	4.5	-1	1.75
11/20/2009	23:58	11/20/09 23:58	0.5	-8.5	-4
11/21/2009	00:13	11/21/09 0:13	1.5	-7	-2.75
11/21/2009	00:28	11/21/09 0:28	0.5	-4	-1.75
11/21/2009	00:43	11/21/09 0:43	0	-7	-3.5
11/21/2009	00:58	11/21/09 0:58	-1.5	-7	-4.25
11/21/2009	01:13	11/21/09 1:13	0.5	-4.5	-2
11/21/2009	01:28	11/21/09 1:28	-2	-9	-5.5
11/21/2009	01:43	11/21/09 1:43	3.5	-5.5	-1
11/21/2009	01:58	11/21/09 1:58	-3	-5.5	-4.25
11/21/2009	02:13	11/21/09 2:13	-2	-8	-5
11/21/2009	02:28	11/21/09 2:28	-3	-6.5	-4.75
11/21/2009	02:43	11/21/09 2:43	4	-6	-1
11/21/2009	02:58	11/21/09 2:58	0.5	-7	-3.25
11/21/2009	03:13	11/21/09 3:13	-1	-6.5	-3.75
11/21/2009	03:28	11/21/09 3:28	-1.5	-10	-5.75
11/21/2009	03:43	11/21/09 3:43	-0.5	-6	-3.25
11/21/2009	03:58	11/21/09 3:58	-3	-7	-5
11/21/2009	04:13	11/21/09 4:13	2.5	-7	-2.25
11/21/2009	04:28	11/21/09 4:28	3	-3.5	-0.25
11/21/2009	04:43	11/21/09 4:43	1	-2.5	-0.75
11/21/2009	04:58	11/21/09 4:58	1	-3.5	-1.25
11/21/2009	05:13	11/21/09 5:13	1.5	-5.5	-2
11/21/2009	05:28	11/21/09 5:28	0	-8	-4
11/21/2009	05:43	11/21/09 5:43	0	-8	-4
11/21/2009	05:58	11/21/09 5:58	2	-2.5	-0.25
11/21/2009	06:13	11/21/09 6:13	1	-5	-2
11/21/2009	06:28	11/21/09 6:28	1.5	-7.5	-3
11/21/2009	06:43	11/21/09 6:43	0	-7	-3.5
11/21/2009	06:58	11/21/09 6:58	1.5	-5.5	-2
11/21/2009	07:13	11/21/09 7:13	3	-7	-2
11/21/2009	07:28	11/21/09 7:28	2.5	-4	-0.75
11/21/2009	07:43	11/21/09 7:43	0	-4	-2
11/21/2009	07:58	11/21/09 7:58	-1	-4.5	-2.75
11/21/2009	08:13	11/21/09 8:13	0	-6.5	-3.25
11/21/2009	08:28	11/21/09 8:28	4	-5.5	-0.75

Date	Time	Date + Time	Indoor Barometric Pressure (ft)	Indoor Barometric Pressure (in)[e]	Temperature (°C)
11/20/2009	21:00	11/20/09 21:00	2.93	35.16	24.59
11/20/2009	21:15	11/20/09 21:15	2.92	35.04	24.63
11/20/2009	21:30	11/20/09 21:30	2.91	34.92	24.64
11/20/2009	21:45	11/20/09 21:45	2.92	35.04	24.65
11/20/2009	22:00	11/20/09 22:00	2.9	34.80	24.67
11/20/2009	22:15	11/20/09 22:15	2.92	35.04	24.67
11/20/2009	22:30	11/20/09 22:30	2.92	35.04	24.67
11/20/2009	22:45	11/20/09 22:45	2.92	35.04	24.61
11/20/2009	23:00	11/20/09 23:00	2.93	35.16	24.57
11/20/2009	23:15	11/20/09 23:15	2.93	35.16	24.56
11/20/2009	23:30	11/20/09 23:30	2.91	34.92	24.53
11/20/2009	23:45	11/20/09 23:45	2.93	35.16	24.48
11/21/2009	0:00	11/21/09 0:00	2.91	34.92	24.45
11/21/2009	0:15	11/21/09 0:15	2.91	34.92	24.38
11/21/2009	0:30	11/21/09 0:30	2.9	34.80	24.37
11/21/2009	0:45	11/21/09 0:45	2.9	34.80	24.33
11/21/2009	1:00	11/21/09 1:00	2.9	34.80	24.34
11/21/2009	1:15	11/21/09 1:15	2.9	34.80	24.37
11/21/2009	1:30	11/21/09 1:30	2.88	34.56	24.33
11/21/2009	1:45	11/21/09 1:45	2.89	34.68	24.35
11/21/2009	2:00	11/21/09 2:00	2.89	34.68	24.38
11/21/2009	2:15	11/21/09 2:15	2.87	34.44	24.42
11/21/2009	2:30	11/21/09 2:30	2.88	34.56	24.43
11/21/2009	2:45	11/21/09 2:45	2.88	34.56	24.45
11/21/2009	3:00	11/21/09 3:00	2.88	34.56	24.49
11/21/2009	3:15	11/21/09 3:15	2.88	34.56	24.49
11/21/2009	3:30	11/21/09 3:30	2.88	34.56	24.45
11/21/2009	3:45	11/21/09 3:45	2.86	34.32	24.38
11/21/2009	4:00	11/21/09 4:00	2.86	34.32	24.36
11/21/2009	4:15	11/21/09 4:15	2.86	34.32	24.36
11/21/2009	4:30	11/21/09 4:30	2.87	34.44	24.34
11/21/2009	4:45	11/21/09 4:45	2.88	34.56	24.32
11/21/2009	5:00	11/21/09 5:00	2.88	34.56	24.30
11/21/2009	5:15	11/21/09 5:15	2.9	34.80	24.29
11/21/2009	5:30	11/21/09 5:30	2.89	34.68	24.31
11/21/2009	5:45	11/21/09 5:45	2.89	34.68	24.29
11/21/2009	6:00	11/21/09 6:00	2.9	34.80	24.27
11/21/2009	6:15	11/21/09 6:15	2.9	34.80	24.27
11/21/2009	6:30	11/21/09 6:30	2.9	34.80	24.28
11/21/2009	6:45	11/21/09 6:45	2.9	34.80	24.27
11/21/2009	7:00	11/21/09 7:00	2.91	34.92	24.24
11/21/2009	7:15	11/21/09 7:15	2.9	34.80	24.24
11/21/2009	7:30	11/21/09 7:30	2.91	34.92	24.21
11/21/2009	7:45	11/21/09 7:45	2.91	34.92	24.14
11/21/2009	8:00	11/21/09 8:00	2.91	34.92	24.04
11/21/2009	8:15	11/21/09 8:15	2.92	35.04	23.89

Date	Time	Date + Time	Outdoor Barometric Pressure (in)
11/20/2009	14:45	11/20/09 14:45	30.03
11/20/2009	15:00	11/20/09 15:00	30.04
11/20/2009	15:15	11/20/09 15:15	30.05
11/20/2009	15:30	11/20/09 15:30	30.06
11/20/2009	15:45	11/20/09 15:45	30.06
11/20/2009	16:00	11/20/09 16:00	30.06
11/20/2009	16:15	11/20/09 16:15	30.05
11/20/2009	16:30	11/20/09 16:30	30.04
11/20/2009	16:45	11/20/09 16:45	30.05
11/20/2009	17:00	11/20/09 17:00	30.05
11/20/2009	17:15	11/20/09 17:15	30.05
11/20/2009	17:30	11/20/09 17:30	30.04
11/20/2009	17:45	11/20/09 17:45	30.05
11/20/2009	18:00	11/20/09 18:00	30.05
11/20/2009	18:15	11/20/09 18:15	30.06
11/20/2009	18:30	11/20/09 18:30	30.07
11/20/2009	18:45	11/20/09 18:45	30.07
11/20/2009	19:00	11/20/09 19:00	30.08
11/20/2009	19:15	11/20/09 19:15	30.08
11/20/2009	19:30	11/20/09 19:30	30.08
11/20/2009	19:45	11/20/09 19:45	30.08
11/20/2009	20:00	11/20/09 20:00	30.08
11/20/2009	20:15	11/20/09 20:15	30.09
11/20/2009	20:30	11/20/09 20:30	30.08
11/20/2009	20:45	11/20/09 20:45	30.09
11/20/2009	21:00	11/20/09 21:00	30.09
11/20/2009	21:15	11/20/09 21:15	30.09
11/20/2009	21:30	11/20/09 21:30	30.09
11/20/2009	21:45	11/20/09 21:45	30.08
11/20/2009	22:00	11/20/09 22:00	30.09
11/20/2009	22:15	11/20/09 22:15	30.10
11/20/2009	22:30	11/20/09 22:30	30.09
11/20/2009	22:45	11/20/09 22:45	30.09
11/20/2009	23:00	11/20/09 23:00	30.09
11/20/2009	23:15	11/20/09 23:15	30.09
11/20/2009	23:30	11/20/09 23:30	30.09
11/20/2009	23:45	11/20/09 23:45	30.09
11/21/2009	0:00	11/21/09 0:00	30.08
11/21/2009	0:15	11/21/09 0:15	30.08
11/21/2009	0:30	11/21/09 0:30	30.08
11/21/2009	0:45	11/21/09 0:45	30.07
11/21/2009	1:00	11/21/09 1:00	30.07
11/21/2009	1:15	11/21/09 1:15	30.08
11/21/2009	1:30	11/21/09 1:30	30.06
11/21/2009	1:45	11/21/09 1:45	30.07
11/21/2009	2:00	11/21/09 2:00	30.07

TABLE 5-7
Summary of Building 133 Phase I Pressure Differential Monitoring Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Date	Time	Date + Time	Maximum Differential Pressure[d] [Pa]	Minimum Differential Pressure[d] [Pa]	Average Pressure [Pa]
11/21/2009	08:43	11/21/09 8:43	6.5	-4.5	1
11/21/2009	08:58	11/21/09 8:58	4	-5.5	-0.75
11/21/2009	09:13	11/21/09 9:13	4.5	-3.5	0.5
11/21/2009	09:28	11/21/09 9:28	1.5	-9.5	-4
11/21/2009	09:43	11/21/09 9:43	3	-8	-2.5
11/21/2009	09:58	11/21/09 9:58	5	-4.5	0.25
11/21/2009	10:13	11/21/09 10:13	2.5	-5.5	-1.5
11/21/2009	10:28	11/21/09 10:28	3	-7	-2
11/21/2009	10:43	11/21/09 10:43	0	-9	-4.5
11/21/2009	10:58	11/21/09 10:58	3	-5	-1
11/21/2009	11:13	11/21/09 11:13	2	-6.5	-2.25
11/21/2009	11:28	11/21/09 11:28	0	-9.5	-4.75
11/21/2009	11:43	11/21/09 11:43	2	-4.5	-1.25
11/21/2009	11:58	11/21/09 11:58	1	-6	-2.5
11/21/2009	12:13	11/21/09 12:13	4	-4	0
11/21/2009	12:28	11/21/09 12:28	6	-4.5	0.75
11/21/2009	12:43	11/21/09 12:43	3	-6	-1.5
11/21/2009	12:58	11/21/09 12:58	4	-6	-1
11/21/2009	13:13	11/21/09 13:13	3	-3	0
11/21/2009	13:28	11/21/09 13:28	1.5	-6.5	-2.5
11/21/2009	13:43	11/21/09 13:43	2.5	-3.5	-0.5
11/21/2009	13:58	11/21/09 13:58	2	-3	-0.5
11/21/2009	14:13	11/21/09 14:13	3	-2.5	0.25
11/21/2009	14:28	11/21/09 14:28	4	-0.5	1.75
11/21/2009	14:43	11/21/09 14:43	3	-3.5	-0.25
11/21/2009	14:58	11/21/09 14:58	3.5	-1.5	1
11/21/2009	15:13	11/21/09 15:13	3.5	-3	0.25
11/21/2009	15:28	11/21/09 15:28	2.5	-3.5	-0.5
11/21/2009	15:43	11/21/09 15:43	5	-2.5	1.25
11/21/2009	15:58	11/21/09 15:58	2	-3	-0.5
11/21/2009	16:13	11/21/09 16:13	4	-4.5	-0.25
11/21/2009	16:28	11/21/09 16:28	2.5	-1	0.75
11/21/2009	16:43	11/21/09 16:43	5	-1	2
11/21/2009	16:58	11/21/09 16:58	3.5	-2	0.75
11/21/2009	17:13	11/21/09 17:13	6	1.5	3.75
11/21/2009	17:28	11/21/09 17:28	5	-0.5	2.25
11/21/2009	17:43	11/21/09 17:43	3.5	-1.5	1
11/21/2009	17:58	11/21/09 17:58	7.5	-2.5	2.5
11/21/2009	18:13	11/21/09 18:13	5.5	-3	1.25
11/21/2009	18:28	11/21/09 18:28	3	-4.5	-0.75
11/21/2009	18:43	11/21/09 18:43	5	-3	1
11/21/2009	18:58	11/21/09 18:58	3	-3	0
11/21/2009	19:13	11/21/09 19:13	4	0	2
11/21/2009	19:28	11/21/09 19:28	4.5	-1.5	1.5
11/21/2009	19:43	11/21/09 19:43	3.5	-2	0.75
11/21/2009	19:58	11/21/09 19:58	2.5	-2	0.25

Date	Time	Date + Time	Indoor Barometric Pressure (ft)	Indoor Barometric Pressure (in)[e]	Temperature (°C)
11/21/2009	8:30	11/21/09 8:30	2.92	35.04	23.74
11/21/2009	8:45	11/21/09 8:45	2.96	35.52	23.66
11/21/2009	9:00	11/21/09 9:00	2.94	35.28	23.51
11/21/2009	9:15	11/21/09 9:15	2.95	35.40	23.39
11/21/2009	9:30	11/21/09 9:30	2.92	35.04	23.29
11/21/2009	9:45	11/21/09 9:45	2.94	35.28	23.15
11/21/2009	10:00	11/21/09 10:00	2.93	35.16	23.13
11/21/2009	10:15	11/21/09 10:15	2.93	35.16	23.27
11/21/2009	10:30	11/21/09 10:30	2.95	35.40	23.39
11/21/2009	10:45	11/21/09 10:45	2.94	35.28	23.41
11/21/2009	11:00	11/21/09 11:00	2.93	35.16	23.49
11/21/2009	11:15	11/21/09 11:15	2.92	35.04	23.58
11/21/2009	11:30	11/21/09 11:30	2.92	35.04	23.65
11/21/2009	11:45	11/21/09 11:45	2.9	34.80	23.72
11/21/2009	12:00	11/21/09 12:00	2.91	34.92	23.75
11/21/2009	12:15	11/21/09 12:15	2.9	34.80	23.79
11/21/2009	12:30	11/21/09 12:30	2.89	34.68	23.85
11/21/2009	12:45	11/21/09 12:45	2.88	34.56	23.88
11/21/2009	13:00	11/21/09 13:00	2.88	34.56	23.93
11/21/2009	13:15	11/21/09 13:15	2.9	34.80	23.94
11/21/2009	13:30	11/21/09 13:30	2.89	34.68	23.98
11/21/2009	13:45	11/21/09 13:45	2.88	34.56	24.02
11/21/2009	14:00	11/21/09 14:00	2.88	34.56	24.04
11/21/2009	14:15	11/21/09 14:15	2.89	34.68	24.04
11/21/2009	14:30	11/21/09 14:30	2.89	34.68	24.03
11/21/2009	14:45	11/21/09 14:45	2.9	34.80	24.00
11/21/2009	15:00	11/21/09 15:00	2.89	34.68	23.99
11/21/2009	15:15	11/21/09 15:15	2.9	34.80	23.98
11/21/2009	15:30	11/21/09 15:30	2.89	34.68	23.99
11/21/2009	15:45	11/21/09 15:45	2.89	34.68	24.02
11/21/2009	16:00	11/21/09 16:00	2.91	34.92	24.01
11/21/2009	16:15	11/21/09 16:15	2.88	34.56	24.05
11/21/2009	16:30	11/21/09 16:30	2.9	34.80	24.05
11/21/2009	16:45	11/21/09 16:45	2.89	34.68	24.10
11/21/2009	17:00	11/21/09 17:00	2.9	34.80	24.11
11/21/2009	17:15	11/21/09 17:15	2.92	35.04	24.10
11/21/2009	17:30	11/21/09 17:30	2.92	35.04	24.09
11/21/2009	17:45	11/21/09 17:45	2.92	35.04	24.09
11/21/2009	18:00	11/21/09 18:00	2.93	35.16	24.13
11/21/2009	18:15	11/21/09 18:15	2.92	35.04	24.09
11/21/2009	18:30	11/21/09 18:30	2.92	35.04	24.10
11/21/2009	18:45	11/21/09 18:45	2.93	35.16	24.11
11/21/2009	19:00	11/21/09 19:00	2.93	35.16	24.10
11/21/2009	19:15	11/21/09 19:15	2.94	35.28	24.08
11/21/2009	19:30	11/21/09 19:30	2.94	35.28	24.11
11/21/2009	19:45	11/21/09 19:45	2.94	35.28	24.08

Date	Time	Date + Time	Outdoor Barometric Pressure (in)
11/21/2009	2:15	11/21/09 2:15	30.06
11/21/2009	2:30	11/21/09 2:30	30.06
11/21/2009	2:45	11/21/09 2:45	30.06
11/21/2009	3:00	11/21/09 3:00	30.07
11/21/2009	3:15	11/21/09 3:15	30.06
11/21/2009	3:30	11/21/09 3:30	30.05
11/21/2009	3:45	11/21/09 3:45	30.05
11/21/2009	4:00	11/21/09 4:00	30.04
11/21/2009	4:15	11/21/09 4:15	30.05
11/21/2009	4:30	11/21/09 4:30	30.06
11/21/2009	4:45	11/21/09 4:45	30.06
11/21/2009	5:00	11/21/09 5:00	30.07
11/21/2009	5:15	11/21/09 5:15	30.07
11/21/2009	5:30	11/21/09 5:30	30.07
11/21/2009	5:45	11/21/09 5:45	30.06
11/21/2009	6:00	11/21/09 6:00	30.07
11/21/2009	6:15	11/21/09 6:15	30.08
11/21/2009	6:30	11/21/09 6:30	30.08
11/21/2009	6:45	11/21/09 6:45	30.08
11/21/2009	7:00	11/21/09 7:00	30.08
11/21/2009	7:15	11/21/09 7:15	30.08
11/21/2009	7:30	11/21/09 7:30	30.09
11/21/2009	7:45	11/21/09 7:45	30.09
11/21/2009	8:00	11/21/09 8:00	30.08
11/21/2009	8:15	11/21/09 8:15	30.08
11/21/2009	8:30	11/21/09 8:30	30.09
11/21/2009	8:45	11/21/09 8:45	30.10
11/21/2009	9:00	11/21/09 9:00	30.10
11/21/2009	9:15	11/21/09 9:15	30.11
11/21/2009	9:30	11/21/09 9:30	30.10
11/21/2009	9:45	11/21/09 9:45	30.10
11/21/2009	10:00	11/21/09 10:00	30.11
11/21/2009	10:15	11/21/09 10:15	30.11
11/21/2009	10:30	11/21/09 10:30	30.11
11/21/2009	10:45	11/21/09 10:45	30.11
11/21/2009	11:00	11/21/09 11:00	30.11
11/21/2009	11:15	11/21/09 11:15	30.10
11/21/2009	11:30	11/21/09 11:30	30.09
11/21/2009	11:45	11/21/09 11:45	30.09
11/21/2009	12:00	11/21/09 12:00	30.08
11/21/2009	12:15	11/21/09 12:15	30.08
11/21/2009	12:30	11/21/09 12:30	30.08
11/21/2009	12:45	11/21/09 12:45	30.07
11/21/2009	13:00	11/21/09 13:00	30.07
11/21/2009	13:15	11/21/09 13:15	30.07
11/21/2009	13:30	11/21/09 13:30	30.06

TABLE 5-7
Summary of Building 133 Phase I Pressure Differential Monitoring Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Date	Time	Date + Time	Maximum Differential Pressure[d] [Pa]	Minimum Differential Pressure[d] [Pa]	Average Pressure [Pa]
11/21/2009	20:13	11/21/09 20:13	2	-4.5	-1.25
11/21/2009	20:28	11/21/09 20:28	9	-1.5	3.75
11/21/2009	20:43	11/21/09 20:43	10.5	-2	4.25
11/21/2009	20:58	11/21/09 20:58	3	-5	-1
11/21/2009	21:13	11/21/09 21:13	7	-5	1
11/21/2009	21:28	11/21/09 21:28	5.5	-8.5	-1.5
11/21/2009	21:43	11/21/09 21:43	4.5	-8	-1.75
11/21/2009	21:58	11/21/09 21:58	5.5	-7	-0.75
11/21/2009	22:13	11/21/09 22:13	6	-1.5	2.25
11/21/2009	22:28	11/21/09 22:28	2.5	-6	-1.75
11/21/2009	22:43	11/21/09 22:43	1.5	-7.5	-3
11/21/2009	22:58	11/21/09 22:58	4.5	-2	1.25
11/21/2009	23:13	11/21/09 23:13	1	-3.5	-1.25
11/21/2009	23:28	11/21/09 23:28	1	-8	-3.5
11/21/2009	23:43	11/21/09 23:43	-0.5	-5.5	-3
11/21/2009	23:58	11/21/09 23:58	7	-2	2.5
11/22/2009	00:13	11/22/09 0:13	7	-2.5	2.25
11/22/2009	00:28	11/22/09 0:28	1.5	-2.5	-0.5
11/22/2009	00:43	11/22/09 0:43	1.5	-4	-1.25
11/22/2009	00:58	11/22/09 0:58	4	-3	0.5
11/22/2009	01:13	11/22/09 1:13	3	-2.5	0.25
11/22/2009	01:28	11/22/09 1:28	3	-3.5	-0.25
11/22/2009	01:43	11/22/09 1:43	3	-3	0
11/22/2009	01:58	11/22/09 1:58	1.5	-1	0.25
11/22/2009	02:13	11/22/09 2:13	1.5	-4	-1.25
11/22/2009	02:28	11/22/09 2:28	4.5	0	2.25
11/22/2009	02:43	11/22/09 2:43	4	-3.5	0.25
11/22/2009	02:58	11/22/09 2:58	6	-3	1.5
11/22/2009	03:13	11/22/09 3:13	5	-6	-0.5
11/22/2009	03:28	11/22/09 3:28	0	-3	-1.5
11/22/2009	03:43	11/22/09 3:43	3	-7.5	-2.25
11/22/2009	03:58	11/22/09 3:58	4.5	-2.5	1
11/22/2009	04:13	11/22/09 4:13	5	-3.5	0.75
11/22/2009	04:28	11/22/09 4:28	0.5	-2	-0.75
11/22/2009	04:43	11/22/09 4:43	3.5	-0.5	1.5
11/22/2009	04:58	11/22/09 4:58	6.5	-6.5	0
11/22/2009	05:13	11/22/09 5:13	3.5	-1.5	1
11/22/2009	05:28	11/22/09 5:28	3.5	-7	-1.75
11/22/2009	05:43	11/22/09 5:43	6	-1.5	2.25
11/22/2009	05:58	11/22/09 5:58	3	-1	1
11/22/2009	06:13	11/22/09 6:13	3	-3	0
11/22/2009	06:28	11/22/09 6:28	3.5	-2	0.75
11/22/2009	06:43	11/22/09 6:43	9	-4	2.5
11/22/2009	06:58	11/22/09 6:58	3.5	-4	-0.25
11/22/2009	07:13	11/22/09 7:13	4	-1	1.5
11/22/2009	07:28	11/22/09 7:28	3	-1.5	0.75
11/22/2009	07:43	11/22/09 7:43	5	0	2.5
11/22/2009	07:58	11/22/09 7:58	6	0	3
11/22/2009	08:13	11/22/09 8:13	3	-4.5	-0.75
11/22/2009	08:28	11/22/09 8:28	4	-3.5	0.25

Date	Time	Date + Time	Indoor Barometric Pressure (ft)	Indoor Barometric Pressure (in)[e]	Temperature (°C)
11/21/2009	20:00	11/21/09 20:00	2.95	35.40	24.03
11/21/2009	20:15	11/21/09 20:15	2.94	35.28	24.03
11/21/2009	20:30	11/21/09 20:30	2.97	35.64	24.03
11/21/2009	20:45	11/21/09 20:45	2.96	35.52	23.98
11/21/2009	21:00	11/21/09 21:00	2.96	35.52	24.00
11/21/2009	21:15	11/21/09 21:15	2.99	35.88	23.96
11/21/2009	21:30	11/21/09 21:30	2.96	35.52	23.93
11/21/2009	21:45	11/21/09 21:45	2.95	35.40	23.93
11/21/2009	22:00	11/21/09 22:00	2.95	35.40	23.88
11/21/2009	22:15	11/21/09 22:15	2.96	35.52	23.90
11/21/2009	22:30	11/21/09 22:30	2.95	35.40	23.87
11/21/2009	22:45	11/21/09 22:45	2.94	35.28	23.88
11/21/2009	23:00	11/21/09 23:00	2.96	35.52	23.89
11/21/2009	23:15	11/21/09 23:15	2.94	35.28	23.92
11/21/2009	23:30	11/21/09 23:30	2.94	35.28	23.93
11/21/2009	23:45	11/21/09 23:45	2.93	35.16	23.95
11/22/2009	0:00	11/22/09 0:00	2.93	35.16	23.93
11/22/2009	0:15	11/22/09 0:15	2.94	35.28	23.94
11/22/2009	0:30	11/22/09 0:30	2.93	35.16	23.95
11/22/2009	0:45	11/22/09 0:45	2.93	35.16	23.97
11/22/2009	1:00	11/22/09 1:00	2.95	35.40	23.93
11/22/2009	1:15	11/22/09 1:15	2.94	35.28	23.93
11/22/2009	1:30	11/22/09 1:30	2.93	35.16	23.93
11/22/2009	1:45	11/22/09 1:45	2.94	35.28	23.93
11/22/2009	2:00	11/22/09 2:00	2.94	35.28	23.92
11/22/2009	2:15	11/22/09 2:15	2.93	35.16	23.89
11/22/2009	2:30	11/22/09 2:30	2.96	35.52	23.91
11/22/2009	2:45	11/22/09 2:45	2.94	35.28	23.90
11/22/2009	3:00	11/22/09 3:00	2.97	35.64	23.89
11/22/2009	3:15	11/22/09 3:15	2.94	35.28	23.89
11/22/2009	3:30	11/22/09 3:30	2.94	35.28	23.88
11/22/2009	3:45	11/22/09 3:45	2.94	35.28	23.87
11/22/2009	4:00	11/22/09 4:00	2.95	35.40	23.86
11/22/2009	4:15	11/22/09 4:15	2.94	35.28	23.85
11/22/2009	4:30	11/22/09 4:30	2.95	35.40	23.84
11/22/2009	4:45	11/22/09 4:45	2.95	35.40	23.85
11/22/2009	5:00	11/22/09 5:00	2.95	35.40	23.80
11/22/2009	5:15	11/22/09 5:15	2.96	35.52	23.80
11/22/2009	5:30	11/22/09 5:30	2.96	35.52	23.79
11/22/2009	5:45	11/22/09 5:45	2.96	35.52	23.79
11/22/2009	6:00	11/22/09 6:00	2.97	35.64	23.79
11/22/2009	6:15	11/22/09 6:15	2.96	35.52	23.78
11/22/2009	6:30	11/22/09 6:30	2.97	35.64	23.76
11/22/2009	6:45	11/22/09 6:45	2.99	35.88	23.75
11/22/2009	7:00	11/22/09 7:00	2.98	35.76	23.71
11/22/2009	7:15	11/22/09 7:15	2.99	35.88	23.65
11/22/2009	7:30	11/22/09 7:30	2.99	35.88	23.62
11/22/2009	7:45	11/22/09 7:45	3.02	36.24	23.57
11/22/2009	8:00	11/22/09 8:00	3.01	36.12	23.49
11/22/2009	8:15	11/22/09 8:15	3.01	36.12	23.48

Date	Time	Date + Time	Outdoor Barometric Pressure (in)
11/21/2009	13:45	11/21/09 13:45	30.06
11/21/2009	14:00	11/21/09 14:00	30.06
11/21/2009	14:15	11/21/09 14:15	30.06
11/21/2009	14:30	11/21/09 14:30	30.07
11/21/2009	14:45	11/21/09 14:45	30.07
11/21/2009	15:00	11/21/09 15:00	30.07
11/21/2009	15:15	11/21/09 15:15	30.07
11/21/2009	15:30	11/21/09 15:30	30.07
11/21/2009	15:45	11/21/09 15:45	30.07
11/21/2009	16:00	11/21/09 16:00	30.07
11/21/2009	16:15	11/21/09 16:15	30.07
11/21/2009	16:30	11/21/09 16:30	30.07
11/21/2009	16:45	11/21/09 16:45	30.08
11/21/2009	17:00	11/21/09 17:00	30.08
11/21/2009	17:15	11/21/09 17:15	30.10
11/21/2009	17:30	11/21/09 17:30	30.10
11/21/2009	17:45	11/21/09 17:45	30.10
11/21/2009	18:00	11/21/09 18:00	30.11
11/21/2009	18:15	11/21/09 18:15	30.11
11/21/2009	18:30	11/21/09 18:30	30.10
11/21/2009	18:45	11/21/09 18:45	30.11
11/21/2009	19:00	11/21/09 19:00	30.11
11/21/2009	19:15	11/21/09 19:15	30.11
11/21/2009	19:30	11/21/09 19:30	30.12
11/21/2009	19:45	11/21/09 19:45	30.12
11/21/2009	20:00	11/21/09 20:00	30.12
11/21/2009	20:15	11/21/09 20:15	30.12
11/21/2009	20:30	11/21/09 20:30	30.13
11/21/2009	20:45	11/21/09 20:45	30.13
11/21/2009	21:00	11/21/09 21:00	30.13
11/21/2009	21:15	11/21/09 21:15	30.14
11/21/2009	21:30	11/21/09 21:30	30.13
11/21/2009	21:45	11/21/09 21:45	30.12
11/21/2009	22:00	11/21/09 22:00	30.12
11/21/2009	22:15	11/21/09 22:15	30.13
11/21/2009	22:30	11/21/09 22:30	30.12
11/21/2009	22:45	11/21/09 22:45	30.12
11/21/2009	23:00	11/21/09 23:00	30.12
11/21/2009	23:15	11/21/09 23:15	30.12
11/21/2009	23:30	11/21/09 23:30	30.11
11/21/2009	23:45	11/21/09 23:45	30.11
11/22/2009	0:00	11/22/09 0:00	30.11
11/22/2009	0:15	11/22/09 0:15	30.12
11/22/2009	0:30	11/22/09 0:30	30.12
11/22/2009	0:45	11/22/09 0:45	30.12
11/22/2009	1:00	11/22/09 1:00	30.12
11/22/2009	1:15	11/22/09 1:15	30.12
11/22/2009	1:30	11/22/09 1:30	30.12
11/22/2009	1:45	11/22/09 1:45	30.12
11/22/2009	2:00	11/22/09 2:00	30.12

TABLE 5-7
Summary of Building 133 Phase I Pressure Differential Monitoring Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Date	Time	Date + Time	Maximum Differential Pressure[d] [Pa]	Minimum Differential Pressure[d] [Pa]	Average Pressure [Pa]
11/22/2009	08:43	11/22/09 8:43	5	-3.5	0.75
11/22/2009	08:58	11/22/09 8:58	1.5	-3.5	-1
11/22/2009	09:13	11/22/09 9:13	4	-3.5	0.25
11/22/2009	09:28	11/22/09 9:28	1.5	-6	-2.25
11/22/2009	09:43	11/22/09 9:43	3.5	-2.5	0.5
11/22/2009	09:58	11/22/09 9:58	4	-3	0.5
11/22/2009	10:13	11/22/09 10:13	3	-6.5	-1.75
11/22/2009	10:28	11/22/09 10:28	3.5	-5	-0.75
11/22/2009	10:43	11/22/09 10:43	3.5	-7.5	-2

Date	Time	Date + Time	Indoor Barometric Pressure (ft)	Indoor Barometric Pressure (in) [e]	Temperature (°C)
11/22/2009	8:30	11/22/09 8:30	3.04	36.48	23.41
11/22/2009	8:45	11/22/09 8:45	3.03	36.36	23.39
11/22/2009	9:00	11/22/09 9:00	3.03	36.36	23.35
11/22/2009	9:15	11/22/09 9:15	3.01	36.12	23.32
11/22/2009	9:30	11/22/09 9:30	3.02	36.24	23.31
11/22/2009	9:45	11/22/09 9:45	3	36.00	23.27
11/22/2009	10:00	11/22/09 10:00	3.01	36.12	23.25
11/22/2009	10:15	11/22/09 10:15	3.03	36.36	23.25
11/22/2009	10:30	11/22/09 10:30	3.02	36.24	23.19

Date	Time	Date + Time	Outdoor Barometric Pressure (in)
11/22/2009	2:15	11/22/09 2:15	30.12
11/22/2009	2:30	11/22/09 2:30	30.13
11/22/2009	2:45	11/22/09 2:45	30.13
11/22/2009	3:00	11/22/09 3:00	30.13
11/22/2009	3:15	11/22/09 3:15	30.13
11/22/2009	3:30	11/22/09 3:30	30.12
11/22/2009	3:45	11/22/09 3:45	30.12
11/22/2009	4:00	11/22/09 4:00	30.12
11/22/2009	4:15	11/22/09 4:15	30.12
11/22/2009	4:30	11/22/09 4:30	30.12
11/22/2009	4:45	11/22/09 4:45	30.13
11/22/2009	5:00	11/22/09 5:00	30.13
11/22/2009	5:15	11/22/09 5:15	30.13
11/22/2009	5:30	11/22/09 5:30	30.13
11/22/2009	5:45	11/22/09 5:45	30.14
11/22/2009	6:00	11/22/09 6:00	30.14
11/22/2009	6:15	11/22/09 6:15	30.14
11/22/2009	6:30	11/22/09 6:30	30.14
11/22/2009	6:45	11/22/09 6:45	30.15
11/22/2009	7:00	11/22/09 7:00	30.16
11/22/2009	7:15	11/22/09 7:15	30.16
11/22/2009	7:30	11/22/09 7:30	30.16
11/22/2009	7:45	11/22/09 7:45	30.17
11/22/2009	8:00	11/22/09 8:00	30.18
11/22/2009	8:15	11/22/09 8:15	30.18
11/22/2009	8:30	11/22/09 8:30	30.19
11/22/2009	8:45	11/22/09 8:45	30.19
11/22/2009	9:00	11/22/09 9:00	30.18
11/22/2009	9:15	11/22/09 9:15	30.18
11/22/2009	9:30	11/22/09 9:30	30.18
11/22/2009	9:45	11/22/09 9:45	30.18
11/22/2009	10:00	11/22/09 10:00	30.18

TABLE 5-8
Summary of Building 137 Phase I Pressure Differential Monitoring Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Averages over all measurements: [b]

Maximum Differential Pressure:	0.4 Pa
Minimum Differential Pressure:	-0.4 Pa

Averages during Work Hours and Night Time: [c]

		Work Hours, Daily 10-hour Average Pressure Difference (7 am to 5 pm)		Night Time, Daily 14-hour Average Pressure Difference (5 pm to 7 am)	
Date	**Time**	**max (Pa)**	**min (Pa)**	**max (Pa)**	**min (Pa)**
11/17/2009	average	0.50	-0.17	0.24	-0.19
11/18/2009	average	0.96	-1.13	0.38	-0.50
11/19/2009	average	0.45	-0.78	0.07	-0.13
11/20/2009	average	0.83	-0.40	0.39	-0.10
11/21/2009	average	0.85	-0.43	0.14	-0.12
11/22/2009	average	1.30	-0.60	N/A	N/A
	Median:	0.84	-0.51	0.24	-0.13

Date	Time	Date + Time	Maximum Differential Pressure[d] [Pa]	Minimum Differential Pressure[d] [Pa]	Average Pressure [Pa]
11/17/2009	16:25	11/17/09 16:25	0.5	-0.5	0
11/17/2009	16:40	11/17/09 16:40	0.5	0	0.25
11/17/2009	16:55	11/17/09 16:55	0.5	0	0.25
11/17/2009	17:10	11/17/09 17:10	0.5	0	0.25
11/17/2009	17:25	11/17/09 17:25	0.5	-0.5	0
11/17/2009	17:40	11/17/09 17:40	0	0	0
11/17/2009	17:55	11/17/09 17:55	0	0	0
11/17/2009	18:10	11/17/09 18:10	1	0	0.5
11/17/2009	18:25	11/17/09 18:25	0	0	0
11/17/2009	18:40	11/17/09 18:40	0.5	0	0.25
11/17/2009	18:55	11/17/09 18:55	0.5	0	0.25
11/17/2009	19:10	11/17/09 19:10	0	0	0
11/17/2009	19:25	11/17/09 19:25	0.5	-0.5	0
11/17/2009	19:40	11/17/09 19:40	0	-0.5	-0.25
11/17/2009	19:55	11/17/09 19:55	0.5	0	0.25
11/17/2009	20:10	11/17/09 20:10	0.5	0	0.25
11/17/2009	20:25	11/17/09 20:25	0	0	0
11/17/2009	20:40	11/17/09 20:40	0	0	0
11/17/2009	20:55	11/17/09 20:55	0.5	0	0.25
11/17/2009	21:10	11/17/09 21:10	0	0	0
11/17/2009	21:25	11/17/09 21:25	0	0	0
11/17/2009	21:40	11/17/09 21:40	0.5	0	0.25

Date	Time	Date + Time	Indoor Barometric Pressure (ft)	Indoor Barometric Pressure (in) [e]	Temperature (°C)
11/17/2009	16:10	11/17/09 16:10	3.15	37.80	25.11
11/17/2009	16:25	11/17/09 16:25	3.18	38.16	25.49
11/17/2009	16:40	11/17/09 16:40	3.19	38.28	25.26
11/17/2009	16:55	11/17/09 16:55	3.2	38.40	25.02
11/17/2009	17:10	11/17/09 17:10	3.2	38.40	24.93
11/17/2009	17:25	11/17/09 17:25	3.18	38.16	24.88
11/17/2009	17:40	11/17/09 17:40	3.19	38.28	24.86
11/17/2009	17:55	11/17/09 17:55	3.21	38.52	24.84
11/17/2009	18:10	11/17/09 18:10	3.2	38.40	24.84
11/17/2009	18:25	11/17/09 18:25	3.19	38.28	24.88
11/17/2009	18:40	11/17/09 18:40	3.18	38.16	24.89
11/17/2009	18:55	11/17/09 18:55	3.2	38.40	24.89
11/17/2009	19:10	11/17/09 19:10	3.2	38.40	24.91
11/17/2009	19:25	11/17/09 19:25	3.19	38.28	24.90
11/17/2009	19:40	11/17/09 19:40	3.18	38.16	24.91
11/17/2009	19:55	11/17/09 19:55	3.2	38.40	24.92
11/17/2009	20:10	11/17/09 20:10	3.19	38.28	24.93
11/17/2009	20:25	11/17/09 20:25	3.2	38.40	24.93
11/17/2009	20:40	11/17/09 20:40	3.2	38.40	24.93
11/17/2009	20:55	11/17/09 20:55	3.18	38.16	24.93
11/17/2009	21:10	11/17/09 21:10	3.2	38.40	24.95
11/17/2009	21:25	11/17/09 21:25	3.2	38.40	24.97

Date	Time	Date + Time	Outdoor Barometric Pressure (in)
11/19/2009	8:00	11/19/09 8:00	30.11
11/19/2009	8:15	11/19/09 8:15	30.11
11/19/2009	8:30	11/19/09 8:30	30.11
11/19/2009	8:45	11/19/09 8:45	30.12
11/19/2009	9:00	11/19/09 9:00	30.11
11/19/2009	9:15	11/19/09 9:15	30.11
11/19/2009	9:30	11/19/09 9:30	30.11
11/19/2009	9:45	11/19/09 9:45	30.11
11/19/2009	10:00	11/19/09 10:00	30.11
11/19/2009	10:15	11/19/09 10:15	30.11
11/19/2009	10:30	11/19/09 10:30	30.09
11/19/2009	10:45	11/19/09 10:45	30.09
11/19/2009	11:00	11/19/09 11:00	30.09
11/19/2009	11:15	11/19/09 11:15	30.08
11/19/2009	11:30	11/19/09 11:30	30.08
11/19/2009	11:45	11/19/09 11:45	30.07
11/19/2009	12:00	11/19/09 12:00	30.07
11/19/2009	12:15	11/19/09 12:15	30.06
11/19/2009	12:30	11/19/09 12:30	30.05
11/19/2009	12:45	11/19/09 12:45	30.05
11/19/2009	13:00	11/19/09 13:00	30.04
11/19/2009	13:15	11/19/09 13:15	30.04

TABLE 5-8
Summary of Building 137 Phase I Pressure Differential Monitoring Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Date	Time	Date + Time	Maximum Differential Pressure[d] [Pa]	Minimum Differential Pressure[d] [Pa]	Average Pressure [Pa]
11/17/2009	21:55	11/17/09 21:55	0	0	0
11/17/2009	22:10	11/17/09 22:10	0	0	0
11/17/2009	22:25	11/17/09 22:25	0	0	0
11/17/2009	22:40	11/17/09 22:40	0	0	0
11/17/2009	22:55	11/17/09 22:55	0	0	0
11/17/2009	23:10	11/17/09 23:10	0.5	0	0.25
11/17/2009	23:25	11/17/09 23:25	0	0	0
11/17/2009	23:40	11/17/09 23:40	0	0	0
11/17/2009	23:55	11/17/09 23:55	0	0	0
11/18/2009	0:10	11/18/09 0:10	0	0	0
11/18/2009	0:25	11/18/09 0:25	0	0	0
11/18/2009	0:40	11/18/09 0:40	0	0	0
11/18/2009	0:55	11/18/09 0:55	0.5	0	0.25
11/18/2009	1:10	11/18/09 1:10	0	0	0
11/18/2009	1:25	11/18/09 1:25	0	0	0
11/18/2009	1:40	11/18/09 1:40	0	-0.5	-0.25
11/18/2009	1:55	11/18/09 1:55	0	0	0
11/18/2009	2:10	11/18/09 2:10	0	0	0
11/18/2009	2:25	11/18/09 2:25	0	0	0
11/18/2009	2:40	11/18/09 2:40	0.5	0	0.25
11/18/2009	2:55	11/18/09 2:55	0	0	0
11/18/2009	3:10	11/18/09 3:10	0	0	0
11/18/2009	3:25	11/18/09 3:25	0	0	0
11/18/2009	3:40	11/18/09 3:40	0	0	0
11/18/2009	3:55	11/18/09 3:55	0	0	0
11/18/2009	4:10	11/18/09 4:10	0	0	0
11/18/2009	4:25	11/18/09 4:25	0.5	0	0.25
11/18/2009	4:40	11/18/09 4:40	0	0	0
11/18/2009	4:55	11/18/09 4:55	0.5	0	0.25
11/18/2009	5:10	11/18/09 5:10	0.5	0	0.25
11/18/2009	5:25	11/18/09 5:25	0.5	-1	-0.25
11/18/2009	5:40	11/18/09 5:40	0.5	-1	-0.25
11/18/2009	5:55	11/18/09 5:55	0.5	-1.5	-0.5
11/18/2009	6:10	11/18/09 6:10	0.5	-1	-0.25
11/18/2009	6:25	11/18/09 6:25	2	-1.5	0.25
11/18/2009	6:40	11/18/09 6:40	0.5	-1.5	-0.5
11/18/2009	6:55	11/18/09 6:55	0.5	-1	-0.25
11/18/2009	7:10	11/18/09 7:10	1	-1	0

Date	Time	Date + Time	Indoor Barometric Pressure (ft)	Indoor Barometric Pressure (in) [e]	Temperature (°C)
11/17/2009	21:40	11/17/09 21:40	3.2	38.40	24.97
11/17/2009	21:55	11/17/09 21:55	3.2	38.40	24.98
11/17/2009	22:10	11/17/09 22:10	3.21	38.52	24.97
11/17/2009	22:25	11/17/09 22:25	3.18	38.16	24.97
11/17/2009	22:40	11/17/09 22:40	3.18	38.16	24.97
11/17/2009	22:55	11/17/09 22:55	3.19	38.28	24.99
11/17/2009	23:10	11/17/09 23:10	3.19	38.28	25.01
11/17/2009	23:25	11/17/09 23:25	3.19	38.28	25.01
11/17/2009	23:40	11/17/09 23:40	3.18	38.16	25.01
11/17/2009	23:55	11/17/09 23:55	3.18	38.16	25.02
11/18/2009	0:10	11/18/09 0:10	3.19	38.28	25.03
11/18/2009	0:25	11/18/09 0:25	3.19	38.28	25.03
11/18/2009	0:40	11/18/09 0:40	3.18	38.16	25.01
11/18/2009	0:55	11/18/09 0:55	3.19	38.28	25.02
11/18/2009	1:10	11/18/09 1:10	3.21	38.52	25.03
11/18/2009	1:25	11/18/09 1:25	3.19	38.28	25.02
11/18/2009	1:40	11/18/09 1:40	3.19	38.28	25.05
11/18/2009	1:55	11/18/09 1:55	3.18	38.16	25.03
11/18/2009	2:10	11/18/09 2:10	3.2	38.40	25.06
11/18/2009	2:25	11/18/09 2:25	3.19	38.28	25.05
11/18/2009	2:40	11/18/09 2:40	3.19	38.28	25.05
11/18/2009	2:55	11/18/09 2:55	3.2	38.40	25.05
11/18/2009	3:10	11/18/09 3:10	3.19	38.28	25.03
11/18/2009	3:25	11/18/09 3:25	3.18	38.16	25.08
11/18/2009	3:40	11/18/09 3:40	3.18	38.16	25.05
11/18/2009	3:55	11/18/09 3:55	3.19	38.28	25.07
11/18/2009	4:10	11/18/09 4:10	3.2	38.40	25.05
11/18/2009	4:25	11/18/09 4:25	3.21	38.52	25.05
11/18/2009	4:40	11/18/09 4:40	3.21	38.52	25.05
11/18/2009	4:55	11/18/09 4:55	3.21	38.52	25.07
11/18/2009	5:10	11/18/09 5:10	3.22	38.64	25.07
11/18/2009	5:25	11/18/09 5:25	3.2	38.40	24.87
11/18/2009	5:40	11/18/09 5:40	3.2	38.40	24.69
11/18/2009	5:55	11/18/09 5:55	3.2	38.40	24.62
11/18/2009	6:10	11/18/09 6:10	3.21	38.52	24.45
11/18/2009	6:25	11/18/09 6:25	3.22	38.64	24.55
11/18/2009	6:40	11/18/09 6:40	3.22	38.64	24.88
11/18/2009	6:55	11/18/09 6:55	3.23	38.76	25.14

Date	Time	Date + Time	Outdoor Barometric Pressure (in)
11/19/2009	13:30	11/19/09 13:30	30.03
11/19/2009	13:45	11/19/09 13:45	30.03
11/19/2009	14:00	11/19/09 14:00	30.03
11/19/2009	14:15	11/19/09 14:15	30.03
11/19/2009	14:30	11/19/09 14:30	30.03
11/19/2009	14:45	11/19/09 14:45	30.02
11/19/2009	15:00	11/19/09 15:00	30.03
11/19/2009	15:15	11/19/09 15:15	30.03
11/19/2009	15:30	11/19/09 15:30	30.03
11/19/2009	15:45	11/19/09 15:45	30.04
11/19/2009	16:00	11/19/09 16:00	30.04
11/19/2009	16:15	11/19/09 16:15	30.04
11/19/2009	16:30	11/19/09 16:30	30.04
11/19/2009	16:45	11/19/09 16:45	30.04
11/19/2009	17:00	11/19/09 17:00	30.04
11/19/2009	17:15	11/19/09 17:15	30.04
11/19/2009	17:30	11/19/09 17:30	30.04
11/19/2009	17:45	11/19/09 17:45	30.05
11/19/2009	18:00	11/19/09 18:00	30.05
11/19/2009	18:15	11/19/09 18:15	30.05
11/19/2009	18:30	11/19/09 18:30	30.05
11/19/2009	18:45	11/19/09 18:45	30.06
11/19/2009	19:00	11/19/09 19:00	30.06
11/19/2009	19:15	11/19/09 19:15	30.06
11/19/2009	19:30	11/19/09 19:30	30.06
11/19/2009	19:45	11/19/09 19:45	30.06
11/19/2009	20:00	11/19/09 20:00	30.05
11/19/2009	20:15	11/19/09 20:15	30.05
11/19/2009	20:30	11/19/09 20:30	30.06
11/19/2009	20:45	11/19/09 20:45	30.05
11/19/2009	21:00	11/19/09 21:00	30.05
11/19/2009	21:15	11/19/09 21:15	30.05
11/19/2009	21:30	11/19/09 21:30	30.05
11/19/2009	21:45	11/19/09 21:45	30.05
11/19/2009	22:00	11/19/09 22:00	30.04
11/19/2009	22:15	11/19/09 22:15	30.04
11/19/2009	22:30	11/19/09 22:30	30.04
11/19/2009	22:45	11/19/09 22:45	30.04

TABLE 5-8
Summary of Building 137 Phase I Pressure Differential Monitoring Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Date	Time	Date + Time	Maximum Differential Pressure[d] [Pa]	Minimum Differential Pressure[d] [Pa]	Average Pressure [Pa]
11/18/2009	7:25	11/18/09 7:25	1	-1	0
11/18/2009	7:40	11/18/09 7:40	1	-1.5	-0.25
11/18/2009	7:55	11/18/09 7:55	1	-1	0
11/18/2009	8:10	11/18/09 8:10	1	-1.5	-0.25
11/18/2009	8:25	11/18/09 8:25	1	-1	0
11/18/2009	8:40	11/18/09 8:40	1	-1	0
11/18/2009	8:55	11/18/09 8:55	1.5	-1.5	0
11/18/2009	9:10	11/18/09 9:10	1	-1	0
11/18/2009	9:25	11/18/09 9:25	0.5	-1	-0.25
11/18/2009	9:40	11/18/09 9:40	1.5	-1.5	0
11/18/2009	9:55	11/18/09 9:55	1	-1.5	-0.25
11/18/2009	10:10	11/18/09 10:10	0.5	-1.5	-0.5
11/18/2009	10:25	11/18/09 10:25	1	-1.5	-0.25
11/18/2009	10:40	11/18/09 10:40	1	-1	0
11/18/2009	10:55	11/18/09 10:55	1	-1.5	-0.25
11/18/2009	11:10	11/18/09 11:10	0.5	-2	-0.75
11/18/2009	11:25	11/18/09 11:25	1	-2	-0.5
11/18/2009	11:40	11/18/09 11:40	2	-1.5	0.25
11/18/2009	11:55	11/18/09 11:55	1	-2	-0.5
11/18/2009	12:10	11/18/09 12:10	1	-2	-0.5
11/18/2009	12:25	11/18/09 12:25	2.5	-2	0.25
11/18/2009	12:40	11/18/09 12:40	1	-1	0
11/18/2009	12:55	11/18/09 12:55	1.5	-1.5	0
11/18/2009	13:10	11/18/09 13:10	1.5	-1.5	0
11/18/2009	13:25	11/18/09 13:25	1.5	-1.5	0
11/18/2009	13:40	11/18/09 13:40	1	-1.5	-0.25
11/18/2009	13:55	11/18/09 13:55	2	-1.5	0.25
11/18/2009	14:10	11/18/09 14:10	1	-2	-0.5
11/18/2009	14:25	11/18/09 14:25	0.5	-0.5	0
11/18/2009	14:40	11/18/09 14:40	1	-0.5	0.25
11/18/2009	14:55	11/18/09 14:55	0	0	0
11/18/2009	15:10	11/18/09 15:10	1	-0.5	0.25
11/18/2009	15:25	11/18/09 15:25	1	-0.5	0.25
11/18/2009	15:40	11/18/09 15:40	0.5	0	0.25
11/18/2009	15:55	11/18/09 15:55	0.5	0	0.25
11/18/2009	16:10	11/18/09 16:10	0	0	0
11/18/2009	16:25	11/18/09 16:25	0	-0.5	-0.25
11/18/2009	16:40	11/18/09 16:40	0	-0.5	-0.25

Date	Time	Date + Time	Indoor Barometric Pressure (ft)	Indoor Barometric Pressure (in) [e]	Temperature (°C)
11/18/2009	7:10	11/18/09 7:10	3.23	38.76	25.31
11/18/2009	7:25	11/18/09 7:25	3.23	38.76	24.72
11/18/2009	7:40	11/18/09 7:40	3.23	38.76	24.28
11/18/2009	7:55	11/18/09 7:55	3.23	38.76	24.28
11/18/2009	8:10	11/18/09 8:10	3.22	38.64	24.39
11/18/2009	8:25	11/18/09 8:25	3.23	38.76	24.75
11/18/2009	8:40	11/18/09 8:40	3.24	38.88	25.01
11/18/2009	8:55	11/18/09 8:55	3.23	38.76	25.21
11/18/2009	9:10	11/18/09 9:10	3.23	38.76	25.37
11/18/2009	9:25	11/18/09 9:25	3.23	38.76	25.48
11/18/2009	9:40	11/18/09 9:40	3.21	38.52	25.57
11/18/2009	9:55	11/18/09 9:55	3.24	38.88	25.63
11/18/2009	10:10	11/18/09 10:10	3.21	38.52	25.67
11/18/2009	10:25	11/18/09 10:25	3.23	38.76	25.63
11/18/2009	10:40	11/18/09 10:40	3.22	38.64	25.66
11/18/2009	10:55	11/18/09 10:55	3.21	38.52	25.67
11/18/2009	11:10	11/18/09 11:10	3.2	38.40	25.66
11/18/2009	11:25	11/18/09 11:25	3.17	38.04	25.65
11/18/2009	11:40	11/18/09 11:40	3.18	38.16	24.44
11/18/2009	11:55	11/18/09 11:55	3.18	38.16	23.30
11/18/2009	12:10	11/18/09 12:10	3.18	38.16	22.94
11/18/2009	12:25	11/18/09 12:25	3.18	38.16	23.34
11/18/2009	12:40	11/18/09 12:40	3.19	38.28	23.13
11/18/2009	12:55	11/18/09 12:55	3.17	38.04	22.85
11/18/2009	13:10	11/18/09 13:10	3.17	38.04	23.18
11/18/2009	13:25	11/18/09 13:25	3.16	37.92	23.69
11/18/2009	13:40	11/18/09 13:40	3.17	38.04	24.27
11/18/2009	13:55	11/18/09 13:55	3.17	38.04	24.67
11/18/2009	14:10	11/18/09 14:10	3.17	38.04	24.97
11/18/2009	14:25	11/18/09 14:25	3.16	37.92	25.14
11/18/2009	14:40	11/18/09 14:40	3.16	37.92	25.29
11/18/2009	14:55	11/18/09 14:55	3.18	38.16	25.43
11/18/2009	15:10	11/18/09 15:10	3.16	37.92	25.51
11/18/2009	15:25	11/18/09 15:25	3.17	38.04	25.60
11/18/2009	15:40	11/18/09 15:40	3.15	37.80	25.63
11/18/2009	15:55	11/18/09 15:55	3.15	37.80	25.67
11/18/2009	16:10	11/18/09 16:10	3.19	38.28	25.67
11/18/2009	16:25	11/18/09 16:25	3.17	38.04	25.67

Date	Time	Date + Time	Outdoor Barometric Pressure (in)
11/19/2009	23:00	11/19/09 23:00	30.03
11/19/2009	23:15	11/19/09 23:15	30.03
11/19/2009	23:30	11/19/09 23:30	30.03
11/19/2009	23:45	11/19/09 23:45	30.03
11/20/2009	0:00	11/20/09 0:00	30.02
11/20/2009	0:15	11/20/09 0:15	30.02
11/20/2009	0:30	11/20/09 0:30	30.01
11/20/2009	0:45	11/20/09 0:45	30.01
11/20/2009	1:00	11/20/09 1:00	30.01
11/20/2009	1:15	11/20/09 1:15	30.00
11/20/2009	1:30	11/20/09 1:30	30.00
11/20/2009	1:45	11/20/09 1:45	30.00
11/20/2009	2:00	11/20/09 2:00	30.01
11/20/2009	2:15	11/20/09 2:15	30.00
11/20/2009	2:30	11/20/09 2:30	30.00
11/20/2009	2:45	11/20/09 2:45	30.00
11/20/2009	3:00	11/20/09 3:00	30.00
11/20/2009	3:15	11/20/09 3:15	30.00
11/20/2009	3:30	11/20/09 3:30	30.00
11/20/2009	3:45	11/20/09 3:45	30.00
11/20/2009	4:00	11/20/09 4:00	30.00
11/20/2009	4:15	11/20/09 4:15	30.00
11/20/2009	4:30	11/20/09 4:30	30.00
11/20/2009	4:45	11/20/09 4:45	30.00
11/20/2009	5:00	11/20/09 5:00	30.00
11/20/2009	5:15	11/20/09 5:15	30.01
11/20/2009	5:30	11/20/09 5:30	30.01
11/20/2009	5:45	11/20/09 5:45	30.02
11/20/2009	6:00	11/20/09 6:00	30.03
11/20/2009	6:15	11/20/09 6:15	30.03
11/20/2009	6:30	11/20/09 6:30	30.04
11/20/2009	6:45	11/20/09 6:45	30.04
11/20/2009	7:00	11/20/09 7:00	30.04
11/20/2009	7:15	11/20/09 7:15	30.05
11/20/2009	7:30	11/20/09 7:30	30.04
11/20/2009	7:45	11/20/09 7:45	30.04
11/20/2009	8:00	11/20/09 8:00	30.04
11/20/2009	8:15	11/20/09 8:15	30.04

TABLE 5-8
Summary of Building 137 Phase I Pressure Differential Monitoring Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Date	Time	Date + Time	Maximum Differential Pressure[d] [Pa]	Minimum Differential Pressure[d] [Pa]	Average Pressure [Pa]
11/18/2009	16:55	11/18/09 16:55	0.5	0	0.25
11/18/2009	17:10	11/18/09 17:10	0	-0.5	-0.25
11/18/2009	17:25	11/18/09 17:25	0	0	0
11/18/2009	17:40	11/18/09 17:40	0.5	0	0.25
11/18/2009	17:55	11/18/09 17:55	0.5	-1	-0.25
11/18/2009	18:10	11/18/09 18:10	0.5	-1.5	-0.5
11/18/2009	18:25	11/18/09 18:25	0	-0.5	-0.25
11/18/2009	18:40	11/18/09 18:40	0	-0.5	-0.25
11/18/2009	18:55	11/18/09 18:55	0.5	0	0.25
11/18/2009	19:10	11/18/09 19:10	0.5	0	0.25
11/18/2009	19:25	11/18/09 19:25	0.5	0	0.25
11/18/2009	19:40	11/18/09 19:40	0	0	0
11/18/2009	19:55	11/18/09 19:55	0	0	0
11/18/2009	20:10	11/18/09 20:10	0.5	0	0.25
11/18/2009	20:25	11/18/09 20:25	0	0	0
11/18/2009	20:40	11/18/09 20:40	0	0	0
11/18/2009	20:55	11/18/09 20:55	0	-0.5	-0.25
11/18/2009	21:10	11/18/09 21:10	0.5	-0.5	0
11/18/2009	21:25	11/18/09 21:25	0.5	-0.5	0
11/18/2009	21:40	11/18/09 21:40	0.5	0	0.25
11/18/2009	21:55	11/18/09 21:55	0	-0.5	-0.25
11/18/2009	22:10	11/18/09 22:10	0	-0.5	-0.25
11/18/2009	22:25	11/18/09 22:25	0	-0.5	-0.25
11/18/2009	22:40	11/18/09 22:40	0	-0.5	-0.25
11/18/2009	22:55	11/18/09 22:55	0	-0.5	-0.25
11/18/2009	23:10	11/18/09 23:10	0	-3	-1.5
11/18/2009	23:25	11/18/09 23:25	0	-1.5	-0.75
11/18/2009	23:40	11/18/09 23:40	0	-1	-0.5
11/18/2009	23:55	11/18/09 23:55	0.5	0	0.25
11/19/2009	0:10	11/19/09 0:10	0.5	-0.5	0
11/19/2009	0:25	11/19/09 0:25	0	-0.5	-0.25
11/19/2009	0:40	11/19/09 0:40	0	-0.5	-0.25
11/19/2009	0:55	11/19/09 0:55	0.5	-0.5	0
11/19/2009	1:10	11/19/09 1:10	1	-0.5	0.25
11/19/2009	1:25	11/19/09 1:25	1	-0.5	0.25
11/19/2009	1:40	11/19/09 1:40	0.5	-1	-0.25
11/19/2009	1:55	11/19/09 1:55	0.5	-0.5	0
11/19/2009	2:10	11/19/09 2:10	0.5	0	0.25

Date	Time	Date + Time	Indoor Barometric Pressure (ft)	Indoor Barometric Pressure (in)[e]	Temperature (°C)
11/18/2009	16:40	11/18/09 16:40	3.18	38.16	25.70
11/18/2009	16:55	11/18/09 16:55	3.18	38.16	25.75
11/18/2009	17:10	11/18/09 17:10	3.18	38.16	25.86
11/18/2009	17:25	11/18/09 17:25	3.18	38.16	24.98
11/18/2009	17:40	11/18/09 17:40	3.19	38.28	23.41
11/18/2009	17:55	11/18/09 17:55	3.19	38.28	22.55
11/18/2009	18:10	11/18/09 18:10	3.2	38.40	22.71
11/18/2009	18:25	11/18/09 18:25	3.18	38.16	23.34
11/18/2009	18:40	11/18/09 18:40	3.18	38.16	23.97
11/18/2009	18:55	11/18/09 18:55	3.19	38.28	24.48
11/18/2009	19:10	11/18/09 19:10	3.19	38.28	24.89
11/18/2009	19:25	11/18/09 19:25	3.19	38.28	25.18
11/18/2009	19:40	11/18/09 19:40	3.19	38.28	25.37
11/18/2009	19:55	11/18/09 19:55	3.17	38.04	25.51
11/18/2009	20:10	11/18/09 20:10	3.19	38.28	25.65
11/18/2009	20:25	11/18/09 20:25	3.18	38.16	25.73
11/18/2009	20:40	11/18/09 20:40	3.19	38.28	25.80
11/18/2009	20:55	11/18/09 20:55	3.18	38.16	25.81
11/18/2009	21:10	11/18/09 21:10	3.18	38.16	25.91
11/18/2009	21:25	11/18/09 21:25	3.17	38.04	25.97
11/18/2009	21:40	11/18/09 21:40	3.18	38.16	26.01
11/18/2009	21:55	11/18/09 21:55	3.15	37.80	26.03
11/18/2009	22:10	11/18/09 22:10	3.18	38.16	26.07
11/18/2009	22:25	11/18/09 22:25	3.19	38.28	26.09
11/18/2009	22:40	11/18/09 22:40	3.16	37.92	26.13
11/18/2009	22:55	11/18/09 22:55	3.18	38.16	26.14
11/18/2009	23:10	11/18/09 23:10	3.18	38.16	26.21
11/18/2009	23:25	11/18/09 23:25	3.16	37.92	24.96
11/18/2009	23:40	11/18/09 23:40	3.14	37.68	23.37
11/18/2009	23:55	11/18/09 23:55	3.16	37.92	22.48
11/19/2009	0:10	11/19/09 0:10	3.16	37.92	22.52
11/19/2009	0:25	11/19/09 0:25	3.15	37.80	22.49
11/19/2009	0:40	11/19/09 0:40	3.15	37.80	23.01
11/19/2009	0:55	11/19/09 0:55	3.16	37.92	23.69
11/19/2009	1:10	11/19/09 1:10	3.16	37.92	24.28
11/19/2009	1:25	11/19/09 1:25	3.16	37.92	24.13
11/19/2009	1:40	11/19/09 1:40	3.14	37.68	22.95
11/19/2009	1:55	11/19/09 1:55	3.15	37.80	22.83

Date	Time	Date + Time	Outdoor Barometric Pressure (in)
11/20/2009	8:30	11/20/09 8:30	30.05
11/20/2009	8:45	11/20/09 8:45	30.06
11/20/2009	9:00	11/20/09 9:00	30.06
11/20/2009	9:15	11/20/09 9:15	30.06
11/20/2009	9:30	11/20/09 9:30	30.06
11/20/2009	9:45	11/20/09 9:45	30.06
11/20/2009	10:00	11/20/09 10:00	30.05
11/20/2009	10:15	11/20/09 10:15	30.05
11/20/2009	10:30	11/20/09 10:30	30.06
11/20/2009	10:45	11/20/09 10:45	30.05
11/20/2009	11:00	11/20/09 11:00	30.05
11/20/2009	11:15	11/20/09 11:15	30.06
11/20/2009	11:30	11/20/09 11:30	30.05
11/20/2009	11:45	11/20/09 11:45	30.05
11/20/2009	12:00	11/20/09 12:00	30.05
11/20/2009	12:15	11/20/09 12:15	30.04
11/20/2009	12:30	11/20/09 12:30	30.03
11/20/2009	12:45	11/20/09 12:45	30.03
11/20/2009	13:00	11/20/09 13:00	30.03
11/20/2009	13:15	11/20/09 13:15	30.30
11/20/2009	13:30	11/20/09 13:30	30.03
11/20/2009	13:45	11/20/09 13:45	30.03
11/20/2009	14:00	11/20/09 14:00	30.03
11/20/2009	14:15	11/20/09 14:15	30.03
11/20/2009	14:30	11/20/09 14:30	30.03
11/20/2009	14:45	11/20/09 14:45	30.03
11/20/2009	15:00	11/20/09 15:00	30.04
11/20/2009	15:15	11/20/09 15:15	30.05
11/20/2009	15:30	11/20/09 15:30	30.06
11/20/2009	15:45	11/20/09 15:45	30.06
11/20/2009	16:00	11/20/09 16:00	30.06
11/20/2009	16:15	11/20/09 16:15	30.05
11/20/2009	16:30	11/20/09 16:30	30.04
11/20/2009	16:45	11/20/09 16:45	30.05
11/20/2009	17:00	11/20/09 17:00	30.05
11/20/2009	17:15	11/20/09 17:15	30.05
11/20/2009	17:30	11/20/09 17:30	30.04
11/20/2009	17:45	11/20/09 17:45	30.05

TABLE 5-8
Summary of Building 137 Phase I Pressure Differential Monitoring Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Date	Time	Date + Time	Maximum Differential Pressure[d] [Pa]	Minimum Differential Pressure[d] [Pa]	Average Pressure [Pa]
11/19/2009	2:25	11/19/09 2:25	0.5	0	0.25
11/19/2009	2:40	11/19/09 2:40	0	0	0
11/19/2009	2:55	11/19/09 2:55	0.5	0	0.25
11/19/2009	3:10	11/19/09 3:10	0.5	0	0.25
11/19/2009	3:25	11/19/09 3:25	0.5	0	0.25
11/19/2009	3:40	11/19/09 3:40	0.5	0	0.25
11/19/2009	3:55	11/19/09 3:55	0	0	0
11/19/2009	4:10	11/19/09 4:10	0.5	0	0.25
11/19/2009	4:25	11/19/09 4:25	0.5	0	0.25
11/19/2009	4:40	11/19/09 4:40	0.5	0	0.25
11/19/2009	4:55	11/19/09 4:55	0.5	0	0.25
11/19/2009	5:10	11/19/09 5:10	0	0	0
11/19/2009	5:25	11/19/09 5:25	0	-0.5	-0.25
11/19/2009	5:40	11/19/09 5:40	1	-1.5	-0.25
11/19/2009	5:55	11/19/09 5:55	0.5	-1.5	-0.5
11/19/2009	6:10	11/19/09 6:10	1	-1	0
11/19/2009	6:25	11/19/09 6:25	1.5	-2	-0.25
11/19/2009	6:40	11/19/09 6:40	0.5	-1.5	-0.5
11/19/2009	6:55	11/19/09 6:55	2	-2	0
11/19/2009	7:10	11/19/09 7:10	1	-3	-1
11/19/2009	7:25	11/19/09 7:25	0.5	-1.5	-0.5
11/19/2009	7:40	11/19/09 7:40	0.5	-1.5	-0.5
11/19/2009	7:55	11/19/09 7:55	0.5	-0.5	0
11/19/2009	8:10	11/19/09 8:10	0.5	-1	-0.25
11/19/2009	8:25	11/19/09 8:25	1	-1.5	-0.25
11/19/2009	8:40	11/19/09 8:40	0.5	-1.5	-0.5
11/19/2009	8:55	11/19/09 8:55	1	-1.5	-0.25
11/19/2009	9:10	11/19/09 9:10	1.5	-2	-0.25
11/19/2009	9:25	11/19/09 9:25	0.5	-2	-0.75
11/19/2009	9:40	11/19/09 9:40	0.5	-2	-0.75
11/19/2009	9:55	11/19/09 9:55	1	-2	-0.5
11/19/2009	10:10	11/19/09 10:10	1	-2	-0.5
11/19/2009	10:25	11/19/09 10:25	0.5	-1.5	-0.5
11/19/2009	10:40	11/19/09 10:40	1	-1	0
11/19/2009	10:55	11/19/09 10:55	0.5	-0.5	0
11/19/2009	11:10	11/19/09 11:10	1	-0.5	0.25
11/19/2009	11:25	11/19/09 11:25	0.5	-0.5	0
11/19/2009	11:40	11/19/09 11:40	0	-0.5	-0.25

Date	Time	Date + Time	Indoor Barometric Pressure (ft)	Indoor Barometric Pressure (in) [e]	Temperature (°C)
11/19/2009	2:10	11/19/09 2:10	3.14	37.68	22.67
11/19/2009	2:25	11/19/09 2:25	3.15	37.80	22.71
11/19/2009	2:40	11/19/09 2:40	3.14	37.68	23.23
11/19/2009	2:55	11/19/09 2:55	3.15	37.80	22.89
11/19/2009	3:10	11/19/09 3:10	3.14	37.68	22.74
11/19/2009	3:25	11/19/09 3:25	3.15	37.80	23.15
11/19/2009	3:40	11/19/09 3:40	3.16	37.92	23.75
11/19/2009	3:55	11/19/09 3:55	3.16	37.92	24.24
11/19/2009	4:10	11/19/09 4:10	3.16	37.92	24.60
11/19/2009	4:25	11/19/09 4:25	3.16	37.92	23.55
11/19/2009	4:40	11/19/09 4:40	3.16	37.92	22.91
11/19/2009	4:55	11/19/09 4:55	3.16	37.92	23.05
11/19/2009	5:10	11/19/09 5:10	3.16	37.92	23.54
11/19/2009	5:25	11/19/09 5:25	3.15	37.80	24.06
11/19/2009	5:40	11/19/09 5:40	3.18	38.16	24.49
11/19/2009	5:55	11/19/09 5:55	3.17	38.04	24.74
11/19/2009	6:10	11/19/09 6:10	3.18	38.16	24.75
11/19/2009	6:25	11/19/09 6:25	3.18	38.16	24.66
11/19/2009	6:40	11/19/09 6:40	3.17	38.04	24.84
11/19/2009	6:55	11/19/09 6:55	3.18	38.16	25.01
11/19/2009	7:10	11/19/09 7:10	3.18	38.16	25.17
11/19/2009	7:25	11/19/09 7:25	3.18	38.16	25.27
11/19/2009	7:40	11/19/09 7:40	3.18	38.16	25.35
11/19/2009	7:55	11/19/09 7:55	3.19	38.28	25.21
11/19/2009	8:10	11/19/09 8:10	3.19	38.28	23.79
11/19/2009	8:25	11/19/09 8:25	3.18	38.16	22.53
11/19/2009	8:40	11/19/09 8:40	3.18	38.16	21.67
11/19/2009	8:55	11/19/09 8:55	3.18	38.16	21.22
11/19/2009	9:10	11/19/09 9:10	3.18	38.16	21.05
11/19/2009	9:25	11/19/09 9:25	3.16	37.92	20.99
11/19/2009	9:40	11/19/09 9:40	3.15	37.80	21.13
11/19/2009	9:55	11/19/09 9:55	3.16	37.92	21.67
11/19/2009	10:10	11/19/09 10:10	3.15	37.80	21.63
11/19/2009	10:25	11/19/09 10:25	3.15	37.80	21.40
11/19/2009	10:40	11/19/09 10:40	3.15	37.80	21.38
11/19/2009	10:55	11/19/09 10:55	3.14	37.68	21.59
11/19/2009	11:10	11/19/09 11:10	3.12	37.44	21.37
11/19/2009	11:25	11/19/09 11:25	3.11	37.32	21.63

Date	Time	Date + Time	Outdoor Barometric Pressure (in)
11/20/2009	18:00	11/20/09 18:00	30.05
11/20/2009	18:15	11/20/09 18:15	30.06
11/20/2009	18:30	11/20/09 18:30	30.07
11/20/2009	18:45	11/20/09 18:45	30.07
11/20/2009	19:00	11/20/09 19:00	30.08
11/20/2009	19:15	11/20/09 19:15	30.08
11/20/2009	19:30	11/20/09 19:30	30.08
11/20/2009	19:45	11/20/09 19:45	30.08
11/20/2009	20:00	11/20/09 20:00	30.08
11/20/2009	20:15	11/20/09 20:15	30.09
11/20/2009	20:30	11/20/09 20:30	30.08
11/20/2009	20:45	11/20/09 20:45	30.09
11/20/2009	21:00	11/20/09 21:00	30.09
11/20/2009	21:15	11/20/09 21:15	30.09
11/20/2009	21:30	11/20/09 21:30	30.09
11/20/2009	21:45	11/20/09 21:45	30.08
11/20/2009	22:00	11/20/09 22:00	30.09
11/20/2009	22:15	11/20/09 22:15	30.10
11/20/2009	22:30	11/20/09 22:30	30.09
11/20/2009	22:45	11/20/09 22:45	30.09
11/20/2009	23:00	11/20/09 23:00	30.09
11/20/2009	23:15	11/20/09 23:15	30.09
11/20/2009	23:30	11/20/09 23:30	30.09
11/20/2009	23:45	11/20/09 23:45	30.09
11/21/2009	0:00	11/21/09 0:00	30.08
11/21/2009	0:15	11/21/09 0:15	30.08
11/21/2009	0:30	11/21/09 0:30	30.08
11/21/2009	0:45	11/21/09 0:45	30.07
11/21/2009	1:00	11/21/09 1:00	30.07
11/21/2009	1:15	11/21/09 1:15	30.08
11/21/2009	1:30	11/21/09 1:30	30.06
11/21/2009	1:45	11/21/09 1:45	30.07
11/21/2009	2:00	11/21/09 2:00	30.07
11/21/2009	2:15	11/21/09 2:15	30.06
11/21/2009	2:30	11/21/09 2:30	30.06
11/21/2009	2:45	11/21/09 2:45	30.06
11/21/2009	3:00	11/21/09 3:00	30.07
11/21/2009	3:15	11/21/09 3:15	30.06

TABLE 5-8
Summary of Building 137 Phase I Pressure Differential Monitoring Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Date	Time	Date + Time	Maximum Differential Pressure[d] [Pa]	Minimum Differential Pressure[d] [Pa]	Average Pressure [Pa]
11/19/2009	11:55	11/19/09 11:55	0.5	-0.5	0
11/19/2009	12:10	11/19/09 12:10	0	-0.5	-0.25
11/19/2009	12:25	11/19/09 12:25	0	-0.5	-0.25
11/19/2009	12:40	11/19/09 12:40	0	0	0
11/19/2009	12:55	11/19/09 12:55	0	-1	-0.5
11/19/2009	13:10	11/19/09 13:10	0.5	-0.5	0
11/19/2009	13:25	11/19/09 13:25	0.5	-0.5	0
11/19/2009	13:40	11/19/09 13:40	0.5	-0.5	0
11/19/2009	13:55	11/19/09 13:55	0.5	-0.5	0
11/19/2009	14:10	11/19/09 14:10	0.5	0	0.25
11/19/2009	14:25	11/19/09 14:25	0.5	0	0.25
11/19/2009	14:40	11/19/09 14:40	0.5	0	0.25
11/19/2009	14:55	11/19/09 14:55	0.5	0	0.25
11/19/2009	15:10	11/19/09 15:10	0	0	0
11/19/2009	15:25	11/19/09 15:25	0	0	0
11/19/2009	15:40	11/19/09 15:40	0	0	0
11/19/2009	15:55	11/19/09 15:55	0	0	0
11/19/2009	16:10	11/19/09 16:10	0	0	0
11/19/2009	16:25	11/19/09 16:25	0	0	0
11/19/2009	16:40	11/19/09 16:40	0	0	0
11/19/2009	16:55	11/19/09 16:55	0	0	0
11/19/2009	17:10	11/19/09 17:10	0	0	0
11/19/2009	17:25	11/19/09 17:25	0	0	0
11/19/2009	17:40	11/19/09 17:40	0	0	0
11/19/2009	17:55	11/19/09 17:55	0.5	0	0.25
11/19/2009	18:10	11/19/09 18:10	0	0	0
11/19/2009	18:25	11/19/09 18:25	0	0	0
11/19/2009	18:40	11/19/09 18:40	0	0	0
11/19/2009	18:55	11/19/09 18:55	0	0	0
11/19/2009	19:10	11/19/09 19:10	0	0	0
11/19/2009	19:25	11/19/09 19:25	0	0	0
11/19/2009	19:40	11/19/09 19:40	0	0	0
11/19/2009	19:55	11/19/09 19:55	0.5	0	0.25
11/19/2009	20:10	11/19/09 20:10	0	0	0
11/19/2009	20:25	11/19/09 20:25	0	0	0

Date	Time	Date + Time	Indoor Barometric Pressure (ft)	Indoor Barometric Pressure (in) [e]	Temperature (°C)
11/19/2009	11:40	11/19/09 11:40	3.1	37.20	21.53
11/19/2009	11:55	11/19/09 11:55	3.1	37.20	21.49
11/19/2009	12:10	11/19/09 12:10	3.1	37.20	21.70
11/19/2009	12:25	11/19/09 12:25	3.08	36.96	21.47
11/19/2009	12:40	11/19/09 12:40	3.08	36.96	21.50
11/19/2009	12:55	11/19/09 12:55	3.09	37.08	21.93
11/19/2009	13:10	11/19/09 13:10	3.08	36.96	21.69
11/19/2009	13:25	11/19/09 13:25	3.08	36.96	21.48
11/19/2009	13:40	11/19/09 13:40	3.07	36.84	21.75
11/19/2009	13:55	11/19/09 13:55	3.08	36.96	21.54
11/19/2009	14:10	11/19/09 14:10	3.08	36.96	21.52
11/19/2009	14:25	11/19/09 14:25	3.08	36.96	21.49
11/19/2009	14:40	11/19/09 14:40	3.07	36.84	21.49
11/19/2009	14:55	11/19/09 14:55	3.08	36.96	21.46
11/19/2009	15:10	11/19/09 15:10	3.1	37.20	21.29
11/19/2009	15:25	11/19/09 15:25	3.09	37.08	21.30
11/19/2009	15:40	11/19/09 15:40	3.09	37.08	21.51
11/19/2009	15:55	11/19/09 15:55	3.11	37.32	21.44
11/19/2009	16:10	11/19/09 16:10	3.1	37.20	21.73
11/19/2009	16:25	11/19/09 16:25	3.09	37.08	22.27
11/19/2009	16:40	11/19/09 16:40	3.1	37.20	22.77
11/19/2009	16:55	11/19/09 16:55	3.09	37.08	23.20
11/19/2009	17:10	11/19/09 17:10	3.11	37.32	23.56
11/19/2009	17:25	11/19/09 17:25	3.12	37.44	23.57
11/19/2009	17:40	11/19/09 17:40	3.12	37.44	22.50
11/19/2009	17:55	11/19/09 17:55	3.12	37.44	21.59
11/19/2009	18:10	11/19/09 18:10	3.12	37.44	21.69
11/19/2009	18:25	11/19/09 18:25	3.11	37.32	22.03
11/19/2009	18:40	11/19/09 18:40	3.11	37.32	22.53
11/19/2009	18:55	11/19/09 18:55	3.11	37.32	22.96
11/19/2009	19:10	11/19/09 19:10	3.11	37.32	23.31
11/19/2009	19:25	11/19/09 19:25	3.12	37.44	23.51
11/19/2009	19:40	11/19/09 19:40	3.11	37.32	22.58
11/19/2009	19:55	11/19/09 19:55	3.11	37.32	21.73
11/19/2009	20:10	11/19/09 20:10	3.11	37.32	21.75

Date	Time	Date + Time	Outdoor Barometric Pressure (in)
11/21/2009	3:30	11/21/09 3:30	30.05
11/21/2009	3:45	11/21/09 3:45	30.05
11/21/2009	4:00	11/21/09 4:00	30.04
11/21/2009	4:15	11/21/09 4:15	30.05
11/21/2009	4:30	11/21/09 4:30	30.06
11/21/2009	4:45	11/21/09 4:45	30.06
11/21/2009	5:00	11/21/09 5:00	30.07
11/21/2009	5:15	11/21/09 5:15	30.07
11/21/2009	5:30	11/21/09 5:30	30.07
11/21/2009	5:45	11/21/09 5:45	30.06
11/21/2009	6:00	11/21/09 6:00	30.07
11/21/2009	6:15	11/21/09 6:15	30.08
11/21/2009	6:30	11/21/09 6:30	30.08
11/21/2009	6:45	11/21/09 6:45	30.08
11/21/2009	7:00	11/21/09 7:00	30.08
11/21/2009	7:15	11/21/09 7:15	30.08
11/21/2009	7:30	11/21/09 7:30	30.09
11/21/2009	7:45	11/21/09 7:45	30.09
11/21/2009	8:00	11/21/09 8:00	30.08
11/21/2009	8:15	11/21/09 8:15	30.08
11/21/2009	8:30	11/21/09 8:30	30.09
11/21/2009	8:45	11/21/09 8:45	30.10
11/21/2009	9:00	11/21/09 9:00	30.10
11/21/2009	9:15	11/21/09 9:15	30.11
11/21/2009	9:30	11/21/09 9:30	30.10
11/21/2009	9:45	11/21/09 9:45	30.10
11/21/2009	10:00	11/21/09 10:00	30.11
11/21/2009	10:15	11/21/09 10:15	30.11
11/21/2009	10:30	11/21/09 10:30	30.11
11/21/2009	10:45	11/21/09 10:45	30.11
11/21/2009	11:00	11/21/09 11:00	30.11
11/21/2009	11:15	11/21/09 11:15	30.10
11/21/2009	11:30	11/21/09 11:30	30.09
11/21/2009	11:45	11/21/09 11:45	30.09
11/21/2009	12:00	11/21/09 12:00	30.08

TABLE 5-8
Summary of Building 137 Phase I Pressure Differential Monitoring Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Date	Time	Date + Time	Maximum Differential Pressure[d] [Pa]	Minimum Differential Pressure[d] [Pa]	Average Pressure [Pa]
11/19/2009	20:40	11/19/09 20:40	0	0	0
11/19/2009	20:55	11/19/09 20:55	0	0	0
11/19/2009	21:10	11/19/09 21:10	0	0	0
11/19/2009	21:25	11/19/09 21:25	0	0	0
11/19/2009	21:40	11/19/09 21:40	0	0	0
11/19/2009	21:55	11/19/09 21:55	0	0	0
11/19/2009	22:10	11/19/09 22:10	0	0	0
11/19/2009	22:25	11/19/09 22:25	0	0	0
11/19/2009	22:40	11/19/09 22:40	0	0	0
11/19/2009	22:55	11/19/09 22:55	0	-0.5	-0.25
11/19/2009	23:10	11/19/09 23:10	0	0	0
11/19/2009	23:25	11/19/09 23:25	0	0	0
11/19/2009	23:40	11/19/09 23:40	0	0	0
11/19/2009	23:55	11/19/09 23:55	0	0	0
11/20/2009	0:10	11/20/09 0:10	0	0	0
11/20/2009	0:25	11/20/09 0:25	0	0	0
11/20/2009	0:40	11/20/09 0:40	0	0	0
11/20/2009	0:55	11/20/09 0:55	0	0	0
11/20/2009	1:10	11/20/09 1:10	0	0	0
11/20/2009	1:25	11/20/09 1:25	0	0	0
11/20/2009	1:40	11/20/09 1:40	0	0	0
11/20/2009	1:55	11/20/09 1:55	0	0	0
11/20/2009	2:10	11/20/09 2:10	0	0	0
11/20/2009	2:25	11/20/09 2:25	0	0	0
11/20/2009	2:40	11/20/09 2:40	0	0	0
11/20/2009	2:55	11/20/09 2:55	0	0	0
11/20/2009	3:10	11/20/09 3:10	0	0	0
11/20/2009	3:25	11/20/09 3:25	0	0	0
11/20/2009	3:40	11/20/09 3:40	0	0	0
11/20/2009	3:55	11/20/09 3:55	0	-3	-1.5
11/20/2009	4:10	11/20/09 4:10	0	-1.5	-0.75
11/20/2009	4:25	11/20/09 4:25	0	0	0
11/20/2009	4:40	11/20/09 4:40	0	0	0
11/20/2009	4:55	11/20/09 4:55	0	-0.5	-0.25
11/20/2009	5:10	11/20/09 5:10	0	-0.5	-0.25

Date	Time	Date + Time	Indoor Barometric Pressure (ft)	Indoor Barometric Pressure (in) [e]	Temperature (°C)
11/19/2009	20:25	11/19/09 20:25	3.13	37.56	21.53
11/19/2009	20:40	11/19/09 20:40	3.1	37.20	21.65
11/19/2009	20:55	11/19/09 20:55	3.1	37.20	22.04
11/19/2009	21:10	11/19/09 21:10	3.11	37.32	22.51
11/19/2009	21:25	11/19/09 21:25	3.08	36.96	22.53
11/19/2009	21:40	11/19/09 21:40	3.08	36.96	21.79
11/19/2009	21:55	11/19/09 21:55	3.08	36.96	21.81
11/19/2009	22:10	11/19/09 22:10	3.09	37.08	22.15
11/19/2009	22:25	11/19/09 22:25	3.09	37.08	22.54
11/19/2009	22:40	11/19/09 22:40	3.08	36.96	22.93
11/19/2009	22:55	11/19/09 22:55	3.08	36.96	23.23
11/19/2009	23:10	11/19/09 23:10	3.07	36.84	23.44
11/19/2009	23:25	11/19/09 23:25	3.06	36.72	23.61
11/19/2009	23:40	11/19/09 23:40	3.06	36.72	23.73
11/19/2009	23:55	11/19/09 23:55	3.06	36.72	23.83
11/20/2009	0:10	11/20/09 0:10	3.05	36.60	23.89
11/20/2009	0:25	11/20/09 0:25	3.05	36.60	23.99
11/20/2009	0:40	11/20/09 0:40	3.06	36.72	24.00
11/20/2009	0:55	11/20/09 0:55	3.05	36.60	24.08
11/20/2009	1:10	11/20/09 1:10	3.05	36.60	24.12
11/20/2009	1:25	11/20/09 1:25	3.05	36.60	24.13
11/20/2009	1:40	11/20/09 1:40	3.05	36.60	24.17
11/20/2009	1:55	11/20/09 1:55	3.04	36.48	24.20
11/20/2009	2:10	11/20/09 2:10	3.04	36.48	24.25
11/20/2009	2:25	11/20/09 2:25	3.03	36.36	24.26
11/20/2009	2:40	11/20/09 2:40	3.04	36.48	24.29
11/20/2009	2:55	11/20/09 2:55	3.04	36.48	24.33
11/20/2009	3:10	11/20/09 3:10	3.04	36.48	24.34
11/20/2009	3:25	11/20/09 3:25	3.05	36.60	24.38
11/20/2009	3:40	11/20/09 3:40	3.04	36.48	24.38
11/20/2009	3:55	11/20/09 3:55	3.04	36.48	24.43
11/20/2009	4:10	11/20/09 4:10	3.05	36.60	24.43
11/20/2009	4:25	11/20/09 4:25	3.05	36.60	24.45
11/20/2009	4:40	11/20/09 4:40	3.06	36.72	24.46
11/20/2009	4:55	11/20/09 4:55	3.07	36.84	24.48

Date	Time	Date + Time	Outdoor Barometric Pressure (in)
11/21/2009	12:15	11/21/09 12:15	30.08
11/21/2009	12:30	11/21/09 12:30	30.08
11/21/2009	12:45	11/21/09 12:45	30.07
11/21/2009	13:00	11/21/09 13:00	30.07
11/21/2009	13:15	11/21/09 13:15	30.07
11/21/2009	13:30	11/21/09 13:30	30.06
11/21/2009	13:45	11/21/09 13:45	30.06
11/21/2009	14:00	11/21/09 14:00	30.06
11/21/2009	14:15	11/21/09 14:15	30.06
11/21/2009	14:30	11/21/09 14:30	30.07
11/21/2009	14:45	11/21/09 14:45	30.07
11/21/2009	15:00	11/21/09 15:00	30.07
11/21/2009	15:15	11/21/09 15:15	30.07
11/21/2009	15:30	11/21/09 15:30	30.07
11/21/2009	15:45	11/21/09 15:45	30.07
11/21/2009	16:00	11/21/09 16:00	30.07
11/21/2009	16:15	11/21/09 16:15	30.07
11/21/2009	16:30	11/21/09 16:30	30.07
11/21/2009	16:45	11/21/09 16:45	30.08
11/21/2009	17:00	11/21/09 17:00	30.08
11/21/2009	17:15	11/21/09 17:15	30.10
11/21/2009	17:30	11/21/09 17:30	30.10
11/21/2009	17:45	11/21/09 17:45	30.10
11/21/2009	18:00	11/21/09 18:00	30.11
11/21/2009	18:15	11/21/09 18:15	30.11
11/21/2009	18:30	11/21/09 18:30	30.10
11/21/2009	18:45	11/21/09 18:45	30.11
11/21/2009	19:00	11/21/09 19:00	30.11
11/21/2009	19:15	11/21/09 19:15	30.11
11/21/2009	19:30	11/21/09 19:30	30.12
11/21/2009	19:45	11/21/09 19:45	30.12
11/21/2009	20:00	11/21/09 20:00	30.12
11/21/2009	20:15	11/21/09 20:15	30.12
11/21/2009	20:30	11/21/09 20:30	30.13
11/21/2009	20:45	11/21/09 20:45	30.13

TABLE 5-8
Summary of Building 137 Phase I Pressure Differential Monitoring Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Date	Time	Date + Time	Maximum Differential Pressure[d] [Pa]	Minimum Differential Pressure[d] [Pa]	Average Pressure [Pa]
11/20/2009	5:25	11/20/09 5:25	0	0	0
11/20/2009	5:40	11/20/09 5:40	0	0	0
11/20/2009	5:55	11/20/09 5:55	0.5	0	0.25
11/20/2009	6:10	11/20/09 6:10	0.5	0	0.25
11/20/2009	6:25	11/20/09 6:25	0.5	-0.5	0
11/20/2009	6:40	11/20/09 6:40	0.5	-0.5	0
11/20/2009	6:55	11/20/09 6:55	1	-0.5	0.25
11/20/2009	7:10	11/20/09 7:10	1	0	0.5
11/20/2009	7:25	11/20/09 7:25	0.5	-0.5	0
11/20/2009	7:40	11/20/09 7:40	0.5	0	0.25
11/20/2009	7:55	11/20/09 7:55	0.5	0	0.25
11/20/2009	8:10	11/20/09 8:10	0.5	0	0.25
11/20/2009	8:25	11/20/09 8:25	1	0	0.5
11/20/2009	8:40	11/20/09 8:40	0.5	-0.5	0
11/20/2009	8:55	11/20/09 8:55	0.5	-0.5	0
11/20/2009	9:10	11/20/09 9:10	0.5	-1	-0.25
11/20/2009	9:25	11/20/09 9:25	0.5	-0.5	0
11/20/2009	9:40	11/20/09 9:40	0.5	-0.5	0
11/20/2009	9:55	11/20/09 9:55	2	-1	0.5
11/20/2009	10:10	11/20/09 10:10	1	-1	0
11/20/2009	10:25	11/20/09 10:25	1	-0.5	0.25
11/20/2009	10:40	11/20/09 10:40	0.5	-0.5	0
11/20/2009	10:55	11/20/09 10:55	0.5	-0.5	0
11/20/2009	11:10	11/20/09 11:10	0.5	-0.5	0
11/20/2009	11:25	11/20/09 11:25	1	-1	0
11/20/2009	11:40	11/20/09 11:40	1	-0.5	0.25
11/20/2009	11:55	11/20/09 11:55	1.5	-1	0.25
11/20/2009	12:10	11/20/09 12:10	1.5	-1	0.25
11/20/2009	12:25	11/20/09 12:25	1	-0.5	0.25
11/20/2009	12:40	11/20/09 12:40	2.5	-1.5	0.5
11/20/2009	12:55	11/20/09 12:55	2	-1	0.5
11/20/2009	13:10	11/20/09 13:10	0.5	0	0.25
11/20/2009	13:25	11/20/09 13:25	1	0	0.5
11/20/2009	13:40	11/20/09 13:40	1.5	-0.5	0.5
11/20/2009	13:55	11/20/09 13:55	1	0	0.5
11/20/2009	14:10	11/20/09 14:10	0.5	0	0.25

Date	Time	Date + Time	Indoor Barometric Pressure (ft)	Indoor Barometric Pressure (in)[e]	Temperature (°C)
11/20/2009	5:10	11/20/09 5:10	3.09	37.08	24.52
11/20/2009	5:25	11/20/09 5:25	3.09	37.08	24.57
11/20/2009	5:40	11/20/09 5:40	3.08	36.96	24.69
11/20/2009	5:55	11/20/09 5:55	3.09	37.08	24.77
11/20/2009	6:10	11/20/09 6:10	3.08	36.96	24.84
11/20/2009	6:25	11/20/09 6:25	3.09	37.08	24.89
11/20/2009	6:40	11/20/09 6:40	3.07	36.84	24.92
11/20/2009	6:55	11/20/09 6:55	3.08	36.96	24.97
11/20/2009	7:10	11/20/09 7:10	3.07	36.84	25.03
11/20/2009	7:25	11/20/09 7:25	3.1	37.20	25.09
11/20/2009	7:40	11/20/09 7:40	3.11	37.32	25.17
11/20/2009	7:55	11/20/09 7:55	3.1	37.20	25.23
11/20/2009	8:10	11/20/09 8:10	3.11	37.32	25.33
11/20/2009	8:25	11/20/09 8:25	3.09	37.08	25.37
11/20/2009	8:40	11/20/09 8:40	3.11	37.32	25.33
11/20/2009	8:55	11/20/09 8:55	3.1	37.20	25.35
11/20/2009	9:10	11/20/09 9:10	3.11	37.32	25.45
11/20/2009	9:25	11/20/09 9:25	3.1	37.20	25.52
11/20/2009	9:40	11/20/09 9:40	3.11	37.32	25.57
11/20/2009	9:55	11/20/09 9:55	3.09	37.08	25.63
11/20/2009	10:10	11/20/09 10:10	3.1	37.20	25.67
11/20/2009	10:25	11/20/09 10:25	3.11	37.32	25.67
11/20/2009	10:40	11/20/09 10:40	3.11	37.32	25.63
11/20/2009	10:55	11/20/09 10:55	3.09	37.08	25.67
11/20/2009	11:10	11/20/09 11:10	3.09	37.08	25.77
11/20/2009	11:25	11/20/09 11:25	3.08	36.96	25.81
11/20/2009	11:40	11/20/09 11:40	3.07	36.84	25.84
11/20/2009	11:55	11/20/09 11:55	3.07	36.84	25.89
11/20/2009	12:10	11/20/09 12:10	3.07	36.84	25.96
11/20/2009	12:25	11/20/09 12:25	3.07	36.84	25.91
11/20/2009	12:40	11/20/09 12:40	3.07	36.84	25.43
11/20/2009	12:55	11/20/09 12:55	3.08	36.96	23.95
11/20/2009	13:10	11/20/09 13:10	3.08	36.96	22.73
11/20/2009	13:25	11/20/09 13:25	3.08	36.96	21.90
11/20/2009	13:40	11/20/09 13:40	3.07	36.84	21.36
11/20/2009	13:55	11/20/09 13:55	3.09	37.08	21.15

Date	Time	Date + Time	Outdoor Barometric Pressure (in)
11/21/2009	21:00	11/21/09 21:00	30.13
11/21/2009	21:15	11/21/09 21:15	30.14
11/21/2009	21:30	11/21/09 21:30	30.13
11/21/2009	21:45	11/21/09 21:45	30.12
11/21/2009	22:00	11/21/09 22:00	30.12
11/21/2009	22:15	11/21/09 22:15	30.13
11/21/2009	22:30	11/21/09 22:30	30.12
11/21/2009	22:45	11/21/09 22:45	30.12
11/21/2009	23:00	11/21/09 23:00	30.12
11/21/2009	23:15	11/21/09 23:15	30.12
11/21/2009	23:30	11/21/09 23:30	30.11
11/21/2009	23:45	11/21/09 23:45	30.11
11/22/2009	0:00	11/22/09 0:00	30.11
11/22/2009	0:15	11/22/09 0:15	30.12
11/22/2009	0:30	11/22/09 0:30	30.12
11/22/2009	0:45	11/22/09 0:45	30.12
11/22/2009	1:00	11/22/09 1:00	30.12
11/22/2009	1:15	11/22/09 1:15	30.12
11/22/2009	1:30	11/22/09 1:30	30.12
11/22/2009	1:45	11/22/09 1:45	30.12
11/22/2009	2:00	11/22/09 2:00	30.12
11/22/2009	2:15	11/22/09 2:15	30.12
11/22/2009	2:30	11/22/09 2:30	30.13
11/22/2009	2:45	11/22/09 2:45	30.13
11/22/2009	3:00	11/22/09 3:00	30.13
11/22/2009	3:15	11/22/09 3:15	30.13
11/22/2009	3:30	11/22/09 3:30	30.12
11/22/2009	3:45	11/22/09 3:45	30.12
11/22/2009	4:00	11/22/09 4:00	30.12
11/22/2009	4:15	11/22/09 4:15	30.12
11/22/2009	4:30	11/22/09 4:30	30.12
11/22/2009	4:45	11/22/09 4:45	30.13
11/22/2009	5:00	11/22/09 5:00	30.13
11/22/2009	5:15	11/22/09 5:15	30.13
11/22/2009	5:30	11/22/09 5:30	30.13
11/22/2009	5:45	11/22/09 5:45	30.14

TABLE 5-8
Summary of Building 137 Phase I Pressure Differential Monitoring Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Date	Time	Date + Time	Maximum Differential Pressure[d] [Pa]	Minimum Differential Pressure[d] [Pa]	Average Pressure [Pa]
11/20/2009	14:25	11/20/09 14:25	2	-0.5	0.75
11/20/2009	14:40	11/20/09 14:40	1.5	-0.5	0.5
11/20/2009	14:55	11/20/09 14:55	0.5	-0.5	0
11/20/2009	15:10	11/20/09 15:10	0	0	0
11/20/2009	15:25	11/20/09 15:25	0	0	0
11/20/2009	15:40	11/20/09 15:40	0.5	0	0.25
11/20/2009	15:55	11/20/09 15:55	0	0	0
11/20/2009	16:10	11/20/09 16:10	0.5	0	0.25
11/20/2009	16:25	11/20/09 16:25	0	0	0
11/20/2009	16:40	11/20/09 16:40	0.5	0	0.25
11/20/2009	16:55	11/20/09 16:55	0.5	0	0.25
11/20/2009	17:10	11/20/09 17:10	0.5	0	0.25
11/20/2009	17:25	11/20/09 17:25	0.5	0	0.25
11/20/2009	17:40	11/20/09 17:40	0.5	0	0.25
11/20/2009	17:55	11/20/09 17:55	0.5	0	0.25
11/20/2009	18:10	11/20/09 18:10	0.5	0	0.25
11/20/2009	18:25	11/20/09 18:25	1	-0.5	0.25
11/20/2009	18:40	11/20/09 18:40	0.5	0	0.25
11/20/2009	18:55	11/20/09 18:55	0	0	0
11/20/2009	19:10	11/20/09 19:10	0.5	0	0.25
11/20/2009	19:25	11/20/09 19:25	0	0	0
11/20/2009	19:40	11/20/09 19:40	0.5	0	0.25
11/20/2009	19:55	11/20/09 19:55	0.5	0	0.25
11/20/2009	20:10	11/20/09 20:10	0	0	0
11/20/2009	20:25	11/20/09 20:25	1	0	0.5
11/20/2009	20:40	11/20/09 20:40	0	-0.5	-0.25
11/20/2009	20:55	11/20/09 20:55	0	0	0
11/20/2009	21:10	11/20/09 21:10	0.5	0	0.25
11/20/2009	21:25	11/20/09 21:25	0.5	0	0.25
11/20/2009	21:40	11/20/09 21:40	0	0	0
11/20/2009	21:55	11/20/09 21:55	0	0	0
11/20/2009	22:10	11/20/09 22:10	0.5	-0.5	0
11/20/2009	22:25	11/20/09 22:25	0.5	0	0.25
11/20/2009	22:40	11/20/09 22:40	0.5	0	0.25
11/20/2009	22:55	11/20/09 22:55	0	0	0
11/20/2009	23:10	11/20/09 23:10	0.5	0	0.25
11/20/2009	23:25	11/20/09 23:25	0	0	0
11/20/2009	23:40	11/20/09 23:40	0.5	0	0.25

Date	Time	Date + Time	Indoor Barometric Pressure (ft)	Indoor Barometric Pressure (in) [e]	Temperature (°C)
11/20/2009	14:10	11/20/09 14:10	3.1	37.20	20.97
11/20/2009	14:25	11/20/09 14:25	3.12	37.44	21.05
11/20/2009	14:40	11/20/09 14:40	3.11	37.32	21.53
11/20/2009	14:55	11/20/09 14:55	3.1	37.20	22.02
11/20/2009	15:10	11/20/09 15:10	3.11	37.32	22.38
11/20/2009	15:25	11/20/09 15:25	3.08	36.96	22.54
11/20/2009	15:40	11/20/09 15:40	3.09	37.08	22.73
11/20/2009	15:55	11/20/09 15:55	3.09	37.08	22.87
11/20/2009	16:10	11/20/09 16:10	3.1	37.20	22.87
11/20/2009	16:25	11/20/09 16:25	3.09	37.08	22.95
11/20/2009	16:40	11/20/09 16:40	3.08	36.96	23.07
11/20/2009	16:55	11/20/09 16:55	3.09	37.08	23.17
11/20/2009	17:10	11/20/09 17:10	3.12	37.44	23.42
11/20/2009	17:25	11/20/09 17:25	3.12	37.44	23.54
11/20/2009	17:40	11/20/09 17:40	3.14	37.68	23.77
11/20/2009	17:55	11/20/09 17:55	3.13	37.56	23.83
11/20/2009	18:10	11/20/09 18:10	3.13	37.56	24.01
11/20/2009	18:25	11/20/09 18:25	3.13	37.56	24.19
11/20/2009	18:40	11/20/09 18:40	3.14	37.68	24.35
11/20/2009	18:55	11/20/09 18:55	3.12	37.44	24.49
11/20/2009	19:10	11/20/09 19:10	3.14	37.68	24.60
11/20/2009	19:25	11/20/09 19:25	3.13	37.56	24.69
11/20/2009	19:40	11/20/09 19:40	3.13	37.56	24.75
11/20/2009	19:55	11/20/09 19:55	3.14	37.68	24.80
11/20/2009	20:10	11/20/09 20:10	3.14	37.68	24.83
11/20/2009	20:25	11/20/09 20:25	3.15	37.80	24.87
11/20/2009	20:40	11/20/09 20:40	3.14	37.68	24.91
11/20/2009	20:55	11/20/09 20:55	3.14	37.68	24.92
11/20/2009	21:10	11/20/09 21:10	3.16	37.92	23.66
11/20/2009	21:25	11/20/09 21:25	3.14	37.68	23.35
11/20/2009	21:40	11/20/09 21:40	3.15	37.80	22.99
11/20/2009	21:55	11/20/09 21:55	3.15	37.80	23.03
11/20/2009	22:10	11/20/09 22:10	3.14	37.68	22.97
11/20/2009	22:25	11/20/09 22:25	3.14	37.68	23.03
11/20/2009	22:40	11/20/09 22:40	3.15	37.80	23.03
11/20/2009	22:55	11/20/09 22:55	3.15	37.80	23.09
11/20/2009	23:10	11/20/09 23:10	3.13	37.56	23.03
11/20/2009	23:25	11/20/09 23:25	3.13	37.56	23.03

Date	Time	Date + Time	Outdoor Barometric Pressure (in)
11/22/2009	6:00	11/22/09 6:00	30.14
11/22/2009	6:15	11/22/09 6:15	30.14
11/22/2009	6:30	11/22/09 6:30	30.14
11/22/2009	6:45	11/22/09 6:45	30.15
11/22/2009	7:00	11/22/09 7:00	30.16
11/22/2009	7:15	11/22/09 7:15	30.16
11/22/2009	7:30	11/22/09 7:30	30.16
11/22/2009	7:45	11/22/09 7:45	30.17
11/22/2009	8:00	11/22/09 8:00	30.18
11/22/2009	8:15	11/22/09 8:15	30.18
11/22/2009	8:30	11/22/09 8:30	30.19
11/22/2009	8:45	11/22/09 8:45	30.19
11/22/2009	9:00	11/22/09 9:00	30.18
11/22/2009	9:15	11/22/09 9:15	30.18
11/22/2009	9:30	11/22/09 9:30	30.18
11/22/2009	9:45	11/22/09 9:45	30.18
11/22/2009	10:00	11/22/09 10:00	30.18

TABLE 5-8
Summary of Building 137 Phase I Pressure Differential Monitoring Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Date	Time	Date + Time	Maximum Differential Pressure[d] [Pa]	Minimum Differential Pressure[d] [Pa]	Average Pressure [Pa]
11/20/2009	23:55	11/20/09 23:55	0	0	0
11/21/2009	0:10	11/21/09 0:10	0.5	0	0.25
11/21/2009	0:25	11/21/09 0:25	0	0	0
11/21/2009	0:40	11/21/09 0:40	0.5	0	0.25
11/21/2009	0:55	11/21/09 0:55	0	0	0
11/21/2009	1:10	11/21/09 1:10	0	0	0
11/21/2009	1:25	11/21/09 1:25	0	0	0
11/21/2009	1:40	11/21/09 1:40	0.5	0	0.25
11/21/2009	1:55	11/21/09 1:55	0.5	0	0.25
11/21/2009	2:10	11/21/09 2:10	0	0	0
11/21/2009	2:25	11/21/09 2:25	0	-0.5	-0.25
11/21/2009	2:40	11/21/09 2:40	0	0	0
11/21/2009	2:55	11/21/09 2:55	0	-0.5	-0.25
11/21/2009	3:10	11/21/09 3:10	0.5	0	0.25
11/21/2009	3:25	11/21/09 3:25	0.5	0	0.25
11/21/2009	3:40	11/21/09 3:40	0	0	0
11/21/2009	3:55	11/21/09 3:55	0.5	0	0.25
11/21/2009	4:10	11/21/09 4:10	0.5	0	0.25
11/21/2009	4:25	11/21/09 4:25	0.5	0	0.25
11/21/2009	4:40	11/21/09 4:40	0.5	0	0.25
11/21/2009	4:55	11/21/09 4:55	0.5	0	0.25
11/21/2009	5:10	11/21/09 5:10	0.5	0	0.25
11/21/2009	5:25	11/21/09 5:25	0.5	0	0.25
11/21/2009	5:40	11/21/09 5:40	1	-0.5	0.25
11/21/2009	5:55	11/21/09 5:55	0.5	0	0.25
11/21/2009	6:10	11/21/09 6:10	0.5	-0.5	0
11/21/2009	6:25	11/21/09 6:25	0.5	0	0.25
11/21/2009	6:40	11/21/09 6:40	1.5	-1	0.25
11/21/2009	6:55	11/21/09 6:55	1.5	-1	0.25
11/21/2009	7:10	11/21/09 7:10	0	-0.5	-0.25
11/21/2009	7:25	11/21/09 7:25	0.5	0	0.25
11/21/2009	7:40	11/21/09 7:40	1.5	-0.5	0.5
11/21/2009	7:55	11/21/09 7:55	2.5	-1.5	0.5
11/21/2009	8:10	11/21/09 8:10	1.5	-0.5	0.5
11/21/2009	8:25	11/21/09 8:25	1.5	-1	0.25
11/21/2009	8:40	11/21/09 8:40	1	-0.5	0.25
11/21/2009	8:55	11/21/09 8:55	0.5	-0.5	0
11/21/2009	9:10	11/21/09 9:10	1	-0.5	0.25
11/21/2009	9:25	11/21/09 9:25	0.5	0	0.25
11/21/2009	9:40	11/21/09 9:40	0.5	-1	-0.25
11/21/2009	9:55	11/21/09 9:55	0.5	0	0.25

Date	Time	Date + Time	Indoor Barometric Pressure (ft)	Indoor Barometric Pressure (in) [e]	Temperature (°C)
11/20/2009	23:40	11/20/09 23:40	3.13	37.56	23.23
11/20/2009	23:55	11/20/09 23:55	3.11	37.32	23.16
11/21/2009	0:10	11/21/09 0:10	3.13	37.56	23.20
11/21/2009	0:25	11/21/09 0:25	3.13	37.56	23.49
11/21/2009	0:40	11/21/09 0:40	3.13	37.56	23.83
11/21/2009	0:55	11/21/09 0:55	3.12	37.44	24.09
11/21/2009	1:10	11/21/09 1:10	3.12	37.44	24.26
11/21/2009	1:25	11/21/09 1:25	3.12	37.44	24.39
11/21/2009	1:40	11/21/09 1:40	3.11	37.32	23.55
11/21/2009	1:55	11/21/09 1:55	3.12	37.44	23.34
11/21/2009	2:10	11/21/09 2:10	3.12	37.44	23.27
11/21/2009	2:25	11/21/09 2:25	3.1	37.20	23.55
11/21/2009	2:40	11/21/09 2:40	3.11	37.32	23.73
11/21/2009	2:55	11/21/09 2:55	3.1	37.20	23.56
11/21/2009	3:10	11/21/09 3:10	3.1	37.20	23.35
11/21/2009	3:25	11/21/09 3:25	3.12	37.44	23.21
11/21/2009	3:40	11/21/09 3:40	3.11	37.32	23.20
11/21/2009	3:55	11/21/09 3:55	3.13	37.56	22.99
11/21/2009	4:10	11/21/09 4:10	3.13	37.56	23.00
11/21/2009	4:25	11/21/09 4:25	3.11	37.32	23.03
11/21/2009	4:40	11/21/09 4:40	3.11	37.32	22.94
11/21/2009	4:55	11/21/09 4:55	3.12	37.44	22.93
11/21/2009	5:10	11/21/09 5:10	3.11	37.32	22.97
11/21/2009	5:25	11/21/09 5:25	3.14	37.68	22.96
11/21/2009	5:40	11/21/09 5:40	3.13	37.56	22.91
11/21/2009	5:55	11/21/09 5:55	3.14	37.68	22.96
11/21/2009	6:10	11/21/09 6:10	3.14	37.68	23.05
11/21/2009	6:25	11/21/09 6:25	3.15	37.80	23.46
11/21/2009	6:40	11/21/09 6:40	3.14	37.68	23.84
11/21/2009	6:55	11/21/09 6:55	3.15	37.80	24.09
11/21/2009	7:10	11/21/09 7:10	3.15	37.80	24.05
11/21/2009	7:25	11/21/09 7:25	3.13	37.56	23.49
11/21/2009	7:40	11/21/09 7:40	3.17	38.04	23.22
11/21/2009	7:55	11/21/09 7:55	3.16	37.92	22.93
11/21/2009	8:10	11/21/09 8:10	3.16	37.92	22.71
11/21/2009	8:25	11/21/09 8:25	3.16	37.92	22.56
11/21/2009	8:40	11/21/09 8:40	3.16	37.92	22.71
11/21/2009	8:55	11/21/09 8:55	3.16	37.92	23.17
11/21/2009	9:10	11/21/09 9:10	3.18	38.16	23.02
11/21/2009	9:25	11/21/09 9:25	3.17	38.04	23.30
11/21/2009	9:40	11/21/09 9:40	3.16	37.92	23.19

TABLE 5-8
Summary of Building 137 Phase I Pressure Differential Monitoring Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Date	Time	Date + Time	Maximum Differential Pressure[d] [Pa]	Minimum Differential Pressure[d] [Pa]	Average Pressure [Pa]
11/21/2009	10:10	11/21/09 10:10	1.5	-1	0.25
11/21/2009	10:25	11/21/09 10:25	1	-0.5	0.25
11/21/2009	10:40	11/21/09 10:40	0.5	-0.5	0
11/21/2009	10:55	11/21/09 10:55	1	-0.5	0.25
11/21/2009	11:10	11/21/09 11:10	0.5	-0.5	0
11/21/2009	11:25	11/21/09 11:25	1.5	-0.5	0.5
11/21/2009	11:40	11/21/09 11:40	0.5	-0.5	0
11/21/2009	11:55	11/21/09 11:55	1	-0.5	0.25
11/21/2009	12:10	11/21/09 12:10	0.5	-0.5	0
11/21/2009	12:25	11/21/09 12:25	1	-0.5	0.25
11/21/2009	12:40	11/21/09 12:40	3.5	-1.5	1
11/21/2009	12:55	11/21/09 12:55	0.5	0	0.25
11/21/2009	13:10	11/21/09 13:10	0.5	-0.5	0
11/21/2009	13:25	11/21/09 13:25	1	-0.5	0.25
11/21/2009	13:40	11/21/09 13:40	1	-0.5	0.25
11/21/2009	13:55	11/21/09 13:55	2	-1	0.5
11/21/2009	14:10	11/21/09 14:10	1	0	0.5
11/21/2009	14:25	11/21/09 14:25	0	0	0
11/21/2009	14:40	11/21/09 14:40	1	-0.5	0.25
11/21/2009	14:55	11/21/09 14:55	0	-0.5	-0.25
11/21/2009	15:10	11/21/09 15:10	0	0	0
11/21/2009	15:25	11/21/09 15:25	0.5	0	0.25
11/21/2009	15:40	11/21/09 15:40	0.5	0	0.25
11/21/2009	15:55	11/21/09 15:55	0.5	0	0.25
11/21/2009	16:10	11/21/09 16:10	0.5	0	0.25
11/21/2009	16:25	11/21/09 16:25	0.5	0	0.25
11/21/2009	16:40	11/21/09 16:40	0	0	0
11/21/2009	16:55	11/21/09 16:55	0.5	0	0.25
11/21/2009	17:10	11/21/09 17:10	0.5	0	0.25
11/21/2009	17:25	11/21/09 17:25	0	0	0
11/21/2009	17:40	11/21/09 17:40	0.5	0	0.25
11/21/2009	17:55	11/21/09 17:55	0	0	0
11/21/2009	18:10	11/21/09 18:10	0	0	0
11/21/2009	18:25	11/21/09 18:25	0	0	0
11/21/2009	18:40	11/21/09 18:40	0	0	0
11/21/2009	18:55	11/21/09 18:55	0	0	0
11/21/2009	19:10	11/21/09 19:10	0	-0.5	-0.25
11/21/2009	19:25	11/21/09 19:25	0	0	0
11/21/2009	19:40	11/21/09 19:40	0.5	0	0.25
11/21/2009	19:55	11/21/09 19:55	0	0	0
11/21/2009	20:10	11/21/09 20:10	0	-0.5	-0.25
11/21/2009	20:25	11/21/09 20:25	0.5	-0.5	0

Date	Time	Date + Time	Indoor Barometric Pressure (ft)	Indoor Barometric Pressure (in) [e]	Temperature (°C)
11/21/2009	9:55	11/21/09 9:55	3.18	38.16	23.24
11/21/2009	10:10	11/21/09 10:10	3.15	37.80	23.61
11/21/2009	10:25	11/21/09 10:25	3.14	37.68	23.24
11/21/2009	10:40	11/21/09 10:40	3.15	37.80	23.07
11/21/2009	10:55	11/21/09 10:55	3.14	37.68	23.20
11/21/2009	11:10	11/21/09 11:10	3.13	37.56	23.11
11/21/2009	11:25	11/21/09 11:25	3.14	37.68	22.83
11/21/2009	11:40	11/21/09 11:40	3.13	37.56	22.60
11/21/2009	11:55	11/21/09 11:55	3.12	37.44	22.47
11/21/2009	12:10	11/21/09 12:10	3.12	37.44	22.45
11/21/2009	12:25	11/21/09 12:25	3.13	37.56	22.67
11/21/2009	12:40	11/21/09 12:40	3.14	37.68	22.62
11/21/2009	12:55	11/21/09 12:55	3.11	37.32	22.63
11/21/2009	13:10	11/21/09 13:10	3.12	37.44	22.63
11/21/2009	13:25	11/21/09 13:25	3.12	37.44	22.52
11/21/2009	13:40	11/21/09 13:40	3.12	37.44	22.43
11/21/2009	13:55	11/21/09 13:55	3.13	37.56	22.47
11/21/2009	14:10	11/21/09 14:10	3.13	37.56	22.36
11/21/2009	14:25	11/21/09 14:25	3.13	37.56	22.41
11/21/2009	14:40	11/21/09 14:40	3.12	37.44	23.02
11/21/2009	14:55	11/21/09 14:55	3.14	37.68	23.55
11/21/2009	15:10	11/21/09 15:10	3.13	37.56	23.91
11/21/2009	15:25	11/21/09 15:25	3.12	37.44	23.77
11/21/2009	15:40	11/21/09 15:40	3.13	37.56	23.55
11/21/2009	15:55	11/21/09 15:55	3.14	37.68	23.59
11/21/2009	16:10	11/21/09 16:10	3.15	37.80	23.64
11/21/2009	16:25	11/21/09 16:25	3.14	37.68	23.70
11/21/2009	16:40	11/21/09 16:40	3.14	37.68	23.78
11/21/2009	16:55	11/21/09 16:55	3.14	37.68	23.80
11/21/2009	17:10	11/21/09 17:10	3.15	37.80	23.83
11/21/2009	17:25	11/21/09 17:25	3.14	37.68	23.83
11/21/2009	17:40	11/21/09 17:40	3.16	37.92	23.84
11/21/2009	17:55	11/21/09 17:55	3.16	37.92	23.85
11/21/2009	18:10	11/21/09 18:10	3.18	38.16	23.85
11/21/2009	18:25	11/21/09 18:25	3.17	38.04	23.83
11/21/2009	18:40	11/21/09 18:40	3.18	38.16	23.81
11/21/2009	18:55	11/21/09 18:55	3.19	38.28	23.80
11/21/2009	19:10	11/21/09 19:10	3.18	38.16	23.80
11/21/2009	19:25	11/21/09 19:25	3.18	38.16	23.79
11/21/2009	19:40	11/21/09 19:40	3.19	38.28	23.79
11/21/2009	19:55	11/21/09 19:55	3.19	38.28	23.77
11/21/2009	20:10	11/21/09 20:10	3.19	38.28	23.76

TABLE 5-8
Summary of Building 137 Phase I Pressure Differential Monitoring Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Date	Time	Date + Time	Maximum Differential Pressure[d] [Pa]	Minimum Differential Pressure[d] [Pa]	Average Pressure [Pa]
11/21/2009	20:40	11/21/09 20:40	0	-0.5	-0.25
11/21/2009	20:55	11/21/09 20:55	0	-0.5	-0.25
11/21/2009	21:10	11/21/09 21:10	0.5	0	0.25
11/21/2009	21:25	11/21/09 21:25	0	0	0
11/21/2009	21:40	11/21/09 21:40	0	-0.5	-0.25
11/21/2009	21:55	11/21/09 21:55	0.5	-0.5	0
11/21/2009	22:10	11/21/09 22:10	0	0	0
11/21/2009	22:25	11/21/09 22:25	0	-0.5	-0.25
11/21/2009	22:40	11/21/09 22:40	0	-0.5	-0.25
11/21/2009	22:55	11/21/09 22:55	0.5	0	0.25
11/21/2009	23:10	11/21/09 23:10	0.5	0	0.25
11/21/2009	23:25	11/21/09 23:25	0	0	0
11/21/2009	23:40	11/21/09 23:40	0	0	0
11/21/2009	23:55	11/21/09 23:55	0	0	0
11/22/2009	0:10	11/22/09 0:10	0	0	0
11/22/2009	0:25	11/22/09 0:25	0	0	0
11/22/2009	0:40	11/22/09 0:40	0	0	0
11/22/2009	0:55	11/22/09 0:55	0	0	0
11/22/2009	1:10	11/22/09 1:10	0	0	0
11/22/2009	1:25	11/22/09 1:25	0	0	0
11/22/2009	1:40	11/22/09 1:40	0	0	0
11/22/2009	1:55	11/22/09 1:55	0	0	0
11/22/2009	2:10	11/22/09 2:10	0.5	-0.5	0
11/22/2009	2:25	11/22/09 2:25	0	0	0
11/22/2009	2:40	11/22/09 2:40	0	-0.5	-0.25
11/22/2009	2:55	11/22/09 2:55	0.5	0	0.25
11/22/2009	3:10	11/22/09 3:10	0.5	0	0.25
11/22/2009	3:25	11/22/09 3:25	0	0	0
11/22/2009	3:40	11/22/09 3:40	0	0	0
11/22/2009	3:55	11/22/09 3:55	0	-0.5	-0.25
11/22/2009	4:10	11/22/09 4:10	0.5	0	0.25
11/22/2009	4:25	11/22/09 4:25	0	-0.5	-0.25
11/22/2009	4:40	11/22/09 4:40	0.5	0	0.25
11/22/2009	4:55	11/22/09 4:55	0	0	0
11/22/2009	5:10	11/22/09 5:10	0	0	0
11/22/2009	5:25	11/22/09 5:25	0.5	0	0.25
11/22/2009	5:40	11/22/09 5:40	0.5	0	0.25
11/22/2009	5:55	11/22/09 5:55	0	0	0
11/22/2009	6:10	11/22/09 6:10	0	0	0
11/22/2009	6:25	11/22/09 6:25	0	0	0
11/22/2009	6:40	11/22/09 6:40	0	0	0
11/22/2009	6:55	11/22/09 6:55	0.5	0	0.25
11/22/2009	7:10	11/22/09 7:10	0	0	0
11/22/2009	7:25	11/22/09 7:25	0.5	0	0.25
11/22/2009	7:40	11/22/09 7:40	2.5	-1	0.75
11/22/2009	7:55	11/22/09 7:55	2	-1	0.5
11/22/2009	8:10	11/22/09 8:10	1.5	-1	0.25

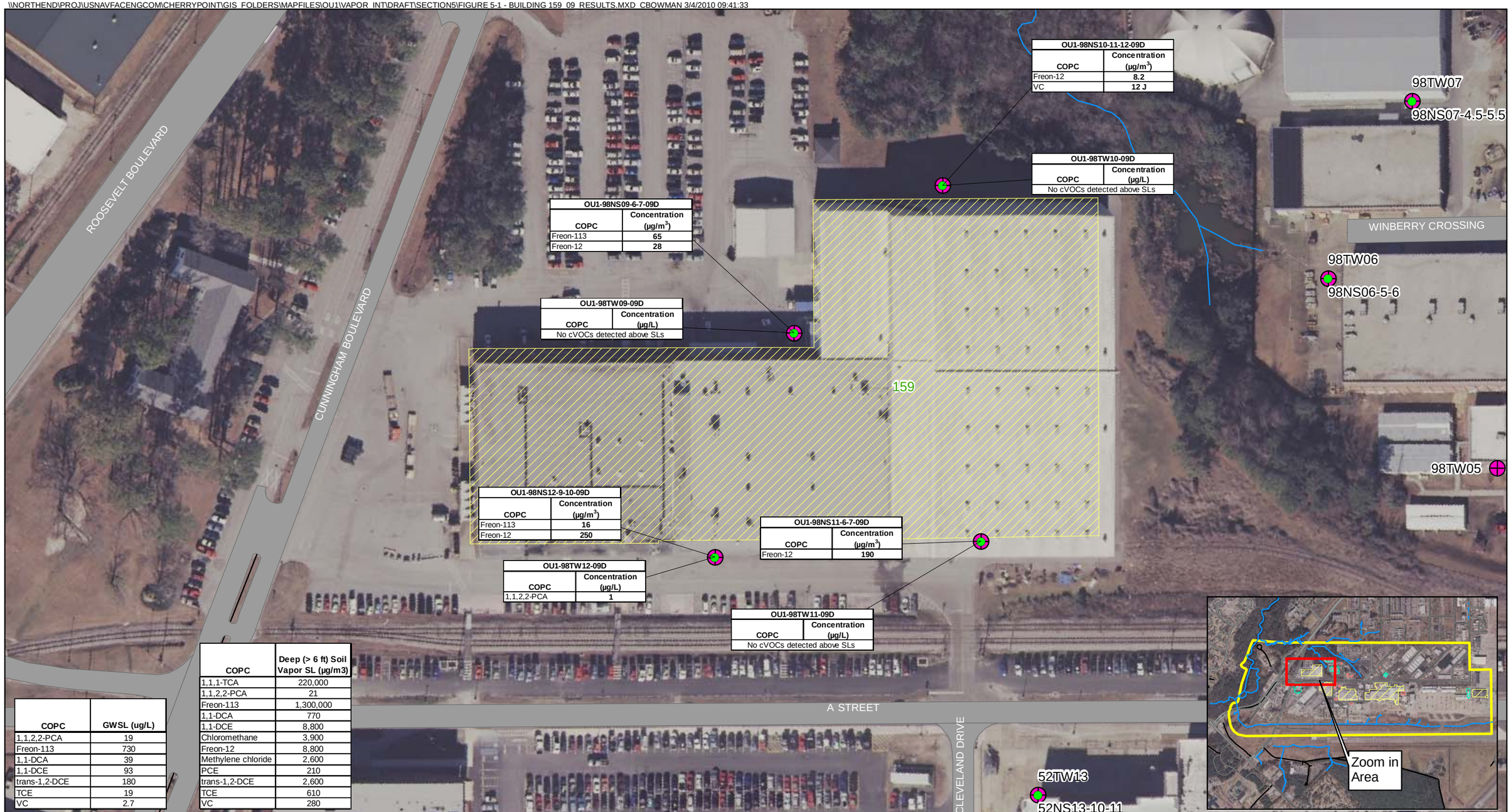
Date	Time	Date + Time	Indoor Barometric Pressure (ft)	Indoor Barometric Pressure (in) [e]	Temperature (°C)
11/21/2009	20:25	11/21/09 20:25	3.2	38.40	23.75
11/21/2009	20:40	11/21/09 20:40	3.18	38.16	23.74
11/21/2009	20:55	11/21/09 20:55	3.17	38.04	23.73
11/21/2009	21:10	11/21/09 21:10	3.19	38.28	23.69
11/21/2009	21:25	11/21/09 21:25	3.19	38.28	23.71
11/21/2009	21:40	11/21/09 21:40	3.19	38.28	23.67
11/21/2009	21:55	11/21/09 21:55	3.19	38.28	23.67
11/21/2009	22:10	11/21/09 22:10	3.18	38.16	23.67
11/21/2009	22:25	11/21/09 22:25	3.17	38.04	23.66
11/21/2009	22:40	11/21/09 22:40	3.18	38.16	23.62
11/21/2009	22:55	11/21/09 22:55	3.16	37.92	23.62
11/21/2009	23:10	11/21/09 23:10	3.18	38.16	23.59
11/21/2009	23:25	11/21/09 23:25	3.18	38.16	23.60
11/21/2009	23:40	11/21/09 23:40	3.18	38.16	23.59
11/21/2009	23:55	11/21/09 23:55	3.18	38.16	23.59
11/22/2009	0:10	11/22/09 0:10	3.18	38.16	23.56
11/22/2009	0:25	11/22/09 0:25	3.18	38.16	23.55
11/22/2009	0:40	11/22/09 0:40	3.18	38.16	23.54
11/22/2009	0:55	11/22/09 0:55	3.36	40.32	23.52
11/22/2009	1:10	11/22/09 1:10	3.17	38.04	23.53
11/22/2009	1:25	11/22/09 1:25	3.18	38.16	23.49
11/22/2009	1:40	11/22/09 1:40	3.21	38.52	23.48
11/22/2009	1:55	11/22/09 1:55	3.18	38.16	23.47
11/22/2009	2:10	11/22/09 2:10	3.18	38.16	23.47
11/22/2009	2:25	11/22/09 2:25	3.18	38.16	23.42
11/22/2009	2:40	11/22/09 2:40	3.17	38.04	23.43
11/22/2009	2:55	11/22/09 2:55	3.18	38.16	23.41
11/22/2009	3:10	11/22/09 3:10	3.18	38.16	23.38
11/22/2009	3:25	11/22/09 3:25	3.18	38.16	23.38
11/22/2009	3:40	11/22/09 3:40	3.19	38.28	23.37
11/22/2009	3:55	11/22/09 3:55	3.18	38.16	23.37
11/22/2009	4:10	11/22/09 4:10	3.2	38.40	23.35
11/22/2009	4:25	11/22/09 4:25	3.19	38.28	23.34
11/22/2009	4:40	11/22/09 4:40	3.19	38.28	23.31
11/22/2009	4:55	11/22/09 4:55	3.2	38.40	23.30
11/22/2009	5:10	11/22/09 5:10	3.21	38.52	23.27
11/22/2009	5:25	11/22/09 5:25	3.2	38.40	23.26
11/22/2009	5:40	11/22/09 5:40	3.22	38.64	23.29
11/22/2009	5:55	11/22/09 5:55	3.21	38.52	23.26
11/22/2009	6:10	11/22/09 6:10	3.21	38.52	23.27
11/22/2009	6:25	11/22/09 6:25	3.24	38.88	23.23
11/22/2009	6:40	11/22/09 6:40	3.24	38.88	23.22
11/22/2009	6:55	11/22/09 6:55	3.25	39.00	23.23
11/22/2009	7:10	11/22/09 7:10	3.25	39.00	23.22
11/22/2009	7:25	11/22/09 7:25	3.26	39.12	23.21
11/22/2009	7:40	11/22/09 7:40	3.27	39.24	23.23
11/22/2009	7:55	11/22/09 7:55	3.25	39.00	23.29
11/22/2009	8:10	11/22/09 8:10	3.25	39.00	23.35

TABLE 5-9
Interpretation Matrix for Pressure Differential Monitoring Results
Phase I Vapor Intrusion Report
MCAS Cherry Point, Havelock, North Carolina

Condition	Description	Comments	Possible Outcome
Possitively Pressurized	Consistent pressure measurements of > 6 to 9 Pa relative to outdoors or subsurface.	Based on the pressure difference needed to prevent soil gas intrusion in a structure with combined heating and appliance or fan operation effects (0.025 or 0.035 in water, based on USEPA, 1993).	No apparent driver for vapor intrusion pathway. Further investigation may not be needed.
Neutral to Positively Pressurized	Consistent pressure measurements of < 2 to 5 Pa relative to outdoors or subsurface. OR Highly variable pressure measurements typically greater than zero.	Minimum acceptable pressure difference needed to prevent in a structure with either heating effects OR appliance/fan effects (0.01 to	Potential transient (intermitent) driver for vapor intrusion pathway may be present. Further investigation may be warranted to identify a potential source for vapor intrusion (i.e. groundwater sampling).
Neutral to Negatively Pressurized	Consistent pressure measurements of -5 to < 2 Pa relative to outdoors or subsurface. OR Highly variable pressure measurements < 5 Pa.	Range of depressurization that could occur either from heating effects OR appliance/fan effects (0.01 to	Potential transient (intermitent) driver for vapor intrusion pathway may be present. Further investigation may be warranted to identify a potential source and trasport
Negatively Pressurized	Consistent pressure measurements of > -6 to -9 Pa relative to outdoors or subsurface.	Range of depressurization that could occur either from heating effects OR appliance/fan effects (0.025 to 0.035 in water, based on USEPA, 1993).	Potential driver for vapor intrusion pathway. Further investigation may be warranted. Consideration may need to be given to sub slab and/or indoor air sampling.

Note: 1 Pa = 0.004 inches of water
Table Adapted from U.S. Environmental Protection Agency (USEPA). 1993. *Radon Reduction Techniques for Existing Detached Houses. Technical Guidance*

\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION5\FIGURE 5-1 - BUILDING 159_09_RESULTS.MXD CBOWMAN 3/4/2010 09:41:33



OU1-98NS10-11-12-09D	
COPC	Concentration (µg/m³)
Freon-12	8.2
VC	12 J

OU1-98TW10-09D	
COPC	Concentration (µg/L)
No cVOCs detected above SLs	

OU1-98NS09-6-7-09D	
COPC	Concentration (µg/m³)
Freon-113	65
Freon-12	28

OU1-98TW09-09D	
COPC	Concentration (µg/L)
No cVOCs detected above SLs	

OU1-98NS12-9-10-09D	
COPC	Concentration (µg/m³)
Freon-113	16
Freon-12	250

OU1-98NS11-6-7-09D	
COPC	Concentration (µg/m³)
Freon-12	190

OU1-98TW12-09D	
COPC	Concentration (µg/L)
1,1,2,2-PCA	1

OU1-98TW11-09D	
COPC	Concentration (µg/L)
No cVOCs detected above SLs	

COPC	GWSL (ug/L)
1,1,2,2-PCA	19
Freon-113	730
1,1-DCA	39
1,1-DCE	93
trans-1,2-DCE	180
TCE	19
VC	2.7

COPC	Deep (> 6 ft) Soil Vapor SL (µg/m3)
1,1,1-TCA	220,000
1,1,2,2-PCA	21
Freon-113	1,300,000
1,1-DCA	770
1,1-DCE	8,800
Chloromethane	3,900
Freon-12	8,800
Methylene chloride	2,600
PCE	210
trans-1,2-DCE	2,600
TCE	610
VC	280

Legend

- Near Slab Soil Gas Sample Location
- Sub Slab Soil Gas Sample Location
- Temporary Well Location
- Surface Water
- OU1 Boundary
- Buildings within 100 ft of Monitoring Wells Exceeding Small Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Medium Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Large Building Criteria

Notes:
J - Analyte present but value estimated
U - The material was analyzed for but not detected
µg/m3 - Micrograms per Cubic Meter of Air
Bold indicates the analyte was detected
Shading indicates the analyte result exceeded the SL
COPC - constituent of potential concern
cVOC - chlorinated volatile organic compound
SL - screening level

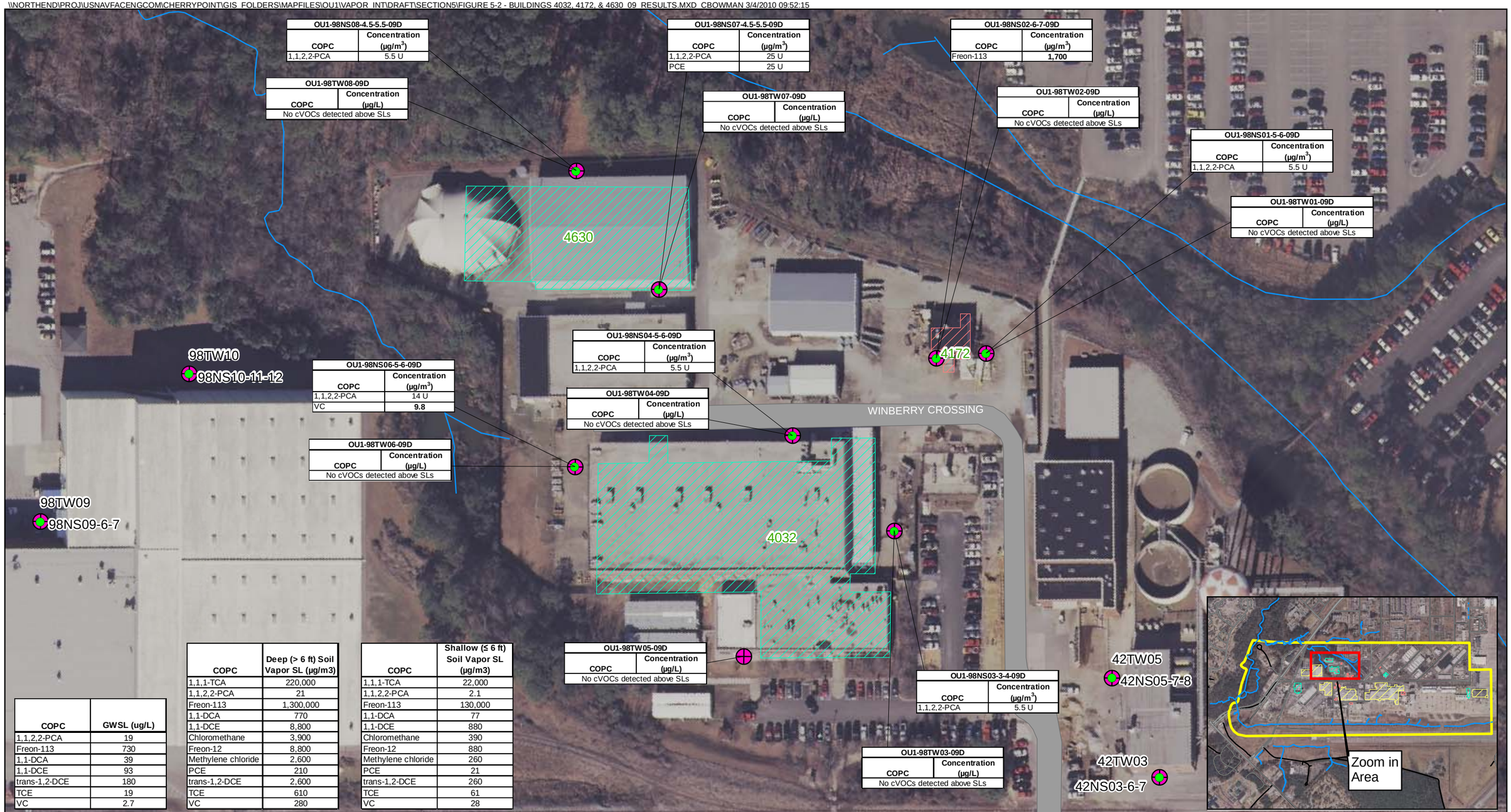
N S E W

0 100 200 Feet

Figure 5-1
Building 159
OU1 Vapor Intrusion Investigation
November 2009 Results
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

CH2MHILL

\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION5\FIGURE 5-2 - BUILDINGS 4032, 4172, & 4630_09_RESULTS.MXD CBOWMAN 3/4/2010 09:52:15



COPC	GWSL (ug/L)
1,1,2,2-PCA	19
Freon-113	730
1,1-DCA	39
1,1-DCE	93
trans-1,2-DCE	180
TCE	19
VC	2.7

COPC	Deep (> 6 ft) Soil Vapor SL (µg/m3)
1,1,1-TCA	220,000
1,1,2,2-PCA	21
Freon-113	1,300,000
1,1-DCA	770
1,1-DCE	8,800
Chloromethane	3,900
Freon-12	8,800
Methylene chloride	2,600
PCE	210
trans-1,2-DCE	2,600
TCE	610
VC	280

COPC	Shallow (≤ 6 ft) Soil Vapor SL (µg/m3)
1,1,1-TCA	22,000
1,1,2,2-PCA	2.1
Freon-113	130,000
1,1-DCA	77
1,1-DCE	880
Chloromethane	390
Freon-12	880
Methylene chloride	260
PCE	21
trans-1,2-DCE	260
TCE	61
VC	28

Legend

- Near Slab Soil Gas Sample Location
- Sub Slab Soil Gas Sample Location
- Temporary Well Location
- Surface Water
- OU1 Boundary
- Buildings within 100 ft of Monitoring Wells Exceeding Small Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Medium Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Large Building Criteria

Notes:
U - The material was analyzed for but not detected
µg/m3 - Micrograms per Cubic Meter of Air
Bold indicates the analyte was detected
Shading indicates the analyte result exceeded the SL
COPC - constituent of potential concern
cVOC - chlorinated volatile organic compound
SL - screening level

N S E W

0 100 200 Feet

Figure 5-2
Buildings 4032, 4172, & 4630
OU1 Vapor Intrusion Investigation
November 2009 Results
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

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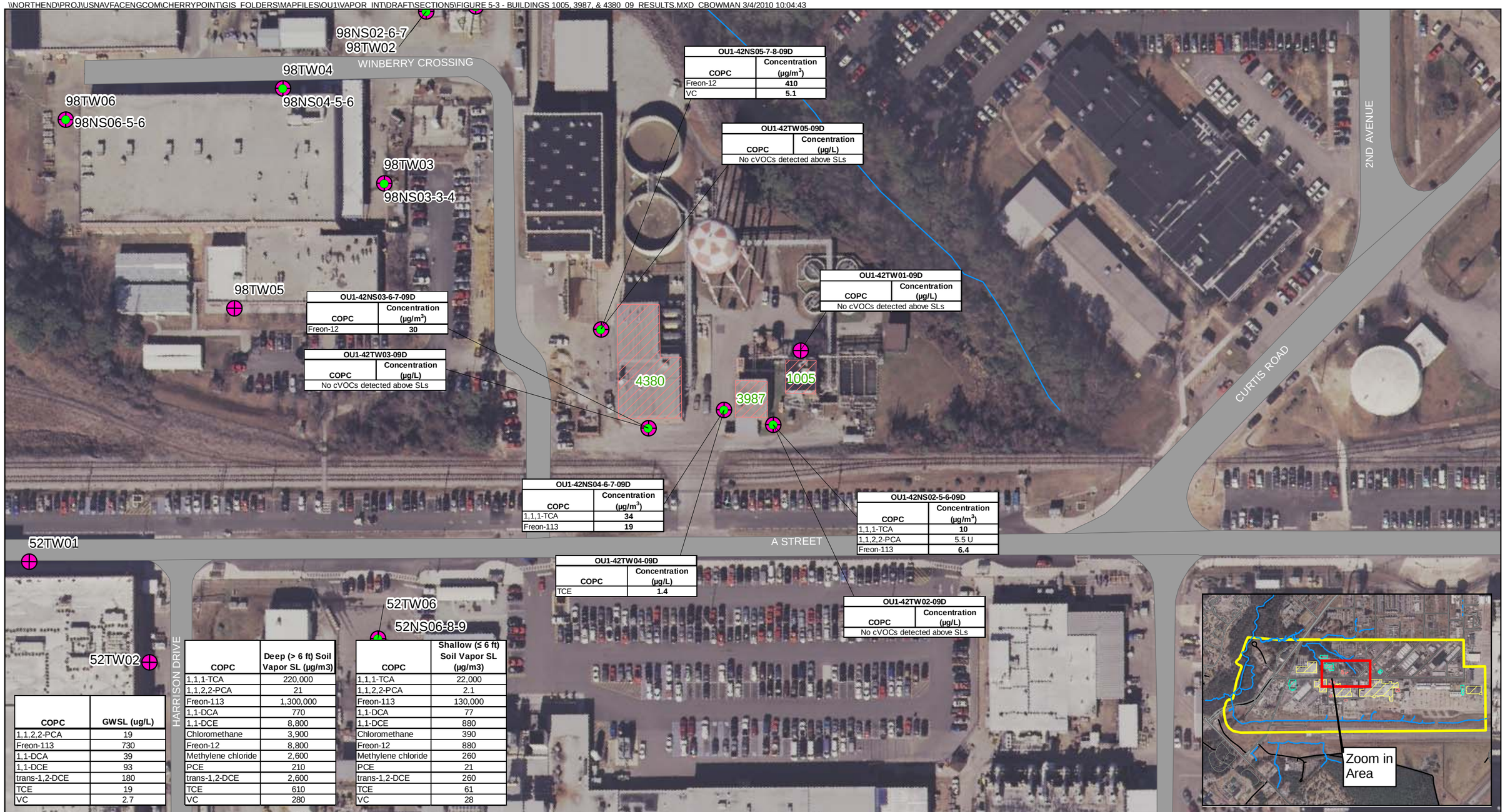
\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION5\FIGURE 5-3 - BUILDINGS 1005, 3987, & 4380_09_RESULTS.MXD CBOWMAN 3/4/2010 10:04:43



OU1-42NS05-7-8-09D	
COPC	Concentration (µg/m^3)
Freon-12	410
VC	5.1

OU1-42TW05-09D	
COPC	Concentration (µg/L)
No cVOCs detected above SLs	

OU1-42TW01-09D	
COPC	Concentration (µg/L)
No cVOCs detected above SLs	

OU1-42NS03-6-7-09D	
COPC	Concentration (µg/m^3)
Freon-12	30

OU1-42TW03-09D	
COPC	Concentration (µg/L)
No cVOCs detected above SLs	

OU1-42NS04-6-7-09D	
COPC	Concentration (µg/m^3)
1,1,1-TCA	34
Freon-113	19

OU1-42NS02-5-6-09D	
COPC	Concentration (µg/m^3)
1,1,1-TCA	10
1,1,2,2-PCA	5.5 U
Freon-113	6.4

OU1-42TW04-09D	
COPC	Concentration (µg/L)
TCE	1.4

OU1-42TW02-09D	
COPC	Concentration (µg/L)
No cVOCs detected above SLs	

COPC	GWSL (ug/L)
1,1,2,2-PCA	19
Freon-113	730
1,1-DCA	39
1,1-DCE	93
trans-1,2-DCE	180
TCE	19
VC	2.7

COPC	Deep (> 6 ft) Soil Vapor SL (µg/m3)
1,1,1-TCA	220,000
1,1,2,2-PCA	21
Freon-113	1,300,000
1,1-DCA	770
1,1-DCE	8,800
Chloromethane	3,900
Freon-12	8,800
Methylene chloride	2,600
PCE	210
trans-1,2-DCE	2,600
TCE	610
VC	280

COPC	Shallow (≤ 6 ft) Soil Vapor SL (µg/m3)
1,1,1-TCA	22,000
1,1,2,2-PCA	2.1
Freon-113	130,000
1,1-DCA	77
1,1-DCE	880
Chloromethane	390
Freon-12	880
Methylene chloride	260
PCE	21
trans-1,2-DCE	260
TCE	61
VC	28

Legend

- Near Slab Soil Gas Sample Location
- Sub Slab Soil Gas Sample Location
- Temporary Well Location
- Surface Water
- OU1 Boundary
- Buildings within 100 ft of Monitoring Wells Exceeding Small Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Medium Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Large Building Criteria

Notes:
U - The material was analyzed for but not detected
µg/m3 - Micrograms per Cubic Meter of Air
Bold indicates the analyte was detected
Shading indicates the analyte result exceeded the SL
COPC - constituent of potential concern
cVOC - chlorinated volatile organic compound
SL - screening level

N W E S

0 100 200 Feet

Figure 5-3
Buildings 1005, 3987, & 4380
OU1 Vapor Intrusion Investigation
November 2009 Results
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

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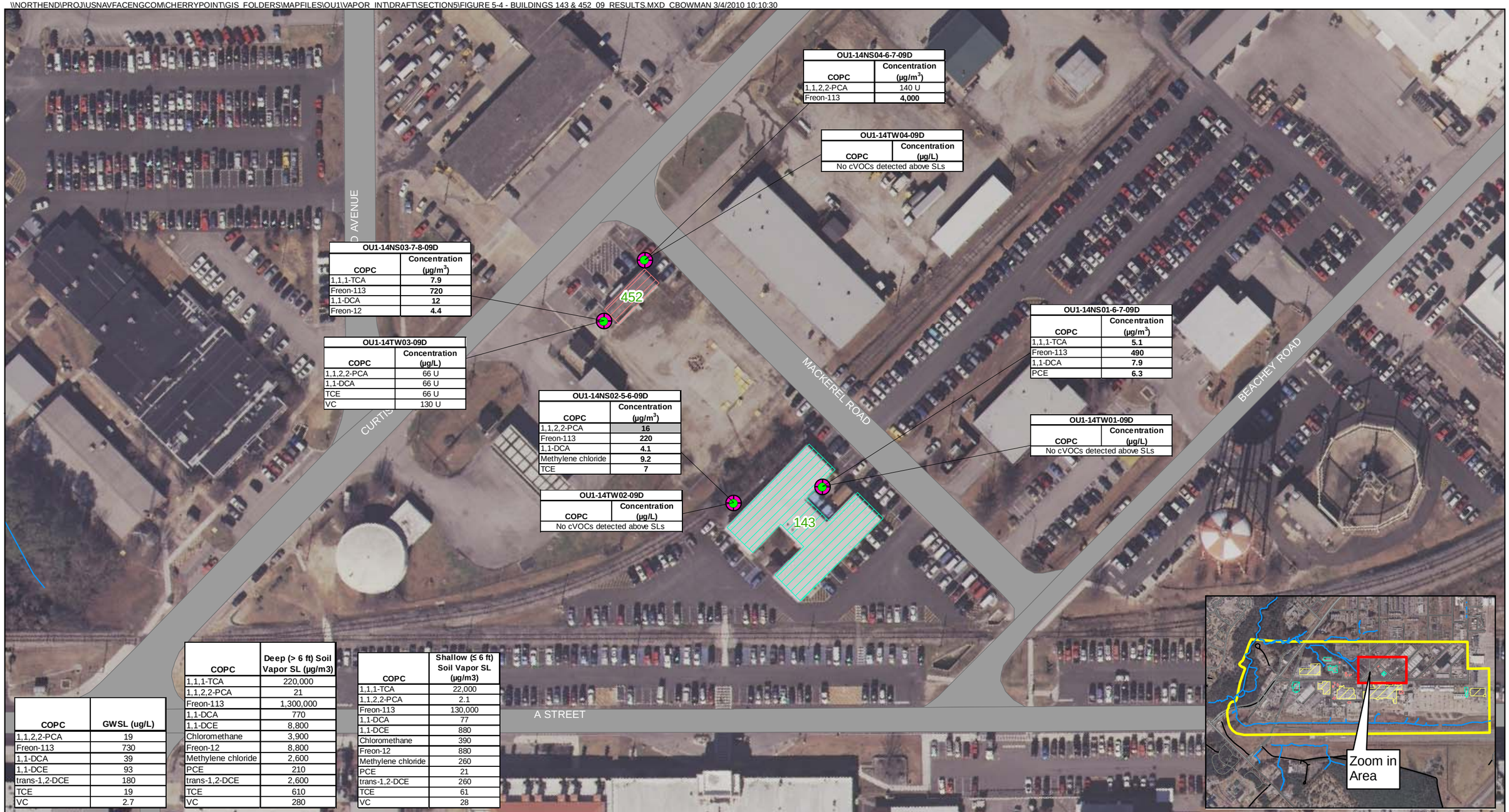
\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION5\FIGURE 5-4 - BUILDINGS 143 & 452_09_RESULTS.MXD CBOWMAN 3/4/2010 10:10:30



OU1-14NS04-6-7-09D	
COPC	Concentration (µg/m³)
1,1,2,2-PCA	140 U
Freon-113	**4,000**

OU1-14TW04-09D	
COPC	Concentration (µg/L)
No cVOCs detected above SLs	

OU1-14NS03-7-8-09D	
COPC	Concentration (µg/m³)
1,1,1-TCA	**7.9**
Freon-113	**720**
1,1-DCA	**12**
Freon-12	**4.4**

OU1-14TW03-09D	
COPC	Concentration (µg/L)
1,1,2,2-PCA	66 U
1,1-DCA	66 U
TCE	66 U
VC	130 U

OU1-14NS01-6-7-09D	
COPC	Concentration (µg/m³)
1,1,1-TCA	**5.1**
Freon-113	**490**
1,1-DCA	**7.9**
PCE	**6.3**

OU1-14NS02-5-6-09D	
COPC	Concentration (µg/m³)
1,1,2,2-PCA	**16**
Freon-113	**220**
1,1-DCA	**4.1**
Methylene chloride	**9.2**
TCE	**7**

OU1-14TW01-09D	
COPC	Concentration (µg/L)
No cVOCs detected above SLs	

OU1-14TW02-09D	
COPC	Concentration (µg/L)
No cVOCs detected above SLs	

COPC	GWSL (ug/L)
1,1,2,2-PCA	19
Freon-113	730
1,1-DCA	39
1,1-DCE	93
trans-1,2-DCE	180
TCE	19
VC	2.7

COPC	Deep (> 6 ft) Soil Vapor SL (µg/m3)
1,1,1-TCA	220,000
1,1,2,2-PCA	21
Freon-113	1,300,000
1,1-DCA	770
1,1-DCE	8,800
Chloromethane	3,900
Freon-12	8,800
Methylene chloride	2,600
PCE	210
trans-1,2-DCE	2,600
TCE	610
VC	280

COPC	Shallow (≤ 6 ft) Soil Vapor SL (µg/m3)
1,1,1-TCA	22,000
1,1,2,2-PCA	2.1
Freon-113	130,000
1,1-DCA	77
1,1-DCE	880
Chloromethane	390
Freon-12	880
Methylene chloride	260
PCE	21
trans-1,2-DCE	260
TCE	61
VC	28

Legend

- Near Slab Soil Gas Sample Location
- Sub Slab Soil Gas Sample Location
- Temporary Well Location
- Surface Water
- OU1 Boundary
- Buildings within 100 ft of Monitoring Wells Exceeding Small Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Medium Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Large Building Criteria

Notes:
U - The material was analyzed for but not detected
µg/m3 - Micrograms per Cubic Meter of Air
Bold indicates the analyte was detected
Shading indicates the analyte result exceeded the SL
COPC - constituent of potential concern
cVOC - chlorinated volatile organic compound
SL - screening level

N W E S

0 100 200 Feet

Figure 5-4
Buildings 143 & 452
OU1 Vapor Intrusion Investigation
November 2009 Results
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

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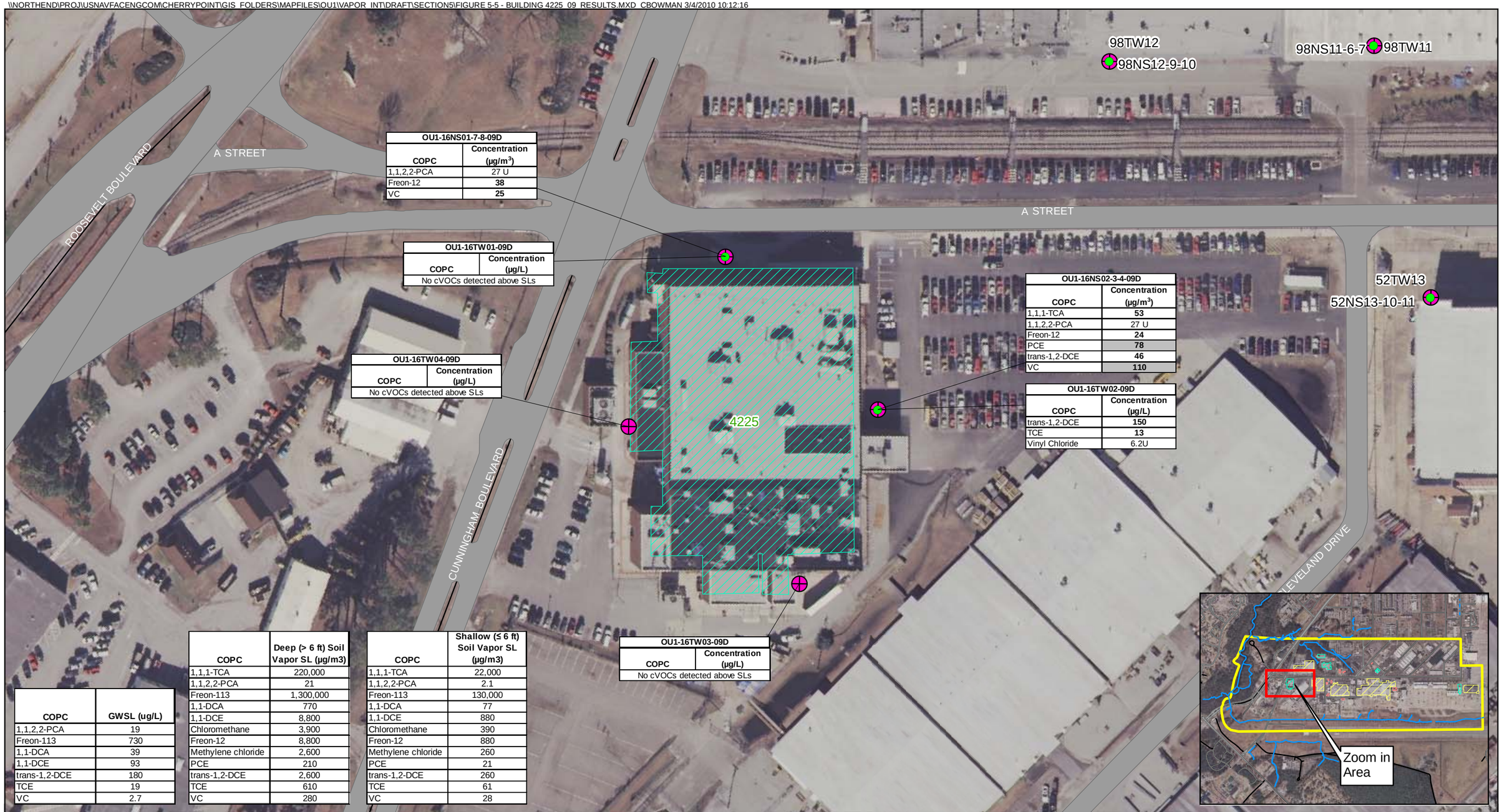
\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION5\FIGURE 5-5 - BUILDING 4225_09_RESULTS.MXD CBOWMAN 3/4/2010 10:12:16



OU1-16NS01-7-8-09D	
COPC	Concentration (µg/m³)
1,1,2,2-PCA	27 U
Freon-12	**38**
VC	**25**

OU1-16TW01-09D	
COPC	Concentration (µg/L)
No cVOCs detected above SLs	

OU1-16TW04-09D	
COPC	Concentration (µg/L)
No cVOCs detected above SLs	

OU1-16NS02-3-4-09D	
COPC	Concentration (µg/m³)
1,1,1-TCA	**53**
1,1,2,2-PCA	27 U
Freon-12	**24**
PCE	**78**
trans-1,2-DCE	**46**
VC	**110**

OU1-16TW02-09D	
COPC	Concentration (µg/L)
trans-1,2-DCE	**150**
TCE	**13**
Vinyl Chloride	6.2U

OU1-16TW03-09D	
COPC	Concentration (µg/L)
No cVOCs detected above SLs	

COPC	GWSL (ug/L)
1,1,2,2-PCA	19
Freon-113	730
1,1-DCA	39
1,1-DCE	93
trans-1,2-DCE	180
TCE	19
VC	2.7

COPC	Deep (> 6 ft) Soil Vapor SL (µg/m3)
1,1,1-TCA	220,000
1,1,2,2-PCA	21
Freon-113	1,300,000
1,1-DCA	770
1,1-DCE	8,800
Chloromethane	3,900
Freon-12	8,800
Methylene chloride	2,600
PCE	210
trans-1,2-DCE	2,600
TCE	610
VC	280

COPC	Shallow (≤ 6 ft) Soil Vapor SL (µg/m3)
1,1,1-TCA	22,000
1,1,2,2-PCA	2.1
Freon-113	130,000
1,1-DCA	77
1,1-DCE	880
Chloromethane	390
Freon-12	880
Methylene chloride	260
PCE	21
trans-1,2-DCE	260
TCE	61
VC	28

Legend

- Near Slab Soil Gas Sample Location
- Sub Slab Soil Gas Sample Location
- Temporary Well Location
- Surface Water
- OU1 Boundary
- Buildings within 100 ft of Monitoring Wells Exceeding Small Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Medium Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Large Building Criteria

Notes:
U - analyte analyzed for but not detected
µg/m3 - Micrograms per Cubic Meter of Air
BOLD indicates the analyte was detected
Shading indicates the analyte result exceeded the SL
COPC - constituent of potential concern
cVOC - chlorinated volatile organic compound
SL - screening level

N W E S

0 100 200 Feet

Figure 5-5
Building 4225
OU1 Vapor Intrusion Investigation
November 2009 Results
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

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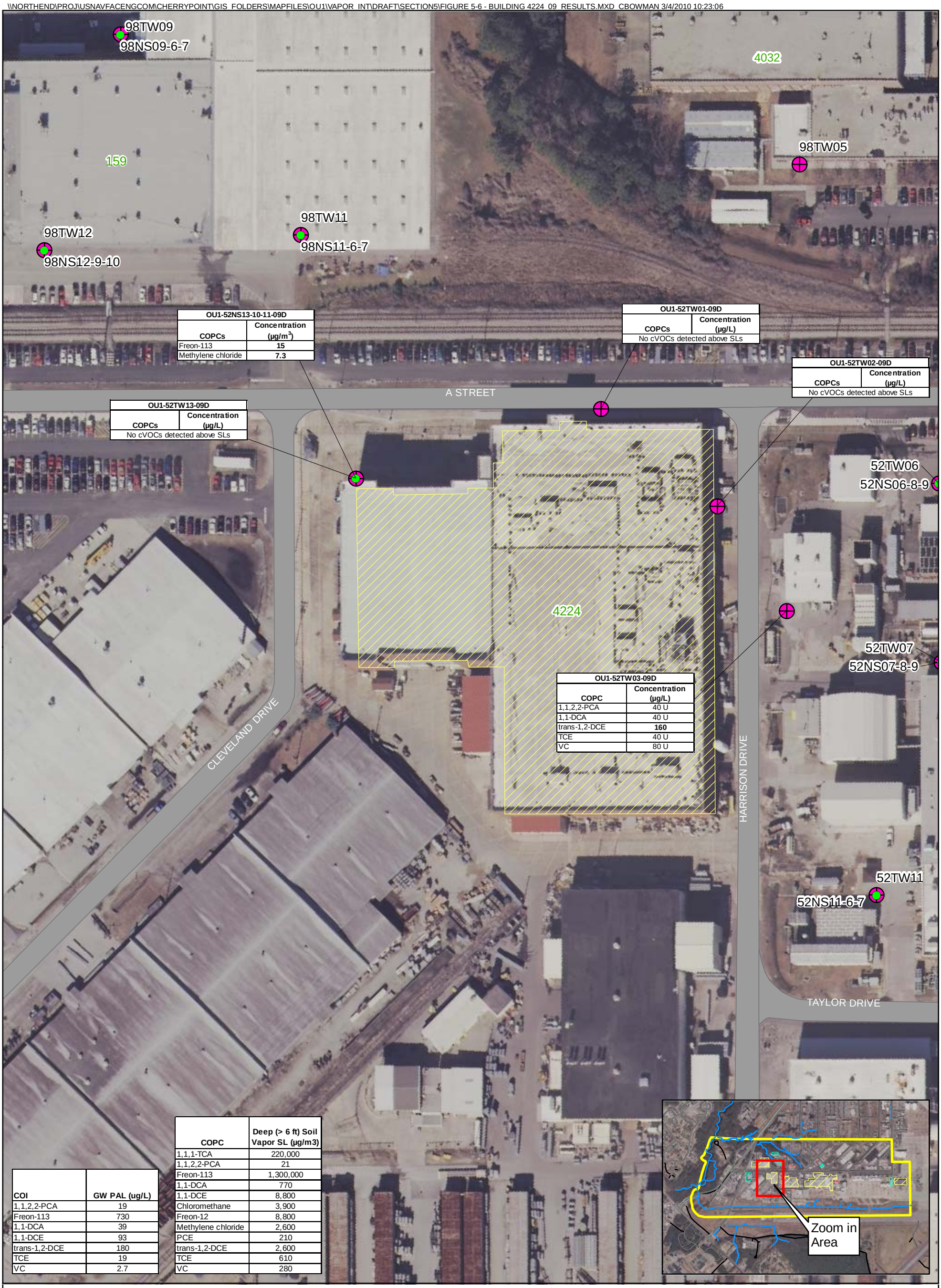
\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION5\FIGURE 5-6 - BUILDING 4224_09_RESULTS.MXD CBOWMAN 3/4/2010 10:23:06



OU1-52NS13-10-11-09D	
COPCs	Concentration (µg/m³)
Freon-113	**15**
Methylene chloride	**7.3**

OU1-52TW01-09D	
COPCs	Concentration (µg/L)
No cVOCs detected above SLs	

OU1-52TW02-09D	
COPCs	Concentration (µg/L)
No cVOCs detected above SLs	

OU1-52TW13-09D	
COPCs	Concentration (µg/L)
No cVOCs detected above SLs	

OU1-52TW03-09D	
COPC	Concentration (µg/L)
1,1,2,2-PCA	40 U
1,1-DCA	40 U
trans-1,2-DCE	**160**
TCE	40 U
VC	80 U

COI	GW PAL (ug/L)
1,1,2,2-PCA	19
Freon-113	730
1,1-DCA	39
1,1-DCE	93
trans-1,2-DCE	180
TCE	19
VC	2.7

COPC	Deep (> 6 ft) Soil Vapor SL (µg/m3)
1,1,1-TCA	220,000
1,1,2,2-PCA	21
Freon-113	1,300,000
1,1-DCA	770
1,1-DCE	8,800
Chloromethane	3,900
Freon-12	8,800
Methylene chloride	2,600
PCE	210
trans-1,2-DCE	2,600
TCE	610
VC	280

Legend

- Near Slab Soil Gas Sample Location
- Sub Slab Soil Gas Sample Location
- Temporary Well Location
- Surface Water
- Buildings within 100 ft of Monitoring Wells Exceeding Small Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Medium Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Large Building Criteria
- OU1 Boundary

Notes:
U - The material was analyzed for but not detected
µg/m3 - Micrograms per Cubic Meter of Air
BOLD indicates the analyte was detected
Shading indicates the analyte result exceeded the SL
COPC - constituent of potential concern
cVOC - chlorinated volatile organic compound
SL - screening level

0 50 100 Feet

Figure 5-6
Building 4224
OU1 Vapor Intrusion Investigation
November 2009 Results
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

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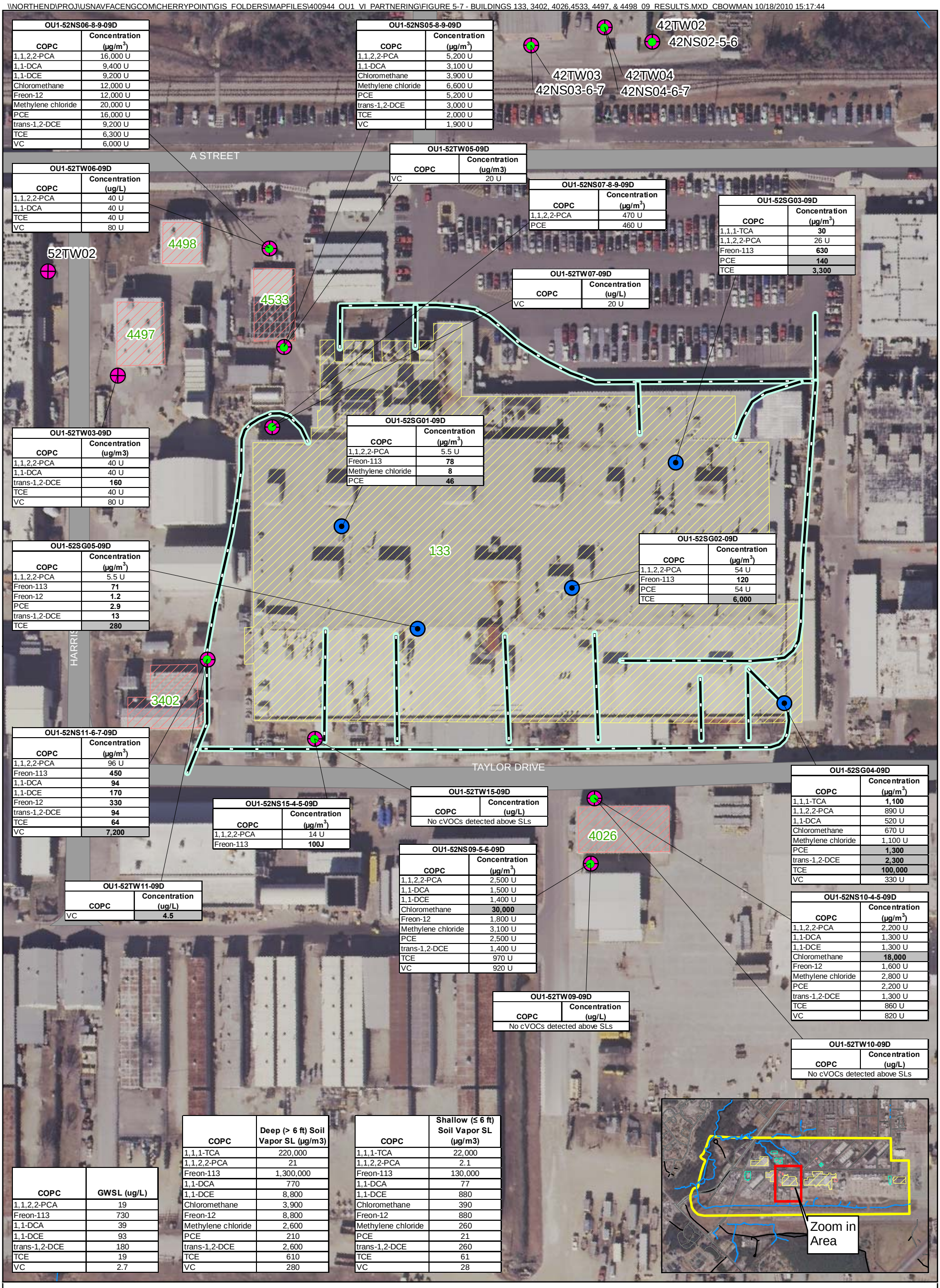
\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\400944_OU1_VI_PARTNERING\FIGURE 5-7 - BUILDINGS 133, 3402, 4026,4533, 4497, & 4498_09_RESULTS.MXD CBOWMAN 10/18/2010 15:17:44



OU1-52NS06-8-9-09D	
COPC	Concentration (µg/m³)
1,1,2,2-PCA	16,000 U
1,1-DCA	9,400 U
1,1-DCE	9,200 U
Chloromethane	12,000 U
Freon-12	12,000 U
Methylene chloride	20,000 U
PCE	16,000 U
trans-1,2-DCE	9,200 U
TCE	6,300 U
VC	6,000 U

OU1-52NS05-8-9-09D	
COPC	Concentration (µg/m³)
1,1,2,2-PCA	5,200 U
1,1-DCA	3,100 U
Chloromethane	3,900 U
Methylene chloride	6,600 U
PCE	5,200 U
trans-1,2-DCE	3,000 U
TCE	2,000 U
VC	1,900 U

OU1-52TW05-09D	
COPC	Concentration (ug/m3)
VC	20 U

OU1-52TW06-09D	
COPC	Concentration (ug/L)
1,1,2,2-PCA	40 U
1,1-DCA	40 U
TCE	40 U
VC	80 U

OU1-52NS07-8-9-09D	
COPC	Concentration (µg/m³)
1,1,2,2-PCA	470 U
PCE	460 U

OU1-52SG03-09D	
COPC	Concentration (µg/m³)
1,1,1-TCA	**30**
1,1,2,2-PCA	26 U
Freon-113	**630**
PCE	**140**
TCE	**3,300**

OU1-52TW07-09D	
COPC	Concentration (ug/L)
VC	20 U

OU1-52TW03-09D	
COPC	Concentration (ug/m3)
1,1,2,2-PCA	40 U
1,1-DCA	40 U
trans-1,2-DCE	**160**
TCE	40 U
VC	80 U

OU1-52SG01-09D	
COPC	Concentration (µg/m³)
1,1,2,2-PCA	5.5 U
Freon-113	**78**
Methylene chloride	**8**
PCE	**46**

OU1-52SG05-09D	
COPC	Concentration (µg/m³)
1,1,2,2-PCA	5.5 U
Freon-113	**71**
Freon-12	**1.2**
PCE	**2.9**
trans-1,2-DCE	**13**
TCE	**280**

OU1-52SG02-09D	
COPC	Concentration (µg/m³)
1,1,2,2-PCA	54 U
Freon-113	**120**
PCE	54 U
TCE	**6,000**

OU1-52NS11-6-7-09D	
COPC	Concentration (µg/m³)
1,1,2,2-PCA	96 U
Freon-113	**450**
1,1-DCA	**94**
1,1-DCE	**170**
Freon-12	**330**
trans-1,2-DCE	**94**
TCE	**64**
VC	**7,200**

OU1-52NS15-4-5-09D	
COPC	Concentration (µg/m³)
1,1,2,2-PCA	14 U
Freon-113	**100J**

OU1-52TW15-09D	
COPC	Concentration (ug/L)
No cVOCs detected above SLs	

OU1-52SG04-09D	
COPC	Concentration (µg/m³)
1,1,1-TCA	**1,100**
1,1,2,2-PCA	890 U
1,1-DCA	520 U
Chloromethane	670 U
Methylene chloride	1,100 U
PCE	**1,300**
trans-1,2-DCE	**2,300**
TCE	**100,000**
VC	330 U

OU1-52TW11-09D	
COPC	Concentration (ug/L)
VC	**4.5**

OU1-52NS09-5-6-09D	
COPC	Concentration (µg/m³)
1,1,2,2-PCA	2,500 U
1,1-DCA	1,500 U
1,1-DCE	1,400 U
Chloromethane	**30,000**
Freon-12	1,800 U
Methylene chloride	3,100 U
PCE	2,500 U
trans-1,2-DCE	1,400 U
TCE	970 U
VC	920 U

OU1-52NS10-4-5-09D	
COPC	Concentration (µg/m³)
1,1,2,2-PCA	2,200 U
1,1-DCA	1,300 U
1,1-DCE	1,300 U
Chloromethane	**18,000**
Freon-12	1,600 U
Methylene chloride	2,800 U
PCE	2,200 U
trans-1,2-DCE	1,300 U
TCE	860 U
VC	820 U

OU1-52TW09-09D	
COPC	Concentration (ug/L)
No cVOCs detected above SLs	

OU1-52TW10-09D	
COPC	Concentration (ug/L)
No cVOCs detected above SLs	

COPC	GWSL (ug/L)
1,1,2,2-PCA	19
Freon-113	730
1,1-DCA	39
1,1-DCE	93
trans-1,2-DCE	180
TCE	19
VC	2.7

COPC	Deep (> 6 ft) Soil Vapor SL (µg/m3)
1,1,1-TCA	220,000
1,1,2,2-PCA	21
Freon-113	1,300,000
1,1-DCA	770
1,1-DCE	8,800
Chloromethane	3,900
Freon-12	8,800
Methylene chloride	2,600
PCE	210
trans-1,2-DCE	2,600
TCE	610
VC	280

COPC	Shallow (≤ 6 ft) Soil Vapor SL (µg/m3)
1,1,1-TCA	22,000
1,1,2,2-PCA	2.1
Freon-113	130,000
1,1-DCA	77
1,1-DCE	880
Chloromethane	390
Freon-12	880
Methylene chloride	260
PCE	21
trans-1,2-DCE	260
TCE	61
VC	28

Legend

- Near Slab Soil Gas Sample Location
- Sub Slab Soil Gas Sample Location
- Temporary Well Location
- Surface Water
- Conceptual Locations of 1940s storm drainage
- Buildings within 100 ft of Monitoring Wells Exceeding Small Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Medium Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Large Building Criteria
- OU1 Boundary

Notes:
U - analyte analyzed for but not detected
J - Analyte present but value estimated
µg/m3 - Micrograms per Cubic Meter of Air
BOLD indicates the analyte was detected
Shading indicates the analyte result exceeded the SL
COPC - constituent of potential concern
cVOC - chlorinated volatile organic compound
SL - screening level

N W E S

0 50 100 Feet

Figure 5-7
Buildings 133, 3402, 4026, 4497, 4498, & 4533
OU1 Vapor Intrusion Investigation
November 2009 Results
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

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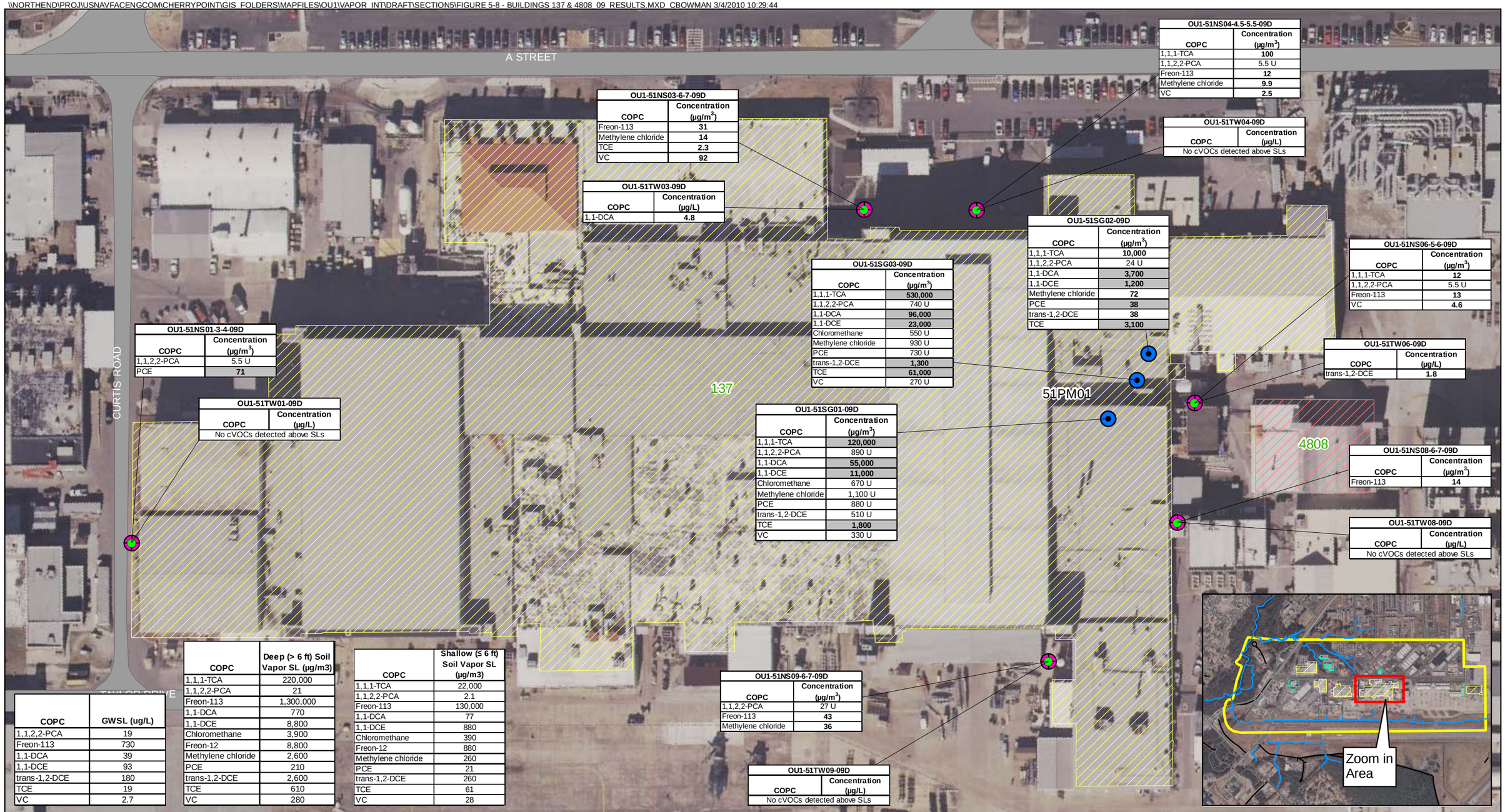
\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION5\FIGURE 5-8 - BUILDINGS 137 & 4808_09_RESULTS.MXD CBOWMAN 3/4/2010 10:29:44



OU1-51NS04-4.5-5.5-09D

COPC	Concentration (µg/m³)
1,1,1-TCA	**100**
1,1,2,2-PCA	5.5 U
Freon-113	**12**
Methylene chloride	**9.9**
VC	**2.5**

OU1-51NS03-6-7-09D

COPC	Concentration (µg/m³)
Freon-113	**31**
Methylene chloride	**14**
TCE	**2.3**
VC	**92**

OU1-51TW04-09D

COPC	Concentration (µg/L)
No cVOCs detected above SLs	

OU1-51TW03-09D

COPC	Concentration (µg/L)
1,1-DCA	**4.8**

OU1-51SG02-09D

COPC	Concentration (µg/m³)
1,1,1-TCA	**10,000**
1,1,2,2-PCA	24 U
1,1-DCA	**3,700**
1,1-DCE	**1,200**
Methylene chloride	**72**
PCE	**38**
trans-1,2-DCE	**38**
TCE	**3,100**

OU1-51NS06-5-6-09D

COPC	Concentration (µg/m³)
1,1,1-TCA	**12**
1,1,2,2-PCA	5.5 U
Freon-113	**13**
VC	**4.6**

OU1-51SG03-09D

COPC	Concentration (µg/m³)
1,1,1-TCA	**530,000**
1,1,2,2-PCA	740 U
1,1-DCA	**96,000**
1,1-DCE	**23,000**
Chloromethane	550 U
Methylene chloride	930 U
PCE	730 U
trans-1,2-DCE	**1,300**
TCE	**61,000**
VC	270 U

OU1-51NS01-3-4-09D

COPC	Concentration (µg/m³)
1,1,2,2-PCA	5.5 U
PCE	**71**

OU1-51TW06-09D

COPC	Concentration (µg/L)
trans-1,2-DCE	**1.8**

OU1-51TW01-09D

COPC	Concentration (µg/L)
No cVOCs detected above SLs	

OU1-51SG01-09D

COPC	Concentration (µg/m³)
1,1,1-TCA	**120,000**
1,1,2,2-PCA	890 U
1,1-DCA	**55,000**
1,1-DCE	**11,000**
Chloromethane	670 U
Methylene chloride	1,100 U
PCE	880 U
trans-1,2-DCE	510 U
TCE	**1,800**
VC	330 U

OU1-51NS08-6-7-09D

COPC	Concentration (µg/m³)
Freon-113	**14**

OU1-51TW08-09D

COPC	Concentration (µg/L)
No cVOCs detected above SLs	

OU1-51NS09-6-7-09D

COPC	Concentration (µg/m³)
1,1,2,2-PCA	27 U
Freon-113	**43**
Methylene chloride	**36**

OU1-51TW09-09D

COPC	Concentration (µg/L)
No cVOCs detected above SLs	

COPC	GWSL (ug/L)
1,1,2,2-PCA	19
Freon-113	730
1,1-DCA	39
1,1-DCE	93
trans-1,2-DCE	180
TCE	19
VC	2.7

COPC	Deep (> 6 ft) Soil Vapor SL (µg/m3)
1,1,1-TCA	220,000
1,1,2,2-PCA	21
Freon-113	1,300,000
1,1-DCA	770
1,1-DCE	8,800
Chloromethane	3,900
Freon-12	8,800
Methylene chloride	2,600
PCE	210
trans-1,2-DCE	2,600
TCE	610
VC	280

COPC	Shallow (≤ 6 ft) Soil Vapor SL (µg/m3)
1,1,1-TCA	22,000
1,1,2,2-PCA	2.1
Freon-113	130,000
1,1-DCA	77
1,1-DCE	880
Chloromethane	390
Freon-12	880
Methylene chloride	260
PCE	21
trans-1,2-DCE	260
TCE	61
VC	28

Legend

- Near Slab Soil Gas Sample Location
- Sub Slab Soil Gas Sample Location
- Temporary Well Location
- Surface Water
- OU1 Boundary
- Buildings within 100 ft of Monitoring Wells Exceeding Small Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Medium Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Large Building Criteria

Notes:
U - The material was analyzed for but not detected
µg/m3 - Micrograms per Cubic Meter of Air
Bold indicates the analyte was detected
Shading indicates the analyte result exceeded the SL
COPC - constituent of potential concern
cVOC - chlorinated volatile organic compound
SL - screening level

N S E

0 100 200 Feet

Figure 5-8
Buildings 137 & 4808
OU1 Vapor Intrusion Investigation
November 2009 Results
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

CH2MHILL

\\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\OU1\VAPOR_INT\DRAFT\SECTION5\FIGURE 5-9 - BUILDINGS 131 & 3997_09_RESULTS.MXD CBOWMAN 3/4/2010 10:31:23

OU1-74NS02-6-7-09D	
COPC	Concentration (µg/m3)
1,1,1-TCA	**49,000**
1,1,2,2-PCA	7,400 U
Freon-113	**11,000,000**
1,1-DCA	**140,000**
1,1-DCE	**9,900**
Chloromethane	5,500 U
Methylene chloride	9,300 U
PCE	7,300 U
trans-1,2-DCE	4,300 U
TCE	2,900 U
VC	2,700 U

OU1-74TW02-09D	
COPC	Concentration (µg/L)
Freon-113	**270**
1,1-DCA	**210**
1,1-DCE	**17**
VC	20 U

OU1-74NS01-7-8-09D	
COPC	Concentration (µg/m3)
1,1,1-TCA	**82**
1,1,2,2-PCA	27 U
Freon-113	**59,000**
1,1-DCA	**200**
Freon-12	**560**

OU1-74TW01-09D	
COPC	Concentration (µg/L)
TCE	**1.2**

COPC	GWSL (ug/L)
1,1,2,2-PCA	19
Freon-113	730
1,1-DCA	39
1,1-DCE	93
trans-1,2-DCE	180
TCE	19
VC	2.7

COPC	Deep (> 6 ft) Soil Vapor SL (µg/m3)
1,1,1-TCA	220,000
1,1,2,2-PCA	21
Freon-113	1,300,000
1,1-DCA	770
1,1-DCE	8,800
Chloromethane	3,900
Freon-12	8,800
Methylene chloride	2,600
PCE	210
trans-1,2-DCE	2,600
TCE	610
VC	280

Legend

- Near Slab Soil Gas Sample Location
- Sub Slab Soil Gas Sample Location
- Temporary Well Location
- Surface Water
- OU1 Boundary
- Buildings within 100 ft of Monitoring Wells Exceeding Small Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Medium Building Criteria
- Buildings within 100 ft of Monitoring Wells Exceeding Large Building Criteria

Notes:
U - The material was analyzed for but not detected
µg/m3 - Micrograms per Cubic Meter of Air
Bold indicates the analyte was detected
Shading indicates the analyte result exceeded the SL
COPC - constituent of potential concern
cVOC - chlorinated volatile organic compound
SL - screening level

N W E S

0 100 200 Feet

Figure 5-9
Buildings 131 & 3997
OU1 Vapor Intrusion Investigation
November 2009 Results
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

CH2MHILL

Figure 5-10
Building 133
Pressure Difference and Barometric Pressure

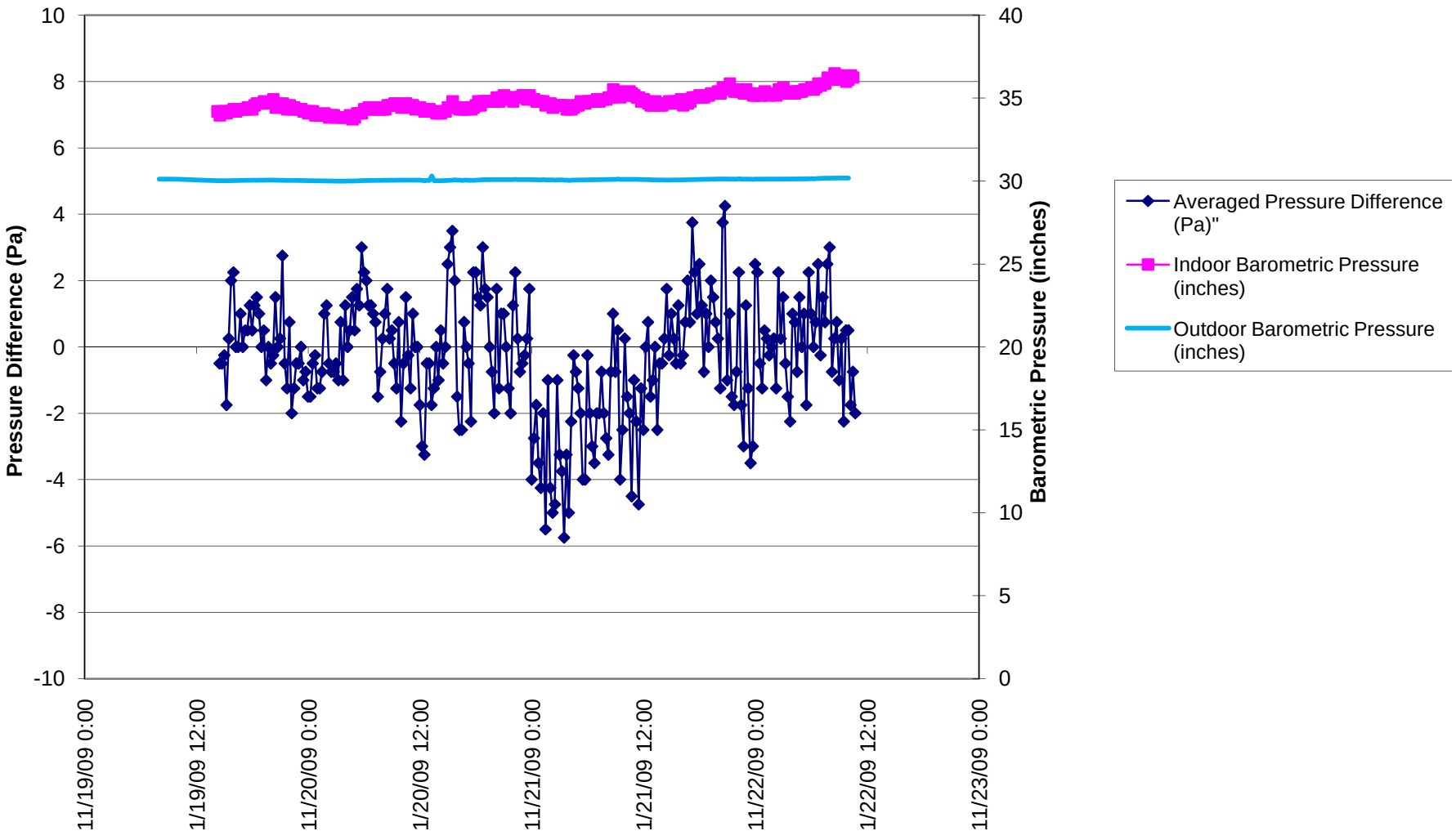
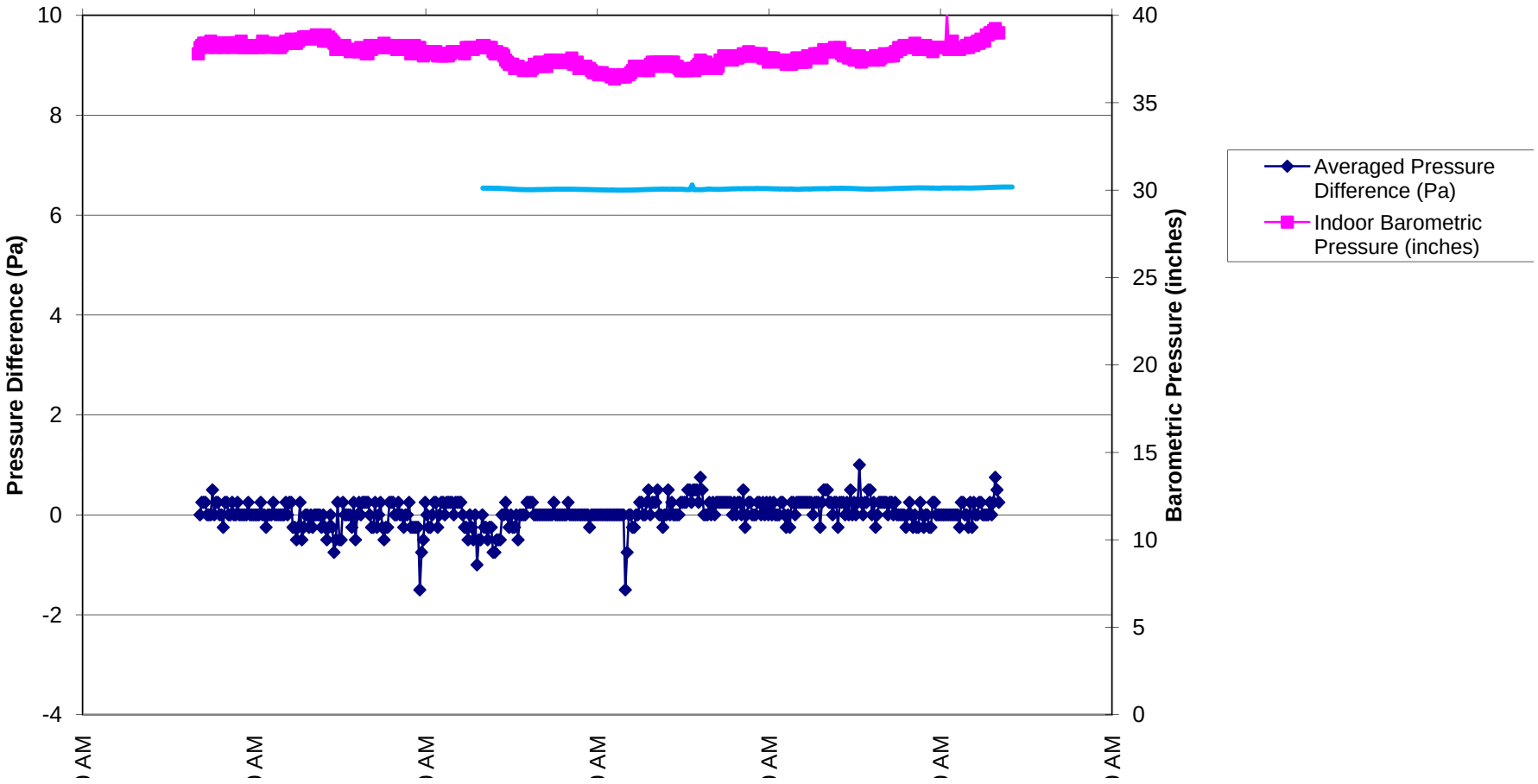


Figure 5-11
Building 137
Pressure Difference and Barometric Pressure



SECTION 6

Refined Conceptual Site Model for Vapor Intrusion

A vapor intrusion conceptual site model (CSM) addresses the following three components: (1) the VOC source (soil or groundwater contamination); (2) migration from the subsurface and through the slab; and (3) and potential receptors (building occupants). The vapor intrusion CSMs for the 21 buildings investigated during Phase I are presented below.

As discussed in Section 2.4, there are multiple historical cVOC release points at OU1 that have resulted in impacts to shallow groundwater, including Site 51 (Building 137), Site 42 (IWTP), and Site 52 (Building 133). TCE is the most prevalent cVOC in shallow groundwater at OU1 (**Figure 2-5**); 1,2-DCE and VC are both also present to lesser extents (**Figures 2-7 and 2-9**). Groundwater flow at OU1 is primarily to the west toward Sandy Branch and East Prong Slocum Creek (**Figures 2-3 and 2-4**). The cVOC groundwater plumes appear to follow groundwater flow. OU1 site-wide groundwater sampling was performed in 2006 and 2009. The 2006 groundwater data were initially used to select the buildings for this vapor intrusion evaluation; however, the 2009 groundwater data were used to check the building list. Two buildings were added to the list due to migration of the cVOC plume (Buildings 159 and 4498); however, buildings that were originally selected based on the 2006 data were not removed from the building list based on the 2009 data (Buildings 143 and 452). Also, some of the wells that were sampled in 2006 were not resampled in 2009; this is notable because the wells near Buildings 131 and 3997 were not resampled in 2009 and the buildings were kept on the buildings of interest list based on the 2006 data. The most recent groundwater data will be used for the vapor intrusion CSMs for the buildings; for most buildings, it will be the 2009 data.

6.1 Building 159

Building 159 is the General Warehouse and Engineering building, which was built in 1954. The building is classified as a large industrial building for this evaluation. A 3-D CSM of Building 159 is provided as **Figure 6-1,** with select features summarized in the following paragraphs.

The building is two-stories and approximately 181,000 ft^2. The building is partially used as warehouse space; there are loading docks on the southeast and northwest sides of the building. The building slab is elevated approximately 3 to 4 ft above the ground surface.

Building 159 is constructed of cinder blocks. The concrete floor contains expansion joints which are sealed. The small administrative offices on the first floor have AC units.

The depth to water is approximately 14 ft bgs in the vicinity of Building 159 based on historic permanent monitoring well data, with groundwater flowing to the southwest. The building is surrounded by asphalt parking lot space and roadway with grassy areas on the north and west sides of the building. The investigation area with which Building 159

samples are associated is Site 98, which is located on the northeastern side of Building 4032. Site 98's source area is a plume of VOC-contaminated groundwater near Building 4032, located southeast of the IWTP in the central portion of OU1 (Section 2.2).

6.1.1 Analytical Results

Historical (2009) shallow groundwater cVOC concentrations within 100 ft of Building 159 that exceeded the site-specific large building GWSLs (CH2M HILL, 2009a) are summarized in this section. The historical TCE, 1,2-DCE, and VC shallow groundwater concentrations exceeding North Carolina 2L (NC2L) standards are shown on **Figures 2-5, 2-7, and 2-9.** Although the plumes are based on exceedances of NC2L standards, groundwater concentrations were compared to site-specific GWSLs for this evaluation. The Phase I co-located groundwater and soil vapor sample locations are shown on **Figure 3-4**. The Phase I analytical results are provided in **Table 5-3 (groundwater) and Tables 5-4 through 5-6 (soil vapor)**. A summary of cVOCs with exceedances of generic screening levels is provided in **Table 6-1** and on **Figure 5-1**.

TABLE 6-1
Summary of Building 159 Evaluation Results

Building 159 Historical (2009) Site-Specific Groundwater Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	TCE (µg/L)
Site Specific Large Building GWSL		*90*
OU1-16GW11-0309	12-27	**210J**
OU1-16GW21-0309	3-13	--

Building 159 Phase I Groundwater Grab Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	TCE (µg/L)
Generic GWSL(based on industrial air RSL)		*19*
OU1-98TW09-09D	13-15	--
OU1-98TW10-09D	14-16	--
OU1-98TW11-09D	13.15	--
OU1-98TW12-09D	13-15	--

Building 159 Phase I Deep Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	TCE (µg/m^3)
Generic Deep SVSL (based on industrial air RSL and AF=1E-02)		*610*
OU1-98NS09-6-7-09D	6-7	--
OU1-98NS10-11-12-09D	11-12	--
OU1-98NS11-6-7-09D	6-7	--
OU1-98NS12-9-10-09D	9-10	--

J-Reported value is an estimate
BOLD indicates exceedance of Industrial screening levels
"—" – indicates COPC result does not exceed screening level

6.1.2 Refined CSM

Building 159 was initially included in Phase I because it was located partially within the TCE plume mapped in 2006 (**Figure 2-5**). Then in 2009 the TCE plume migrated such that the monitoring well southeast of the building (16GW11, screened from 12 to 27 ft bgs) had an exceedance of the modeled site-specific GWSLs for large buildings, and the building was located completely within the TCE plume. Shallow groundwater flows to the west from the source area at Building 133 toward Building 159.

Co-located Phase I groundwater grab and soil vapor samples were collected at four locations around Building 159 during Phase I: two on the east side and two on the west side. No constituents were detected in the groundwater grab or soil vapor samples in exceedance of the applicable industrial generic screening levels. The TCE concentration in the Phase I groundwater grab sample collected at 98TW11 (1 µg/L U) did not correlate with the TCE concentration in monitoring well OU1-16GW11-0309 in 2009; the groundwater grab sample was collected from the top of the water table (13 - 15 ft bgs) and the monitoring well is screened from 12 - 27 ft bgs.

6.1.3 Conclusions

It is unlikely that the vapor intrusion pathway would result in cVOC concentrations above the indoor air screening levels (IASLs) in indoor air at Building 159 based on a review of the Phase I data and the following lines of evidence:

- The historical groundwater concentration that exceeded the generic screening level and triggered the subsequent Phase I sampling was from a sample collected at 12 – 27 ft bgs, which is below the top of the water table where volatilization to soil gas occurs.
- cVOCs were not detected above industrial generic screening levels in the Phase I groundwater samples collected from the top of the water table or the Phase I soil vapor samples.
- The attenuation factor used to calculate the generic screening levels is significantly more conservative (2 to 3 orders of magnitude) than the empirically based attenuation factors calculated for industrial buildings at other Bases.
- There were no screening level exceedances in Phase I groundwater or soil vapor samples at nearby Buildings 4630, 4032, or 4224, which are closer to the center of the main cVOC plume than Building 159.
- Building 159 is a large warehouse building with a large indoor air volume that would likely result in significant mixing and attenuation of indoor air concentrations, minimizing the potential for a significant vapor intrusion pathway.

Based on this evaluation, additional evaluation of the vapor intrusion pathway at Building 159 is not recommended for Phase II.

6.2 Building 4630

Building 4630 is the ASKARS storage building. The construction date of Building 4630 is unknown. It is classified as a medium industrial building for this evaluation. A 3-D CSM of Building 4630 is provided as **Figure 6-2,** with select features summarized in the following paragraphs.

Building 4630 is one-story and approximately 16,000 ft^2. The above-ground structure is constructed of corrugated metal. The building is constructed on a concrete slab on grade. There is one bay door on the south side of the building that was open during the Phase I sampling event. Building 4630 is predominantly used for storage of metal parts (i.e. empty torpedo casings) and as a workshop. Since the original construction of Building 4630, it has been expanded in size between 2006 and 2009. No AC units were observed on Building 4630.

The depth to water is approximately 5 ft bgs in the vicinity of Building 4630 based on historic permanent monitoring well data, with groundwater flowing in the southwesterly direction. The building is surrounded by asphalt parking lot space and roadway with a wooded area on the west side of the building. The investigation area with which Building 4630 samples are associated is Site 98, which is located on the northeastern side of Building 4032, just east of Building 4630. Site 98's source area is a plume of cVOC-contaminated groundwater near Building 4032, located southeast of the IWTP in the central portion of OU1 (Section 2.2). The plume occurs beneath a large portion of Building 4630.

6.2.1 Analytical Results

Historical (2009) shallow groundwater cVOC concentrations within 100 ft of Building 4630 that were above the site-specific GWSLs for medium buildings (CH2M HILL, 2009a) are summarized in this section. The historical TCE, 1,2-DCE, and VC shallow groundwater concentrations exceeding NC2L standards are shown in **Figures 2-5, 2-7, and 2-9.** Although the plumes are based on exceedances of NC2L standards, groundwater concentrations were compared to site-specific GWSLs for this evaluation. The Phase I co-located groundwater and soil vapor sample locations are shown on **Figure 3-4**. The Phase I analytical results are provided in **Table 5-3 (groundwater) and Tables 5-4 through 5-6 (soil vapor)**. A summary of cVOCs with exceedances of generic screening levels is provided in **Table 6-2** and on **Figure 5-2**.

TABLE 6-2
Summary of Building 4630 Evaluation Results

Building 4630 Historical (2009) Site-Specific Groundwater Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	VC (µg/L)
Site Specific Medium Building GWSL		*4.9*
OU1-GW75-0309	20-30	**8.7**

Building 4630 Phase I Groundwater Grab Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	VC (µg/L)
Generic GWSL(based on industrial air RSL)		*2.7*
OU1-98TW07-09D	6-8	--
OU1-98TW08-09D	6-10	--

Building 4630 Phase I Shallow Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	VC ($\mu g/m^3$)	1,1,2,2-PCA ($\mu g/m^3$)	PCE ($\mu g/m^3$)
Generic Shallow SVSL (based on industrial air RSL and AF=1E-01)		*28*	*2.1*	*21*
OU1-98NS07-4.5-5.5-09D	4.5-5.5	--	25U	25U
OU1-98NS08-4.5-5.5-09D	4.5-5.5	--	5.5U	--

U - The material was analyzed for, but not detected
BOLD indicates exceedance of Industrial screening levels
"—" – indicates COPC results does not exceed screening level

6.2.2 Refined CSM

Building 4630 was included in Phase I because it is located partially within the cVOC plume (**Figures 2-5, 2-7 and 2-9**). There is one monitoring well (OU1-GW75 screened from 20 to 30 ft bgs) within 100 ft of the building that had an exceedance of the modeled site-specific GWSLs for medium buildings. The source area closest to Building 4630 is Site 98, located less than 300 ft east. The main cVOC source area at Building 133 is more than 1,000 ft southeast of Building 4630.

Co-located groundwater grab and soil vapor samples were collected at two locations around Building 4630 during Phase I: one on the east side and one on the west side. No constituents were detected in the groundwater or the soil vapor samples in exceedance of the applicable industrial generic screening levels. The VC concentration in the Phase I groundwater grab sample collected at 98TW08 (2 µg/L U) did not correlate with the VC concentration in monitoring well OU1-GW75-0309 in 2009; the groundwater grab sample was collected from the top of the water table (6-10 ft bgs) and the monitoring well is screened from 20-30 ft bgs.

There were non-detect results for 1,1,2,2-PCA and PCE in soil vapor that had reporting limits greater than the industrial generic SVSLs. There is some uncertainty regarding these results; however, it does not have an impact on the conclusions for Building 4630 because

the industrial generic SVSLs are fairly conservative (i.e., based on a conservative AF of 1 in 10 and a 10-6 ELCR).

6.2.3 Conclusions

It is unlikely that the vapor intrusion pathway would result in cVOC concentrations above the indoor air screening levels (IASLs) in indoor air at Building 4630 based on a review of the Phase I data and the following lines of evidence:

- The historical groundwater concentration that exceeded the generic screening level and triggered the subsequent Phase I sampling was from a sample collected at 20–30 ft bgs, which is well below the top of the water table where volatilization to soil gas occurs.
- cVOCs were not detected above industrial generic screening levels in the Phase I groundwater collected from the top of the water table or the Phase I soil vapor samples.
- The attenuation factor used to calculate the generic screening levels is significantly more conservative (2 to 3 orders of magnitude) than the empirically based attenuation factors calculated for industrial buildings at other Bases.
- There were no screening level exceedances in Phase I groundwater or soil vapor samples at nearby Buildings 4032, 4172, or 159, which are closer to the center of the main cVOC plume than Building 4630.
- Building 4630 is a warehouse building with a large indoor air volume and frequent opening of doorways for access by delivery carts that would likely result in significant mixing and attenuation of indoor air concentrations, minimizing the potential for a significant vapor intrusion pathway.

Based on this evaluation, additional evaluation of the vapor intrusion pathway at Building 4630 is not recommended for Phase II.

6.3 Building 4032

Building 4032 is the Ground Support Equipment Rework Shop, built in 1985. The building is classified as a medium industrial building for this evaluation. A 3-D CSM of Building 4032 is provided as **Figure 6-2,** with select features summarized in the following paragraphs.

The building is one-story and approximately 51,000 ft^2. Based on a visual inspection, the above-ground structure was built with cinder blocks and bricks. The building is constructed on a concrete slab on grade. Building 4032 contains administrative offices and laboratories. The building has multiple doors and windows, which are typically kept closed. Multiple window AC units are located throughout the building.

The depth to water is approximately 5 ft bgs in the vicinity of Building 4032 based on historic permanent monitoring well data, with perched groundwater encountered at 4 ft bgs while during installation of temporary well point 98TW05. Groundwater flows in the southwesterly direction. The building is surrounded by asphalt parking lot space and roadway, with a grassy area on the southwest side of the building. The investigation area with which Building 4630 samples are associated is Site 98, which is located on the northeastern side of Building 4032, just northeast of Building 4630. Site 98's source area is a

plume of cVOC-contaminated groundwater near Building 4032, located southeast of the IWTP in the central portion of OU1 (Section 2.2). The plume occurs beneath a small portion of Building 4032 on the northeast side.

6.3.1 Analytical Results

Historical (2009) shallow groundwater cVOC concentrations within 100 ft of Building 4032 that exceeded the site-specific GWSLs for large building (CH2M HILL, 2009a) are summarized in this section. The historical TCE, 1,2-DCE, and VC shallow groundwater concentrations exceeding NC2L standards are shown on **Figures 2-5, 2-7, and 2-9.** Although the plumes are based on exceedances of NC2L standards, groundwater concentrations were compared to site-specific GWSLs for this evaluation. The Phase I co-located groundwater and soil vapor sample locations are shown on **Figure 3-4**. The Phase I analytical results are provided in **Table 5-3 (groundwater) and Tables 5-4 through 5-6 (soil vapor)**. A summary of cVOCs with exceedances of generic screening levels is provided in **Table 6-3** and shown on **Figure 5-2**.

TABLE 6-3
Summary of Building 4032 Evaluation Results

Building 4032 Historical (2009) Site-Specific Groundwater Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	TCE (µg/L)
Site Specific Medium Building GWSL		*37*
OU1-N2GW44-0309	30.5-35.5	**96**

Building 4032 Phase I Groundwater Grab Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	TCE (µg/L)
Generic GWSL(based on industrial air RSL)		*19*
OU1-98TW03-09D	6-7	--
OU1-98TW04-09D	5-6	--
OU1-98TW05-09D	4-8	--
OU1-98TW06-09D	7-8	--

Building 4032 Phase I Shallow Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	TCE (µg/m^3)	1,1,2,2-PCA (µg/m^3)
Generic Shallow SVSL (based on industrial air RSL and AF=1E-01)		*61*	*2.1*
OU1-98NS03-3-4-09D	3-4	--	5.5U
OU1-98NS04-5-6-09D	5-6	--	5.5U
OU1-98NS06-5-6-09D	5-6	--	14U

U - The material was analyzed for, but not detected
BOLD indicates exceedance of Industrial screening levels
"—" – indicates COPC result does not exceed screening level

6.3.2 Refined CSM

Building 4032 was initially included in Phase I because it is located partially within the cVOC plume (**Figures 2-5, 2-7 and 2-9**). Then in 2009, the TCE plume migrated such that the monitoring well southeast of the building (OU1-N2GW44, screened from 30.5 to 35.5 ft bgs) had an exceedance of the modeled site-specific GWSLs for medium buildings. Shallow groundwater flows to the west from the source area at Building 133 toward Building 4032. The source area closest to Building 4032 is Site 98, just east of the building; however, groundwater impacts near the building are from the main cVOC source area at Building 133. The TCE, VC, and 1,2-DCE shallow groundwater plumes underlie the southeast portion of the building; impacted shallow groundwater is not present under the larger northwest section of the building.

Four co-located groundwater grab and soil vapor samples were planned for Phase I at Building 4032: one on each side of the building. At one of the locations, OU1-98TW05, southeast of the building, the soil vapor sample could not be collected due to shallow groundwater. There were no cVOCs detected in exceedance of the industrial generic screening levels in either groundwater or soil vapor at Building 4032.

The TCE concentration in the Phase I groundwater grab samples collected at 98TW03 (1 $\mu g/m^3$ U) and 98TW05 (1 $\mu g/m^3$ U) did not correlate with the TCE concentration in monitoring well OU1-N2GW44-0309 in 2009; the groundwater grab samples were collected from the top of the water table (6-7 ft bgs and 4-8 ft bgs, respectively) and the monitoring well is screened from 30.5 – 35.5 ft bgs.

There were non-detect results for 1,1,2,2-PCA in soil vapor that had reporting limits greater than the industrial generic SVSL. There is some uncertainty regarding these results; however, it does not have an impact on the conclusions for Building 4032 because the industrial generic SVSLs are fairly conservative (i.e., based on a conservative AF of 1 in 10 and a 10-6 ELCR).

6.3.3 Conclusions

It is unlikely that the vapor intrusion pathway would result in cVOC concentrations above the indoor air screening levels (IASLs) in indoor air at Building 4032 based on a review of the Phase I data and the following lines of evidence:

- The historical groundwater concentration that exceeded the generic screening level and triggered the subsequent Phase I sampling was from a sample collected at 30.5 – 35.5 ft bgs, which is well below the top of the water table where volatilization to soil gas occurs.
- cVOCs were not detected above industrial generic screening levels in the Phase I groundwater samples collected from the top of the water table or the Phase I soil vapor samples.
- The attenuation factor used to calculate the generic screening levels is significantly more conservative (2 to 3 orders of magnitude) than the empirically based attenuation factors calculated for industrial buildings at other Bases.

- There were no screening level exceedances in Phase I groundwater or soil vapor samples at nearby Buildings 4630, 4172, 4380, or 4224, which are closer to the center of the main cVOC plume than Building 4032.
- Building 4032 is a building with several laboratories containing vented hoods for experimentation that would mitigate vapor transport and VOC concentrations.

Based on this evaluation, additional evaluation of the vapor intrusion pathway at Building 4032 is not recommended for Phase II.

6.4 Building 4172

Building 4172 is the Ground Support Equipment Rework Shop, built in 1985.The building was classified as a small industrial building for this evaluation. A 3-D CSM of Building 4172 is provided as **Figure 6-2,** with select features summarized in the following paragraphs.

The building is one-story and approximately 1,700 ft^2. The above-ground structure is constructed of cinder block and brick. The building is constructed on a concrete slab on grade. The building is predominantly used as a storage area and workshop but is typically vacant. There are two roof vents on the building.

The depth to water is approximately 5 ft bgs in the vicinity of Building 4172 based on historic permanent monitoring well data, with groundwater flowing in the southwesterly direction. The building is surrounded by asphalt parking lot space and roadway, with a wooded area on the northwestern side of the building. The investigation area with which Building 4172 samples are associated is Site 98, which is located on the northeastern side of Building 4032, just east of Building 4172. Site 98's source area is a plume of VOC-contaminated groundwater near Building 4032, located southeast of the IWTP in the central portion of OU1 (Section 2.2).

6.4.1 Analytical Results

Historical (2009) shallow groundwater cVOC concentrations within 100 ft of Building 4032 that were above the site-specific small building GWSLs (CH2M HILL, 2009a) are summarized in this section. The historical TCE, 1,2-DCE, and VC shallow groundwater concentrations exceeding NC2L standards are shown in **Figures 2-5, 2-7, and 2-9.** Although the plumes are based on exceedances of NC2L standards, groundwater concentrations were compared to site-specific GWSLs for this evaluation. The Phase I co-located groundwater and soil vapor sample locations are shown on **Figure 3-4**. The Phase I analytical results are provided in **Table 5-3 (groundwater) and Tables 5-4 through 5-6 (soil vapor)**. A summary of cVOCs with exceedances of generic screening levels is provided in **Table 6-4** and on **Figure 5-2**.

TABLE 6-4
Summary of Building 4172 Evaluation Results

Building 4172 Historical (2009) Site-Specific Groundwater Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	TCE (µg/L)	VC (µg/L)
Site Specific Small Building GWSL		*28*	*3.6*
OU1-GW76-0309	20-30	**38**	**52**

Building 4172 Phase I Groundwater Grab Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	TCE (µg/L)	VC (µg/L)
Generic GWSL(based on industrial air RSL)		*19*	*2.7*
OU1-98TW01-09D	7-8	--	--
OU1-98TW02-09D	6-7	--	--

Building 4172 Phase I Shallow Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	TCE (µg/m^3)	VC (µg/m^3)	1,1,2,2-PCA (µg/m^3)
Generic Shallow SVSL (based on industrial air RSL and AF=1E-01)		*61*	*28*	*2.1*
OU1-98NS01-5-6-09D	5-6	--	--	5.5U

Building 4172 Phase I Deep Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	TCE (µg/m^3)	VC (µg/m^3)	1,1,2,2-PCA (µg/m^3)
Generic Deep SVSL (based on industrial air RSL and AF=1E-02)		*610*	*280*	*21*
OU1-98NS02-6-709D	6-7	--	--	--

U - The material was analyzed for, but not detected
BOLD indicates exceedance of Industrial screening levels
"—" – indicates COPC result does not exceed screening level

6.4.2 Refined CSM

Building 4172 was included in Phase I because it is located partially within the cVOC plume (**Figures 2-5, 2-7 and 2-9**). There is one monitoring well (OU1-GW76, screened from 20 to 30 ft bgs) within 100 ft of the building that had an exceedance of the modeled site-specific GWSLs for small buildings. The source area closest to Building 4172 is Site 98 (IWTP), which encompasses Building 4172 and is located east of Building 4032. The main cVOC source area at Building 133 is more than 1,000 ft southeast of Building 4630 and does not appear to be impacting shallow groundwater near Building 4172.

Co-located groundwater grab and soil vapor samples were collected at two locations around Building 4172 during Phase I: one on the northeast side and one on the southwest side. No constituents were detected in the groundwater or the soil vapor samples in exceedance of the industrial generic screening levels. The TCE and VC concentrations in the Phase I groundwater grab samples collected at 98TW01 (1 µg/m^3 U and 2 µg/m^3 U, respectively)

and 98TW02 (1 µg/m^3 U and 2 µg/m^3 U, respectively) did not correlate with the TCE and VC concentrations in monitoring well OU1-GW76-0309 in 2009; the groundwater grab sample was collected from the top of the water table (7-8 ft bgs and 6-7 ft bgs, respectively) and the monitoring well is screened from 20 to 30 ft bgs.

There was a non-detect result for 1,1,2,2-PCA in soil vapor that had a reporting limit greater than the industrial generic SVSL. There is some uncertainty regarding these results; however, it does not have an impact on the conclusions for Building 4172 because the industrial generic SVSLs are fairly conservative (i.e., based on a conservative AF of 1 in 10 and a 10-6 ELCR).

6.4.3 Conclusions

It is unlikely that the vapor intrusion pathway would result in cVOC concentrations above the indoor air screening levels (IASLs) in indoor air at Building 4172 based on a review of the Phase I data and the following lines of evidence:

- The historical groundwater concentration that exceeded the generic screening level and triggered the subsequent Phase I sampling was from a sample collected at 20-30 ft bgs, which is well below the top of the water table where volatilization to soil gas occurs.
- cVOCs were not detected above industrial generic screening levels in the Phase I groundwater samples collected from the top of the water table or the Phase I soil vapor samples.
- The attenuation factor used to calculate the generic screening levels is significantly more conservative (2 to 3 orders of magnitude) than the empirically based attenuation factors calculated for industrial buildings at other Bases.
- There were no screening level exceedances in Phase I groundwater or soil vapor samples at nearby Buildings 4630, 4032, or 4380, which are closer to the Site 42 (IWTP) cVOC source area than Building 4172.

Based on this evaluation, additional evaluation of the vapor intrusion pathway at Building 4172 is not recommended for Phase II.

6.5 Building 4380

Building 4380 is the IWTP, built in 1990. It is classified as a small industrial building for this evaluation. A 3-D CSM of Building 4380 is provided as **Figure 6-3,** with select features summarized in the following paragraphs.

The building is one-story and approximately 7,000 ft^2. The foundation is slab-on-grade. The building is constructed of brick and cinder block. The concrete floor contains expansion joints, which are sealed. Windows contain vented fans that blow air out of the structure.

The depth to water is approximately 9 ft bgs in the vicinity of Building 4380 based on historic permanent monitoring well data, with groundwater flowing in the southwesterly direction. The building is surrounded by asphalt parking lot space and roadway, with some grassy areas on the north side of the building. The groundwater plume boundary is located just north of Building 4380 and the plume does not appear to impact Building 4380. The

investigation area with which Building 4380 samples are associated is Site 42, which encompasses the entire area surrounding Building 4380 and adjacent buildings of interest (Buildings 3987 and 1005). There is no defined source zone at Site 42, as the sewer lines that carried the waste extend throughout the site (Section 2.2).

6.5.1 Analytical Results

Historical (2009) shallow groundwater cVOC concentrations within 100 ft of Building 4380 (CH2M HILL, 2009a) are summarized in this section. The historical TCE, 1,2-DCE, and VC shallow groundwater concentrations exceeding NC2L standards are shown on **Figures 2-5, 2-7, and 2-9.** Although the plumes are based on exceedances of NC2L standards, groundwater concentrations were compared to site-specific GWSLs for this evaluation. The Phase I co-located groundwater and soil vapor sample locations are shown on **Figure 3-4**. The Phase I analytical results are provided in **Table 5-3 (groundwater) and Tables 5-4 through 5-6 (soil vapor)**. A summary of cVOCs with exceedances of generic screening levels is provided in **Table 6-5** and shown on **Figure 5-3**.

TABLE 6-5
Summary of Building 4380 Evaluation Results

Building 4380 Historical (2009) Site-Specific Groundwater Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	
Site Specific Small Building GWSL		*NA*
OU1-42GW08-0309	3-15	--

Building 4380 Phase I Groundwater Grab Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	
Generic GWSL(based on industrial air RSL)		*NA*
OU1-42TW02-09D	7-9	--
OU1-42TW03-09D	9-11	--
OU1-42TW04-09D	8-12	--
OU1-42TW05-09D	9-11	--

Building 4380 Phase I Shallow Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	1,1,2,2-PCA ($\mu g/m^3$)
Generic Shallow SVSL (based on industrial air RSL and AF=1E-01)		*2.1*
OU1-42NS02-5-6-09D	5-6	5.5U

Building 4380 Phase I Deep Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	1,1,2,2-PCA ($\mu g/m^3$)
Generic Deep SVSL (based on industrial air RSL and AF=1E-02)		*21*
OU1-42NS03-6-7-09D	6-7	--
OU1-42NS04-6-7-09D	6-7	--
OU1-42NS05-7-8-09D	7-8	--

NA – Not Applicable
U - The material was analyzed for, but not detected
"—" – indicates COPC result does not exceed screening level

6.5.2 Refined CSM

Building 4380 was included in Phase I because it is located within 100 ft of the cVOC plume that is associated with Site 42 (IWTP); this plume is located to the north and cross-gradient of the building (**Figures 2-5, 2-7, and 2-9**). Shallow monitoring wells within 100 ft of the building did not contain cVOCs in exceedance of the modeled site-specific GWSLs for small buildings. The main cVOC source area at Building 133 is more than 300 ft southeast of Building 4380 and does not appear to be impacting shallow groundwater within 100 ft of Building 4380.

Co-located groundwater grab and soil vapor samples were collected at two locations around Building 4380 during Phase I: one on the west side and one on the southwest side. Two co-located groundwater grab and soil vapor samples were also collected at the neighboring Building 3987 within 100 ft from Building 4380. No constituents were detected in the groundwater or the soil vapor samples in exceedance of the industrial generic screening levels at Building 4380 or 3987.

There was a non-detect result for 1,1,2,2-PCA in soil vapor that had a reporting limit greater than the industrial generic SVSL. There is some uncertainty regarding these results; however, it does not have an impact on the conclusions for Building 4380 because the industrial generic SVSLs are fairly conservative (i.e., based on a conservative AF of 1 in 10 and a 10-6 ELCR).

6.5.3 Conclusions

It is unlikely that the vapor intrusion pathway would result in cVOC concentrations above the indoor air screening levels (IASLs) in indoor air at Building 4380 based on a review of the Phase I data and the following lines of evidence:

- Shallow monitoring wells within 100 ft of the building did not contain cVOCs in exceedance of the modeled site-specific GWSLs for small buildings; the main cVOC source area at Building 133 is more than 300 ft southeast of Building 4380 and does not appear to be impacting shallow groundwater within 100 ft of Building 4380.
- cVOCs were not detected above industrial generic screening levels in the Phase I groundwater samples collected from the top of the water table or the Phase I soil vapor samples.

- The attenuation factor used to calculate the generic screening levels is significantly more conservative (2 to 3 orders of magnitude) than the empirically based attenuation factors calculated for industrial buildings at other Bases.
- There were no screening level exceedances in Phase I groundwater or soil vapor samples at nearby Buildings 4032, 3987, or 1005, which are closer to the Site 42 (IWTP) cVOC source area than Building 4380.

Based on this evaluation, additional evaluation of the vapor intrusion pathway at Building 4380 is not recommended for Phase II.

6.6 Building 3987

Building 3987 is the IWTP Sludge Digester, built in 1984. The building is classified as a small industrial building for this evaluation. A 3-D CSM of Building 3987 is provided as **Figure 6-3,** with select features summarized in the following paragraphs.

The building is one-story and approximately 1,000 ft^2. The building is constructed of concrete and brick and the slab is on grade. Multiple expansion joints are present and appear to be sealed. The ceiling height is approximately 30 ft. There is one AC unit in the small control room in Building 3987. There are window ventilation fans present and the doors and windows are typically left open to allow for ventilation.

The depth to water is approximately 9 ft bgs in the vicinity of Building 3987 based on historic permanent monitoring well data, with groundwater flowing in the southwesterly direction. The building is surrounded by asphalt parking lot space and roadway, with some grassy areas on the north and east sides of the building. The groundwater plume boundary is located just north of Building 3987. The investigation area with which Building 3987 samples are associated is Site 42, which encompasses the entire area surrounding Building 3987 and adjacent buildings of interest (Building 4380 and Building 1005). There is no defined source zone at Site 42, as the sewer lines that carried the waste extend throughout the site (Section 2.2).

6.6.1 Analytical Results

Historical (2009) shallow groundwater cVOC concentrations within 100 ft of Building 3987 (CH2M HILL, 2009a) are summarized in this section. The historical TCE, 1,2-DCE, and VC shallow groundwater concentrations exceeding NC2L standards are shown in **Figures 2-5, 2-7, and 2-9**. Although the plumes are based on exceedances of NC2L standards, groundwater concentrations were compared to site-specific GWSLs for this evaluation. The Phase I co-located groundwater and soil vapor sample locations are shown on **Figure 3-4**. The Phase I analytical results are provided in **Table 5-3 (groundwater) and Tables 5-4 through 5-6 (soil vapor)**. A summary of cVOCs with exceedances of generic screening levels is provided in **Table 6-6** and on **Figure 5-3**.

TABLE 6-6
Summary of Building 3987 Evaluation Results

Building 3987 Historical (2009) Site-Specific Groundwater Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	
Site Specific Small Building GWSL		*NA*
OU1-42GW08-0309	3-15	--

Building 3987 Phase I Groundwater Grab Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	
Generic GWSL(based on industrial air RSL)		*NA*
OU1-42TW01-09D	5-7	--
OU1-42TW02-09D	7-9	--
OU1-42TW03-09D	9-11	--
OU1-42TW04-09D	8-12	--

Building 3987 Phase I Shallow Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	1,1,2,2-PCA ($\mu g/m^3$)
Generic Shallow SVSL (based on industrial air RSL and AF=1E-01)		*2.1*
OU1-42NS02-5-6-09D	5-6	5.5U

Building 3987 Phase I Deep Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	1,1,2,2-PCA ($\mu g/m^3$)
Generic Deep SVSL (based on industrial air RSL and AF=1E-02)		*21*
OU1-42NS03-6-7-09D	6-7	--
OU1-42NS04-6-7-09D	6-7	--

NA – Not Applicable
U - The material was analyzed for, but not detected
"—" indicates COPC result does not exceed screening level

6.6.2 Refined CSM

Building 3987 was included in Phase I because it is located within 100 ft of the cVOC plume that is associated with Site 42 (IWTP); this plume is located to the north and cross-gradient of the building (**Figures 2-5, 2-7, and 2-9**). Shallow monitoring wells within 100 ft of the building did not contain cVOCs in exceedance of the modeled site-specific GWSLs for small buildings. The main cVOC source area at Building 133 is more than 300 ft southeast of Building 3987 and does not appear to be impacting shallow groundwater within 100 ft of Building 3987.

Co-located groundwater grab and soil vapor samples were collected at two locations around Building 3987 during Phase I: one on the east corner and one on the southwest side. One co-located groundwater grab and soil vapor sample was also collected at neighboring Building 4380, and one groundwater grab sample was collected at neighboring Building 1005; both locations were within 100 ft of Building 3987. No constituents were detected in the

groundwater or the soil vapor samples in exceedance of the industrial generic screening levels at Building 3987 or neighboring Buildings 4380 and 1005.

There was a non-detect result for 1,1,2,2-PCA in shallow soil vapor that had a reporting limit greater than the industrial generic SVSL. There is some uncertainty regarding these results; however, it does not have an impact on the conclusions for Building 3987 because the industrial generic SVSLs are fairly conservative (i.e., based on a conservative AF of 1 in 10 and a 10-6 ELCR).

6.6.3 Conclusions

It is unlikely that the vapor intrusion pathway would result in cVOC concentrations above the indoor air screening levels (IASLs) in indoor air at Building 3987 based on a review of the Phase I data and the following lines of evidence:

- Shallow monitoring wells within 100 ft of the building did not contain cVOCs in exceedance of the modeled site-specific GWSLs for small buildings; the main cVOC source area at Building 133 is more than 300 ft southeast of Building 3987 and does not appear to be impacting shallow groundwater within 100 ft of Building 3987.
- cVOCs were not detected above industrial generic screening levels in the Phase I groundwater samples collected from the top of the water table or the Phase I soil vapor samples.
- The attenuation factor used to calculate the generic screening levels is significantly more conservative (2 to 3 orders of magnitude) than the empirically based attenuation factors calculated for industrial buildings at other Bases.
- There were no screening level exceedances in Phase I groundwater or soil vapor samples at nearby Buildings 4380 or 1005, which are closer to the Site 42 (IWTP) cVOC source area than Building 3987.

Based on this evaluation, additional evaluation of the vapor intrusion pathway at Building 3987 is not recommended for Phase II.

6.7 Building 1005

Building 1005 is the IWTP, built in 1958. The building is classified as a small industrial building for this evaluation. A 3-D CSM of Building 1005 is provided as **Figure 6-3,** with select features summarized in the following paragraphs.

The building is two-stories and approximately 1,085 ft^2. The building is constructed primarily of brick. The building slab is on grade at the southeast side of the building and approximately 3 to 4 ft above grade on the northwest side. The top floor has two rooms with AC units. These rooms are predominantly used for administrative purposes. The first floor is used as the control room for a wastewater treatment facility. There is a large bay door on the northwest side of the building and, during a site visit, it was observed that all the doors leading outside were left open.

The depth to water is approximately 9 ft bgs in the vicinity of Building 1005 based on historic permanent monitoring well data, with groundwater flowing in the southwesterly direction. The building is surrounded by asphalt parking lot space and roadway, with some grassy areas on the east side of the building. The groundwater plume boundary is located just north of Building 1005. The investigation area with which Building 1005 samples are associated is Site 42, which encompasses the entire area surrounding Building 1005 and adjacent buildings of interest (Buildings 4380 and 3987). There is no defined source zone at Site 42, as the sewer lines that carried the waste extend throughout the site (Section 2.2).

6.7.1 Analytical Results

Historical (2009) shallow groundwater cVOC concentrations within 100 ft of Building 1005 (CH2M HILL, 2009a) are summarized in this section. The historical TCE, 1,2-DCE, and VC shallow groundwater concentrations exceeding NC2L standards are shown in **Figures 2-5, 2-7, and 2-9**. Although the plumes are based on exceedances of NC2L standards, groundwater concentrations were compared to site-specific GWSLs for this evaluation. The Phase I co-located groundwater and soil vapor sample locations are shown on **Figure 3-4**. The Phase I analytical results are provided in **Table 5-3 (groundwater) and Tables 5-4 through 5-6 (soil vapor)**. A summary of cVOCs with exceedances of generic screening levels is provided in **Table 6-7** and on **Figure 5-3**.

TABLE 6-7
Summary of Building 1005 Evaluation Results

Building 1005 Historical (2009) Site-Specific Groundwater Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	
Site Specific Small Building GWSL		*NA*
OU1-42GW08-0309	3-15	--

Building 1005 Phase I Groundwater Grab Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	
Generic GWSL(based on industrial air RSL)		*NA*
OU1-42TW01-09D	5-7	--
OU1-42TW02-09D	7-9	--
OU1-42TW04-09D	9-11	--

Building 1005 Phase I Shallow Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	1,1,2,2-PCA ($\mu g/m^3$)
Generic Shallow SVSL (based on industrial air RSL and AF=1E-01)		*2.1*
OU1-42NS02-5-6-09D	5-6	5.5U

Building 1005 Phase I Deep Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	1,1,2,2-PCA (µg/m^3)
Generic Deep SVSL (based on industrial air RSL and AF=1E-02)		*21*
OU1-42NS04-6-7-09D	6-7	--

NA – Not Applicable
U - The material was analyzed for, but not detected
"—" indicates COPC result does not exceed screening level

6.7.2 Refined CSM

Building 1005 was included in Phase I because the cVOC plume that is associated with Site 42 (IWTP) partially underlies the building (**Figures 2-5, 2-7, and 2-9**). Shallow monitoring wells within 100 ft of the building did not contain cVOCs in exceedance of the modeled site-specific GWSLs for small buildings. The main cVOC source area at Building 133 is more than 300 ft southeast of Building 1005 and does not appear to be impacting shallow groundwater within 100 ft of Building 1005.

One co-located groundwater grab and soil vapor sample was planned for Phase I at Building 1005 on the southeast side of the building. This sample location was moved to the northeast side of the building due to the presence of exterior structures. A soil vapor sample could not be collected at this location due to shallow groundwater. Two co-located groundwater grab and soil vapor samples were also collected at neighboring Building 3987, both within 100 ft from Building 1005. No constituents were detected in the groundwater or the soil vapor samples in exceedance of the industrial generic screening levels at Building 1005 or neighboring Building 3987.

There was a non-detect result for 1,1,2,2-PCA in shallow soil vapor that had a reporting limit greater than the industrial generic SVSL. There is some uncertainty regarding these results; however, it does not have an impact on the conclusions for Building 1005 because the industrial generic SVSLs are fairly conservative (i.e., based on a conservative AF of 1 in 10 and a 10-6 ELCR).

6.7.3 Conclusions

It is unlikely that the vapor intrusion pathway would result in cVOC concentrations above the indoor air screening levels (IASLs) in indoor air at Building 1005 based on a review of the Phase I data and the following lines of evidence:

- Shallow monitoring wells within 100 ft of the building did not contain cVOCs in exceedance of the modeled site-specific GWSLs for small buildings; the main cVOC source area at Building 133 is more than 300 ft southeast of Building 1005 and does not appear to be impacting shallow groundwater within 100 ft of Building 1005.
- cVOCs were not detected above industrial generic screening levels in the Phase I groundwater samples collected from the top of the water table or the Phase I soil vapor samples.

- The attenuation factor used to calculate the generic screening levels is significantly more conservative (2 to 3 orders of magnitude) than the empirically based attenuation factors calculated for industrial buildings at other Bases.
- There were no screening level exceedances in Phase I groundwater or soil vapor samples at nearby Buildings 3987 or 4380.
- Building 1005 is a two story building in which the ground floor has large bay doors which remain open throughout the day and an open stairwell that connect the ground floor with the top floor for increased air exchange. The increased air exchange would likely result in significant mixing and attenuation of indoor air concentrations, minimizing the potential for a significant vapor intrusion pathway.

Based on this evaluation, additional evaluation of the vapor intrusion pathway at Building 1005 is not recommended for Phase II.

6.8 Building 452

Building 452 is the NAVARIR Administration building, built in 1945. The building is classified as a small industrial building for this evaluation. A 3-D CSM of Building 452 is provided as **Figure 6-4** with select features summarized in the following paragraphs.

The building is one-story and approximately 1,300 ft². It is constructed of brick and the foundation is slab-on-grade. The windows and doors typically remain closed. The depth to water is approximately 9 ft bgs in the vicinity of Building 452, with groundwater flowing in the southwesterly direction. Building 452 has one double door on the west side and several small windows on the perimeter walls. The building is surrounded by asphalt parking lot space and roadway.

6.8.1 Analytical Results

No monitoring wells are located within 100 ft of Building 452. The Phase I co-located groundwater and soil vapor sample locations are shown on **Figure 3-4**. The Phase I analytical results are provided in **Table 5-3 (groundwater) and Tables 5-4 through 5-6 (soil vapor)**. A summary for cVOCs with exceedances of generic screening levels is provided in **Table 6-8** and on **Figure 5-4**.

TABLE 6-8
Summary of Building 452 Evaluation Results

Building 452 Historical (2009) Site-Specific Groundwater Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	
Site Specific Small Building GWSL		*NA*
OU1-14GW18- 0309	16-26	--

Building 452 Phase I Groundwater Grab Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	1,1,2,2-PCA (µg/L)	1,1-DCA (µg/L)	TCE (µg/L)	Vinyl Chloride (µg/L)
Generic GWSL(based on industrial air RSL)		*19*	*39*	*19*	*2.7*
OU1-14TW03-09D	9-12	66U	66U	66U	130U
OU1-14TW04-09D	9-12	--	--	--	--

Building 452 Phase I Deep Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	1,1,2,2-PCA (µg/m^3)	1,1-DCA (µg/m^3)	TCE (µg/m^3)	Vinyl Chloride (µg/m^3)
Generic Deep SVSL (based on industrial air RSL and AF=1E-02)		*21*	*770*	*610*	*280*
OU1-14NS03-7-8-09D	7-8	--	--	--	--
OU1-14NS04-6-7-09D	6-7	140U	--	--	--

NA – Not Applicable
U - The material was analyzed for, but not detected
"—" indicates COPC result does not exceed screening level

6.8.2 Refined CSM

Building 452 was initially included in Phase I because it was located 100 ft from a small TCE plume near neighboring Building 143. This plume was centered on one monitoring well (OU1-14GW18 screened from 16 to 26) where TCE was detected at 105 µg/L in 2006; the small building modeled site-specific GWSL is 28 µg/L. However, TCE was not detected in this well in 2009 (**Figure 2-5**). The historical cVOC source area (Site 14--Motor Transportation) is located 400 ft north of Building 452 and is up-gradient from Building 452. Site 42 (IWTP) and Site 52 (Building 133) are located at least 800 ft away and are cross- or down-gradient from Building 452. The cVOC plume at Site 51 (Building 137) is down-gradient from Building 452 but is at least 800 ft away.

Co-located groundwater grab and soil vapor samples were collected at two locations around Building 452 during Phase I: one on the south side and one on the northwest corner. Two co-located groundwater grab and soil vapor samples were also collected at neighboring Building 143; however, these sample locations were more than 200 ft from Building 452.

No constituents were detected in the groundwater or the soil vapor samples in exceedance of the industrial generic screening levels at Building 452. There was an exceedance at Building 143: 1,1,2,2-PCA in shallow soil vapor.

As discussed in Section 4, there were non-detect results for 1,1,2,2-PCA, 1,1-DCA, TCE, and VC in one of the groundwater grab samples (14TW03) that had reporting limits greater than the industrial generic GWSLs. There was also a non-detect result for 1,1,2,2-PCA in one of the deep soil vapor samples (14TW04), which coincidentally was not co-located with 14TW03, that had a reporting limit greater than the industrial generic SVSL. There is some uncertainty regarding these results; however, it does not have an impact on the conclusions for Building 452 because the industrial generic GWSLs and SVSLs are fairly conservative (i.e., based on a conservative AF of 1 in 10 and a 10-6 ELCR).

6.8.3 Conclusions

It is unlikely that the vapor intrusion pathway would result in cVOC concentrations above the indoor air screening levels (IASLs) in indoor air at Building 452 based on a review of the Phase I data and the following lines of evidence:

- The historical cVOC source area(Site 14--Motor Transportation) is located 400 ft north of Building 452 and is up-gradient from Building 452.
- Site 42 (IWTP) and Site 52 (Building 133) are located at least 800 ft away and are cross- or downgradient from Building 452.
- The cVOC plume at Site 51 (Building 137) is down-gradient from Building 452 but is at least 800 ft away.
- cVOCs were not detected above industrial generic screening levels in the Phase I groundwater samples collected from the top of the water table or the Phase I soil vapor samples.
- The attenuation factor used to calculate the generic screening levels is significantly more conservative (2 to 3 orders of magnitude) than the empirically based attenuation factors calculated for industrial buildings at other Bases.
- At the neighboring Building 143, 1,1,2,2-TCE exceeded the screening level in one of the soil vapor samples; however, this sample was located more than 200 ft from Building 452 and there were no screening level exceedances in Phase I groundwater or soil vapor samples at nearby Buildings 3987 or 4380.

Based on this evaluation, additional evaluation of the vapor intrusion pathway at Building 452 is not recommended for Phase II.

6.9 Building 143

Building 143 is the Quality and Safety Administrative Office, built in 1943. The building is classified as a medium industrial building for this evaluation. A 3-D CSM is provided as **Figure 6-4,** with select features summarized in the following paragraphs.

The building is a one-story "H" shaped building and is approximately 10,600 ft^2. An expansion was recently built on the northwest corner of the structure. The building is constructed primarily of wood, with a concrete slab on grade. There are multiple doors and windows around the structure that are typically kept closed. The building includes multiple wall-mounted AC units.

The depth to water is approximately 9 ft bgs in the vicinity of Building 143, with groundwater flowing in the southwesterly direction. The building is surrounded by asphalt parking lot space and roadway, with some grassy areas on the west side. There is an abandoned railroad track extending north to south on the west side of the building.

6.9.1 Analytical Results

No monitoring wells are located within 100 ft of Building 143. The Phase I co-located groundwater and soil vapor sample locations are shown on **Figure 3-4**. The Phase I analytical results are provided in **Table 5-3 (groundwater) and Tables 5-4 through 5-6 (soil vapor)**. A summary of cVOCs with exceedances of generic screening levels is provided in **Table 6-9** and on **Figure 5-4**.

TABLE 6-9
Summary of Building 143 Evaluation Results

Building 143 Historical (2009) Site-Specific Groundwater Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	
Site Specific Medium Building GWSL		*NA*
OU1-14GW18- 0309	16-26	--

Building 143 Phase I Groundwater Grab Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	
Generic GWSL(based on industrial air RSL)		*NA*
OU1-14TW01-09D	9-12	--
OU1-14TW02-09D	9-12	--

Building 143 Phase I Shallow Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	1,1,2,2-PCA ($\mu g/m^3$)
Generic Shallow SVSL (based on industrial air RSL and AF=1E-01)		*2.1*
OU1-14NS02-5-6-09D	5-6	**16**

Building 143 Phase I Deep Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	1,1,2,2-PCA ($\mu g/m^3$)
Generic Deep SVSL (based on industrial air RSL and AF=1E-02)		*21*
OU1-14NS01-6-7-09D	6-7	--

NA- Not Applicable
BOLD indicates exceedance of Industrial screening level
"—" indicates COPC result does not exceed screening level

6.9.2 Refined CSM

Building 143 was initially included in Phase I because it was located partially within a small TCE plume centered on one monitoring well (OU1-14GW18, screened from 16 to 26 ft bgs) where TCE was detected at 105 µg/L in 2006; the medium building modeled site-specific GWSL is 37 µg/L. However, TCE was not detected in this well in 2009 (**Figure 2-5**). The historical cVOC source areas, Site 42 (IWTP) and Site 52 (Building 133), are located at least

500 ft away and are cross- or down-gradient from Building 143. The cVOC plume at Site 51 (Building 137) is up-gradient from Building 143 but is at least 600 ft away.

Co-located groundwater grab and soil vapor samples were collected at two locations around Building 143 during Phase I: one on the north side and one on the southwest corner. Two co-located groundwater grab and soil vapor samples were also collected at neighboring Building 452; however, these samples were more than 200 ft from Building 143.

1,1,2,2-PCA was detected in soil vapor in exceedance of the industrial generic screening level at one of the two sample locations: the one at the southwest corner closest to OU1-14GW18, where TCE exceeded the medium building modeled site-specific GWSL in 2006. There were no other exceedances in soil vapor or groundwater at either Building 143 or 452.

The 1,1,2,2-PCA concentration in the Phase I shallow soil vapor sample collected at 14NS02 (16 µg/m^3) did not correlate with the 1,1,2,2-PCA concentration in monitoring well OU1-14GW18-0309 (1 µg/L U) in 2009; the soil vapor sample was collected 3 feet above the top of the water table (5 to 6 ft bgs) and the monitoring well is screened from 16 to 26 ft bgs. This could indicate that the 1,1,2,2-PCA detected in 14NS02 originated from contamination in the soil rather than volatilization from the vadose zone.

6.9.3 Conclusions

It is possible that subslab soil vapor at Building 143 is impacted by 1,1,2,2-PCA, as suggested by the SVSL exceedance in exterior soil vapor at the southwest corner of the building. A thorough building survey is recommended to document building characteristics, which will be needed to evaluate the vapor intrusion pathway using a multiple-lines-of-evidence approach. Subslab soil vapor samples should be collected in the southwest section of Building 143 during Phase II to further evaluate the potential for vapor migration from cVOC-contaminated groundwater into the building, and to determine if any building occupants are currently subject to unacceptable risks.

6.10 Building 4225

Building 4225 is the Dedicated Aircraft Engine Overhaul General Process building, built in 1990. Building 4225 is classified as a medium industrial building for this evaluation. A 3-D CSM is provided as **Figure 6-5,** with select features summarized in the following paragraphs.

The building is two-stories and approximately 63,500 ft^2. The building is constructed primarily of brick with a concrete slab on grade. There are multiple doors and windows around the structure that are typically kept closed.

The depth to water is approximately 9 ft bgs in the vicinity of Building 4225 based on historic permanent monitoring well data, with groundwater flowing in the southwesterly direction. A dense sandy clay lens was encountered in the subsurface around Building 4225 on the southeastern and southwestern sides. The building is surrounded by asphalt parking lot space and roadway. The TCE plume boundary is located northeast of Building 4225.

6.10.1 Analytical Results

Historical (2009) shallow groundwater cVOC concentrations within 100 ft of Building 4225 (CH2M HILL, 2009a) are summarized in this section. The historical TCE, 1,2-DCE, and VC shallow groundwater concentrations exceeding NC2L standards are shown on **Figures 2-5, 2-7, and 2-9**. Although the plumes are based on exceedances of NC2L standards, groundwater concentrations were compared to site-specific GWSLs for this evaluation. The Phase I co-located groundwater and soil vapor sample locations are shown on **Figure 3-4**. The Phase I analytical results are provided in **Table 5-3 (groundwater) and Tables 5-4 through 5-6 (soil vapor)**. A summary of cVOCs with exceedances of generic screening levels is provided in **Table 6-10** and on **Figure 5-5**.

TABLE 6-10
Summary of Building 4225 Evaluation Results

Building 4225 Historical (2009) Site-Specific Groundwater Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	
Site Specific Medium Building GWSL		*NA*
OU1-16GW08-0309	17-27	--

Building 4225 Phase I Groundwater Grab Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	Vinyl Chloride (µg/L)
Generic GWSL(based on industrial air RSL)		*2.7*
OU1-16TW01-09D	10-13	--
OU1-16TW02-09D	9-13	6.2U
OU1-16TW03-09D	8-12	--
OU1-16TW04-09D	9-13	--

Building 4225 Phase I Shallow Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	VC (µg/m^3)	1,1,2,2-PCA (µg/m^3)	PCE (µg/m^3)
Generic SVSL (based on industrial air RSL and AF=1E-01)		*28*	*2.1*	*21*
OU1-16NS02-3-4-09D	3-4	**110**	27U	**78**

Building 4225 Phase I Deep Exterior Soil Vapor Screening Industrial Level Exceedances

Sample ID	Screen Depth (ft bgs)	VC (µg/m^3)	1,1,2,2-PCA (µg/m^3)	PCE (µg/m^3)
Generic SVSL (based on industrial air RSL and AF=1E-02)		*280*	*21*	*210*
OU1-16NS01-7-8-09D	7-8	--	27U	--

NA – Not Applicable
U - The material was analyzed for, but not detected
BOLD indicates exceedance of Industrial screening levels
"—" indicates COPC result does not exceed screening level

6.10.2 Refined CSM

Building 4225 was initially included in Phase I because it was located partially within the large TCE plume west of Building 159 based on the 2006 groundwater data (**Figures 3-1, 3-2, 3-3**). Then in 2009, the TCE groundwater plume moved slightly away from Building 4225 (**Figures 2-5, 2-7, 2-9).** The monitoring well at the west corner of Building 4225 did not have cVOCs in exceedance of the modeled site-specific GWSLs for medium buildings during either 2006 or 2009. The main TCE plume centered on Building 133 is at least 1,000 ft from Building 4225.

Four co-located groundwater grab and soil vapor samples were planned for Phase I at Building 4225: one on each side of the building. At two of the locations, OU1-16TW03 and OU1-16TW04 southeast and southwest of the building, respectively, the soil vapor samples could not be collected due to dense clay in the zone above the water table. The depth to water was 9 ft bgs at OU1-16TW03 and 8 ft bgs at OU1-16TW04. At three of the four sample locations, no cVOCs were detected in exceedance of the industrial generic screening levels in groundwater. At sample location OU1-16TW/NS02, located to the northwest of Building 4225, cVOCs were detected in exceedance of the industrial generic screening levels in groundwater and soil vapor. PCE and VC exceeded the screening levels in the shallow soil vapor, but did not exceed the screening levels in groundwater or deep soil vapor. There is some uncertainty regarding the concentrations of 1,1,2,2-PCA in soil vapor because the laboratory reporting limits exceeded the screening levels for deep and shallow soil vapor.

Co-located groundwater and soil vapor samples were also collected at nearby Buildings 159 (to the north) and 4224 (to the northeast). Trans-1,2-DCE exceeded the GWSL in one groundwater sample northwest of Building 4224; however, this sample location is on the opposite side of Building 4225 closer to the main source area at Building 133. There were no other screening level exceedances at Building 4224 or at Building 159, which is entirely underlain by the TCE plume.

The VC and PCE concentrations in the Phase I shallow soil vapor sample collected at 16NS02 (110 $\mu g/m^3$ and 78 $\mu g/m^3$) did not correlate with the VC and PCE concentrations in the co-located groundwater grab sample 14TW02; the soil vapor sample was collected approximately 5 ft above the top of the water table (3 to 4 ft bgs) and the temporary well is screened from 9 to 13 ft bgs. This could indicate that the VC and PCE detected in 16NS02 originated from contamination in the soil rather than volatilization from the vadose zone.

There was a non-detect result for VC in one of the groundwater grab samples (16TW02) that had a reporting limit greater than the industrial generic GWSL. There were also non-detect results for 1,1,2,2-PCA in soil vapor that had reporting limits greater than the industrial generic SVSL. There is some uncertainty regarding these results; however, it does not have an impact on the conclusions for Building 4225 because the industrial generic GWSLs and SVSLs are fairly conservative (i.e., based on a conservative AF of 1 in 10 and a 10-6 ELCR).

6.10.3 Conclusions

It is possible that subslab soil vapor at Building 4225 is impacted by PCE and/or VC, as suggested by the SVSL exceedance in exterior soil vapor on the northeast side of the building. A thorough building survey is recommended to document building characteristics, which will be needed to evaluate the vapor intrusion pathway using a

multiple-lines-of-evidence approach. Subslab soil vapor samples should be collected in the northeast section of Building 4225 during Phase II to further evaluate the potential for vapor migration from cVOC-contaminated groundwater into the building, and to determine if any building occupants are currently subject to unacceptable risks.

6.11 Building 4224

Building 4224 is the Non-Metal Components Shop V/STOL Rework building, built in 1990. Building 4224 is classified as a large industrial building for this evaluation. A 3-D CSM is provided as **Figure 6-6,** with select features summarized in the following paragraphs.

The building is two-stories and approximately 127,000 ft^2. The building is constructed primarily of brick with a concrete slab on grade. There are multiple doors and windows around the structure that are typically kept closed. There are also several bay doors which are equipped with motion detecting devices that keep the door closed, with the exception of carts accessing the doors intermittently throughout the day.

The depth to water is approximately 8 ft bgs in the vicinity of Building 4224 based on historic permanent monitoring well data, with groundwater flowing in the southwesterly direction. A dense sandy clay lens was encountered in the subsurface around Building 4224 on the northeastern and northwestern sides. The building is surrounded by asphalt parking lot space and roadway, with grassy areas on the north side of the building. The TCE plume is located beneath half of the building on the northern and western sides. The investigation area with which the Building 4224 samples are associated is Site 52, which is located due east of Building 4224. Site 52 is located within Building 133 on the northeast end of the building. Site 52's source area is the Plating Shop cleaning vats and metal degreaser, which were located on the northeastern end of the Building 133. Additionally, the source area wastes were disposed of in a drainage ditch associated with Site 15 on the southeast side of the building before the industrial sewerage system (Site 47) was installed (Section 2.2).

6.11.1 Analytical Results

Historical (2009) shallow groundwater cVOC concentrations within 100 ft of Building 4224 that were above the site-specific GWSLs for large buildings (CH2M HILL, 2009a) are summarized in this section. The historical TCE, 1,2-DCE, and VC shallow groundwater concentrations exceeding NC2L standards are shown in **Figures 2-5, 2-7, and 2-9.** Although the plumes are based on exceedances of NC2L standards, groundwater concentrations were compared to site-specific GWSLs for this evaluation. The Phase I co-located groundwater and soil vapor sample locations are shown on **Figure 3-4**. The Phase I analytical results are provided in **Table 5-3 (groundwater) and Tables 5-4 through 5-6 (soil vapor)**. A summary of cVOCs with exceedances of generic screening levels is provided in **Table 6-11** and on **Figure 5-6**.

TABLE 6-11
Summary of Building 4224 Evaluation Results

Building 4224 Historical (2009) Site-Specific Groundwater Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	TCE (µg/L)
Site Specific Large Building GWSL		*89.6*
OU1-52GW31-0309	20-30	**820**
OU1-52GW76-0309	20-30	--

Building 4224 Phase I Groundwater Grab Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	TCE (µg/L)	1,1,2,2-PCA (µg/L)	1,1-DCA (µg/L)	Vinyl Chloride (µg/L)
Generic GWSL(based on industrial air RSL)		*19*	*19*	*39*	*2.7*
OU1-52TW01-09D	13-17	--	--	--	--
OU1-52TW02-09D	5-7	--	--	--	--
OU1-52TW03-09D	13-15	40U	40U	40U	80U
OU1-52TW13-09D	12-14	--	--	--	--

Building 4224 Phase I Deep Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	TCE ($\mu g/m^3$)	1,1,2,2-PCA ($\mu g/m^3$)	1,1-DCA ($\mu g/m^3$)	Vinyl Chloride ($\mu g/m^3$)
Generic Deep SVSL (based on industrial air RSL and AF=1E-02)		*610*	*21*	*770*	*280*
OU1-52NS13-10-11-9D	10-11	--	--	--	--

U - The material was analyzed for, but not detected
BOLD indicates exceedance of Industrial screening levels
"—" indicates COPC result does not exceed screening level

6.11.2 Refined CSM

Building 4224 was included in Phase I because it is located within 100 ft of one shallow monitoring well which had a TCE exceedance of the modeled site-specific GWSL for large buildings (**Figure 2-5**). Additionally, the majority of the building is underlain by the shallow TCE groundwater plume originating from Site 52 (Building 133), which is approximately 300 ft to the northeast and up-gradient of Building 4224.

Four co-located groundwater grab and soil vapor samples were planned for Phase I at Building 4224: one on each side of the building. The sample on the southeast side was not collected because the area could not be accessed for the utility location. At two of the locations, OU1-52TW01 and OU1-52TW02 (northwest and northeast, respectively, of the building), the soil vapor samples could not be collected due to a dense clay layer above the groundwater table. A groundwater sample was also collected at the neighboring Building 4497 within 100 ft of Building 4224. A co-located soil vapor sample could not be collected at this location due to dense clay in the vadose zone.

There were no cVOCs detected in exceedance of the industrial generic screening levels in either groundwater or soil vapor at the three sample locations at Building 4224. At sample location 52TW/NS11 at Building 3402, 200 ft up-gradient from the east corner of Building 4224, VC was detected in soil vapor and groundwater in exceedance of the industrial generic screening levels.

The TCE concentration in the Phase I groundwater sample collected at 52TW03 (40 µg/L U) did not correlate with the TCE concentration in the historic groundwater sample at 52GW31 in 2009; the groundwater grab sample was collected from the top of the water table (13 to 15 ft bgs) and the monitoring well is screened from 20 to 30 ft bgs.

There were non-detect results for TCE, 1,1,2,2-PCA, 1,1-DCA, and VC in one of the groundwater grab samples (52TW03) that had reporting limits greater than the industrial generic GWSLs. There is some uncertainty regarding these results; however, it does not have an impact on the conclusions for Building 4224 because the industrial generic GWSLs are fairly conservative (i.e., based on a conservative AF of 1 in 10 and a 10-6 ELCR).

6.11.3 Conclusions

There were no cVOCs detected in groundwater or soil vapor above industrial generic screening levels during Phase I at Building 4224. However, at sample locations hydraulically up-gradient of Building 4224, cVOCs were detected in exceedance of the industrial generic screening levels in soil vapor and groundwater. It is possible that subslab soil vapor in the southeast portion of Building 4224 is impacted by VC, as suggested by the exceedance of the SVSL in exterior soil vapor on the northeast side of the Building 3402. A thorough building survey is recommended to document building characteristics, which will be needed to evaluate the vapor intrusion pathway using a multiple–lines-of-evidence approach. Subslab soil vapor samples should be collected in the southeast section of Building 4224 during Phase II to further evaluate the potential for vapor migration from cVOC-contaminated groundwater into the building, and to determine if any building occupants are currently subject to unacceptable risks.

6.12 Building 133

Building 133 is the Dedicated Aircraft and Engine Accessories Overhaul and Test Building, built in 1944. The building is classified as a large industrial building for this evaluation. A 3-D CSM is provided as **Figure 6-7,** with select features summarized in the following paragraphs.

The building is one-story and approximately 210,000 ft^2. An expansion was recently built on the northwest corner of the structure. The building is constructed of cinder blocks, bricks, and wood. The concrete slab is elevated above grade approximately 6 inches and ranges from approximately 6 to 12 inches thick. Multiple expansion joints are present, but appear to be sealed. The majority of the floor is sealed with an epoxy paint. The ceiling is approximately 30 ft high in most of the building, with 8-foot drop ceilings in the office areas on the northern perimeter and in the workshops in the central portion of the building.

The larger section of the building is used as a maintenance and manufacturing area with several bay doors. All or some of these bay doors remain open during working hours to allow for vehicular and personnel access. Fans are located throughout the larger section of

the building. The building is cooled by a multi-zone AC unit. There is also a second-story room in the central portion of the building where water is treated and a clean room area in the central portion of the building.

The depth to water is approximately 7 ft bgs in the vicinity of Building 133 based on historic permanent monitoring well data, with groundwater flowing in the southwesterly direction. The building is surrounded by asphalt parking lot space and roadway, with grassy areas on the north side of the building. The TCE plume is located beneath half of the building on the northern and western sides. There are also two DNAPL plumes below Building 133: one below the northeastern corner and one below the western corner. The investigation area with which the Building 133 samples are associated is Site 52. Site 52 is located within Building 133 on the northeast end of the building. Site 52's source area is the Plating Shop cleaning vats and metal degreaser, which were located on the northeastern end of Building 133. Additionally, the source area wastes were disposed of in a drainage ditch associated with Site 15 on the southeast side of the building before the industrial sewerage system (Site 47) was installed (Section 2.2).

6.12.1 Analytical Results

Historical (2009) shallow groundwater cVOC concentrations within 100 ft of Building 133 that exceeded the site-specific GWSLs for large buildings (CH2M HILL, 2009a) are summarized in this section. The historical TCE, 1,2-DCE, and VC shallow groundwater concentrations exceeding NC2L standards are shown on **Figures 2-5, 2-7, and 2-9**. Although the plumes are based on exceedances of NC2L standards, groundwater concentrations were compared to site-specific GWSLs for this evaluation. The Phase I subslab soil vapor and co-located groundwater and soil vapor sample locations are shown on **Figure 3-4**. The Phase I analytical results are provided in **Table 5-3 (groundwater) and Tables 5-4 through 5-6 (soil vapor)**. A summary of cVOCs with exceedances of generic screening levels is provided in **Table 6-12** and on **Figure 5-7**.

TABLE 6-12
Summary of Building 133 Evaluation Results

Building 133 Historical (2009) Site-Specific Groundwater Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	1,1-DCA (µg/L)	PCE (µg/L)	TCE (µg/L)	VC (µg/L)
Site Specific Large Building GWSL		*200*	*18*	*90*	*13*
OU1-52GW01-0309		----	----	**200**	----
OU1-52GW07-0309	10-20	----	----	**370**	----
OU1-52GW08-0309	8-18	----	50U	**2,000**	**110**
OU1-52GW10-0309	8-18	----	----	----	----
OU1-52GW11-0309	8-18	----	----	----	----
OU1-52GW17-0309	20-30	----	----	**360**	----
OU1-52GW28-0309	20-30	**370**	50UJ	**970**	50U
OU1-52GW33-0309	20-30	----	----	**390**	----
OU1-52GW35-0309	20-30	--	50U	**540**	50U
OU1-52GW37-0309	20-30	----	50U	**950**	50U
OU1-52GW39-0309	20-30	----	----	----	----

Sample ID	Screen Depth (ft bgs)	1,1-DCA (µg/L)	PCE (µg/L)	TCE (µg/L)	VC (µg/L)
Site Specific Large Building GWSL		*200*	*18*	*90*	*13*
OU1-52GW41-0309	20-30	----	----	--	--
OU1-52GW44-0309	20-30	--	50U	**160**	50U
OU1-52GW46-0309	20-30	--	**19**	**20,000**	**68J**
OU1-52GW48-0309	20-30	--	--	--	--
OU1-52GW51-0309	20-30	--	50U	**1,800**	50U
OU1-52GW53-0309	20-30	--	--	**9,700**	**21**
OU1-52GW56-0309	20-30	--	--	--	--
OU1-52GW58-0309	20-30	--	--	**9,300**	--
OU1-52GW60-0309	20-30	--	--	--	--
OU1-52GW62-0309	20.5-30.5	--	50U	**2,200**	50U
OU1-52GW64-0309	20-30	--	--	**190**	--
OU1-52GW70-0309	20-30	--	--	**380**	--
OU1-52GW72-0309	20-30	--	--	--	--
OU1-52GW74-0309	20-30	--	--	--	--
OU1-MW73-0309	5-15	--	--	--	--
OU1-N2GW17-0309	13-23	--	--	**170J**	**61J**
OU1-N2GW18-0309	7.5-17.5	--	20U	--	20U
OU1-N2GW25-0309	5-15	--	--	--	--
OU1-N2GW29-0309	5-15	--	--	--	--
OU1-N4GW07-0309	8-18	--	--	--	--
OU1-N4GW14-0309	5-15	--	--	--	--
OU1-N5GW03-0309	10-20	--	--	--	--

Building 133 Phase I Groundwater Grab Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	1,1-DCA (µg/L)	PCE (µg/L)	TCE (µg/L)	VC (µg/L)
Generic GWSL(based on industrial air RSL)		*39*	*3.5*	*19*	*2.7*
OU1-52TW05-09D	10-12	--	--	--	20U
OU1-52TW07-09D	9-13	--	--	--	20U
OU1-52TW10-09D	6-10	--	--	--	--
OU1-52TW11-09D	8.5-10.5	--	--	--	**4.5**
OU1-52TW15-09D	10-11	--	--	--	--

Building 133 Phase I Shallow Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	1,1-DCA ($\mu g/m^3$)	PCE ($\mu g/m^3$)	TCE ($\mu g/m^3$)	VC ($\mu g/m^3$)
Generic Shallow SVSL (based on industrial air RSL and AF=1E-01)		*77*	*21*	*61*	*28*
OU1-52NS10-4-5-09D	4-5	1,300U	2,200U	860U	820U
OU1-52NS15-4-5-09D	4-5	--	--	--	--

Building 133 Phase I Shallow Exterior Soil Vapor Industrial Screening Level Exceedances (continued)

Sample ID	Screen Depth (ft bgs)	1,1,2,2-PCA (µg/m^3)	1,1-DCE (µg/m^3)	Chloromethane (µg/m^3)	Freon-12 (µg/m^3)
Generic Shallow SVSL (based on industrial air RSL and AF=1E-01)		*2.1*	*880*	*390*	*880*
OU1-52NS10-4-5-09D	4-5	2,200U	1,300U	**18,000**	1,600U
OU1-52NS15-4-5-09D	4-5	14U	--	--	--

Building 133 Phase I Shallow Exterior Soil Vapor Industrial Screening Level Exceedances (continued)

Sample ID	Screen Depth (ft bgs)	Methylene Chloride (µg/m^3)	Trans-1,2-DCE (µg/m^3)
Generic Shallow SVSL (based on industrial air RSL and AF=1E-01)		*260*	*260*
OU1-52NS10-4-5-09D	4-5	2,800U	1,300U
OU1-52NS15-4-5-09D	4-5	--	--

Building 133 Phase I Deep Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	1,1-DCA (µg/m^3)	PCE (µg/m^3)	TCE (µg/m^3)	VC (µg/m^3)
Generic Deep SVSL (based on industrial air RSL and AF=1E-02)		*770*	*210*	*610*	*280*
OU1-52NS05-8-9-09D	8-9	3,100U	5,200U	2,000U	1,900U
OU1-52NS07-8-9-09D	8-9	--	460U	--	--
OU1-52NS11-6-7-09D	6-7	--	--	--	**7,200**

Building 133 Phase I Deep Exterior Soil Vapor Industrial Screening Level Exceedances (continued)

Sample ID	Screen Depth (ft bgs)	1,1,2,2-PCA (µg/m^3)	1,1-DCE (µg/m^3)	Chloromethane (µg/m^3)	Freon-12 (µg/m^3)
Generic Deep SVSL (based on industrial air RSL and AF=1E-02)		*21*	*8,800*	*3,900*	*8,800*
OU1-52NS05-8-9-09D	8-9	5,200U	3,000U	3,900U	--
OU1-52NS07-8-9-09D	8-9	470U	--	--	--
OU1-52NS11-6-7-09D	6-7	96U	--	--	--

Building 133 Phase I Deep Exterior Soil Vapor Industrial Screening Level Exceedances (continued)

Sample ID	Screen Depth (ft bgs)	Methylene Chloride (µg/m^3)	Trans-1,2-DCE (µg/m^3)
Generic Deep SVSL (based on industrial air RSL and AF=1E-02)		*2,600*	*2,600*
OU1-52NS05-8-9-09D	8-9	*6,600U*	*3,000U*
OU1-52NS07-8-9-09D	8-9	--	--
OU1-52NS11-6-7-09D	6-7	--	--

Building 133 Phase I Subslab Soil Vapor Industrial Screening Level Exceedances

Sample ID	1,1-DCA (µg/m^3)	PCE (µg/m^3)	TCE (µg/m^3)	VC (µg/m^3)
Generic Subslab SVSL (based on industrial air RSL and AF=1E-01)	*77*	*21*	*61*	*28*
OU1-52SG01-09D	--	**46**	--	--
OU1-52SG02-09D	--	54 U	**6,000**	--
OU1-52SG03-09D	--	**140**	**3,300**	--
OU1-52SG04-09D	520U	**1,300**	**100,000**	330U
OU1-52SG05-09D	--	--	**280**	--

Building 133 Phase I Subslab Soil Vapor Industrial Screening Level Exceedances (continued)

Sample ID	1,1,2,2-PCA (µg/m^3)	1,1-DCE (µg/m^3)	Chloromethane (µg/m^3)	Freon-12 (µg/m^3)
Generic Subslab SVSL (based on industrial air RSL and AF=1E-01)	*2.1*	*880*	*390*	*880*
OU1-52SG01-09D	5.5U	--	--	--
OU1-52SG02-09D	54U	--	--	--
OU1-52SG03-09D	26U	--	--	--
OU1-52SG04-09D	890U	--	670U	--
OU1-52SG05-09D	5.5U	--	--	--

Building 133 Phase I Subslab Soil Vapor Industrial Screening Level Exceedances (continued)

Sample ID	Methylene Chloride (µg/m^3)	Trans-1,2-DCE (µg/m^3)
Generic Subslab SVSL (based on industrial air RSL and AF=1E-01)	*260*	*260*
OU1-52SG01-09D	--	--
OU1-52SG02-09D	--	--
OU1-52SG03-09D	--	--
OU1-52SG04-09D	1,100U	2,300
OU1-52SG05-09D	--	--

U - The material was analyzed for, but not detected
J – The analyte is present but the value is estimated
BOLD indicates exceedance of the applicable screening criteria
"—" – indicates COPC result does not exceed screening level

6.12.2 Refined CSM

Building 133 was included in Phase I because it is located within 100 ft of 17 shallow monitoring wells which had cVOC exceedances of the modeled site-specific GWSLs for large buildings (**Figures 2-5, 2-7, and 2-9**). Site 52, which is within Building 133, is one of the cVOC groundwater source areas at OU1; as discussed in Section 2.2, it is the former Plating Shop and ditch. The main portion of the OU1 TCE plume originates from Building 133; the highest concentrations of TCE (up to 20,000 µg/L) in shallow groundwater were detected in

wells installed beneath Building 133. TCE DNAPL is likely present beneath Building 133. VC, 1,2-DCE, and PCE have also been detected in exceedance of the modeled site-specific GWSLs.

Co-located Phase I groundwater grab and soil vapor samples were collected at two locations around Building 133 during Phase I: one on the south corner and one on the west corner. An additional co-located groundwater and soil vapor sampling location was planned for the northwest side of the building; however, these samples could not be installed due to an obstruction in the subsurface. Co-located groundwater grab and soil vapor samples were also collected at neighboring Buildings 4026, 3402, and 4533 within 100 ft of Building 133. Subslab soil vapor samples were collected from five locations within Building 133.

There were no cVOCs detected during Phase I in exceedance of the industrial generic screening levels in either groundwater or soil vapor samples at the two locations adjacent to Building 133. Concentrations of cVOCs in exterior soil vapor were not anticipated to predict VOC concentrations in subslab soil vapor due to the location of the groundwater plume and VOC source area "hot spots" beneath the building's footprint. VC was detected in soil vapor and groundwater in exceedance of the industrial generic screening levels to the southwest at Building 3402; however, VC was not detected in exceedance of the industrial generic SVSLs in subslab soil vapor at Building 133. Chloromethane was detected in exceedance of the industrial generic SVSL to the southeast at Building 4026; however, chloromethane was not detected in exceedance of the industrial generic SVSL in subslab soil vapor at Building 133. The source of these VOCs (e.g. chloromethane, Freon) is unclear. They were not previously detected at significant levels in groundwater suggesting a potential vadose zone source. The elevated reporting limit of Freon in shallow soil vapor may be related to leaky refrigerant lines and the presence of Freon does not appear to mask the presence of other VOCs or affect the overall VI conclusions for Building 133.

The potential need for additional samples to characterize the chloromethane presence will be included in the recommendations for Phase II. There were no cVOCs detected in exceedance of the industrial generic screening levels in either groundwater or soil vapor near Building 4533 to the west of Building 159.

The groundwater grab samples collected from 52TW05 and 52TW07 and soil vapor samples collected from 52NS05 and 52NS07 had elevated reporting limits for the analytes due to the presence of non-target compounds in the samples, as discussed in Section 4. Those non-target compounds are likely the petroleum hydrocarbons that are known to occur in the subsurface near Building 4533 and are being addressed by the Air Station UST Program (**Figures 2-11 and 2-12**). The potential presence of cVOCs in soil vapor near Building 4533 cannot be evaluated due to the elevated reporting limits. There is some uncertainty regarding potential cVOC concentrations in the west corner of Building 133; however, subslab soil vapor samples were collected throughout the building and the conclusions are primarily based on those sample results.

Subslab soil vapor sampling was recommended for Building 133 knowing that higher VOC concentrations would likely be detected beneath the building based on the interior locations of the primary VOC source areas (waste sump) and the TCE groundwater plume beneath the building's footprint (**Figure 2-5**). TCE, PCE and trans-1,2-DCE were detected in

exceedance of the industrial generic SVSLs in subslab soil vapor at Building 133. The highest concentrations of cVOCs were on the east to northeast side of the building, specifically at sample location 52SG04. The TCE concentration at 52SG04 was 100,000 µg/m^{3,} which is approximately 1,640 times the industrial generic SVSL. These data observed spatially may indicate a subsurface source in this area of Building 133 that has not previously been investigated.

The cVOC concentrations in groundwater were historically higher on the southwest side of Building 133; however, the groundwater grab, exterior soil vapor, and subslab soil vapor data from samples collected in that area do not correlate. Alternatively, the highest levels of TCE were observed in the subslab soil vapor data collected from the northeast side of Building 133, where historically groundwater was not as significantly impacted.

The pressure monitoring conducted during Phase I indicated that the building is neutral to positively pressurized. The pressure differential measurements were highly variable and typically greater than zero (**Figure 5-10**). The fluctuations observed in pressure differential at Building 133 mimicked those in barometric pressure, indicating that indoor air is primarily influenced by outdoor air. These conditions could reduce the favorability for a complete vapor intrusion pathway.

6.12.3 Conclusions

Subslab soil vapor at Building 133 is impacted by TCE, PCE, and trans-1,2-DCE. At the east corner of the building the detection of TCE was greater than two orders of magnitude above the SVSL. Chloromethane was detected in exterior soil vapor southeast of the building in exceedance of the SVSL and VC was detected in a co-located soil vapor and groundwater sample south of the building in exceedance of the screening levels; however, these cVOCs did not exceed SVSLs in Building 133 subslab soil vapor. The source of these VOCs (e.g. chloromethane, Freon) is unclear. They were not previously detected at significant levels in groundwater suggesting a potential vadose zone source. Additional lines of evidence that will be examined during Phase II may include the pressure environment within the building, the ventilation system, and additional building characteristics. This information will be used with the data collected as recommended below during Phase II.

To reduce uncertainty in the multi-media relationship at Building 133, additional characterization is needed. A thorough building survey is recommended to document building characteristics, which will be needed to evaluate the vapor intrusion pathway using a multiple-lines-of-evidence approach. An additional round of subslab soil vapor sampling should be performed to address temporal variability. Additional subslab soil vapor samples should be collected to assess the spatial variability of cVOCs in subslab soil vapor at Building 133 during Phase II, particularly the northeast corner of the building to include the delineation of chloromethane and TCE. Co-located indoor and outdoor air samples should be collected with the subslab soil vapor during Phase II to determine if indoor air is currently being significantly impacted by soil vapor intrusion. The feasibility of calculating empirical subslab-to-indoor-air AFs should be considered using Phase II data.

6.13 Building 4533

Building 4533 is the Customer Service building in FRCE, built in 1944. It is classified as a small industrial building for this evaluation. A 3-D CSM is provided as **Figure 6-7,** with select features summarized in the following paragraphs.

The building is one-story and approximately 3,500 ft^2. It is constructed primarily of brick. The building was not accessed during the building survey activities and was unoccupied during field activities.

The depth to water is approximately 7 ft bgs in the vicinity of Building 4533 based on historic permanent monitoring well data, with groundwater flowing in the southwesterly direction. The building is surrounded by asphalt parking lot space and roadway. The TCE plume is located beneath Building 4533 and the surrounding area. The investigation area with which the Building 4533 samples are associated is Site 52, which is located due east of Building 4533. Site 52 is located within Building 133 on the northeast end of the building. Site 52's source area is the Plating Shop cleaning vats and metal degreaser, which were located on the northeastern end of Building 133. Additionally, the source area wastes were disposed of in a drainage ditch associated with Site 15 on the southeast side of the building before the industrial sewerage system (Site 47) was installed (Section 2.2).

6.13.1 Analytical Results

Historical (2009) shallow groundwater cVOC concentrations within 100 ft of Building 4533 that exceeded the site-specific GWSLs for small buildings (CH2M HILL, 2009a) are summarized in this section. The historical TCE, 1,2-DCE, and VC shallow groundwater concentrations exceeding NC2L standards are shown on **Figures 2-5, 2-7, and 2-9.** Although the plumes are based on exceedances of NC2L standards, groundwater concentrations were compared to site-specific GWSLs for this evaluation. The Phase I co-located groundwater and soil vapor sample locations are shown on **Figure 3-4**. The Phase I analytical results are provided in **Table 5-3 (groundwater) and Tables 5-4 through 5-6 (soil vapor)**. A summary of cVOCs with exceedances of generic screening levels are provided in **Table 6-13** and on **Figure 5-7**.

TABLE 6-13
Summary of Building 4533 Evaluation Results

Building 4533 Historical (2009) Site-Specific Groundwater Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	TCE (µg/L)	VC (µg/L)
Site Specific Small Building GWSL		*28*	*3.5*
OU1-N2GW07-0309	20-30	**130**	**260**
OU1-N2GW17-0309	12.9-22.9	**170J**	**61J**

Building 4533 Phase I Groundwater Grab Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	TCE (µg/L)	VC (µg/L)	1,1,2,2-PCA (µg/L)	1,1-DCA (µg/L)
Generic GWSL(based on industrial air RSL)		*19*	*2.7*	*19*	*39*
OU1-52TW05-09D	10-12	--	20U	--	--
OU1-52TW06-09D	10-14	40U	80U	40U	40U

Building 4533 Phase I Deep Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	TCE (µg/m^3)	VC (µg/m^3)	1,1,2,2-PCA (µg/m^3)	1,1-DCA (µg/m^3)
Generic Deep SVSL (based on industrial air RSL and AF=1E-02)		*610*	*280*	*21*	*770*
OU1-52NS05-8-9-09D	8-9	2,000U	1,900U	5,200U	3,100U
OU1-52NS06-8-9-09D	8-9	6,300U	6,000U	16,000U	9,400U

Building 4533 Phase I Deep Exterior Soil Vapor Industrial Screening Level Exceedances (continued)

Sample ID	Screen Depth (ft bgs)	1,1-DCE (µg/m^3)	Chloromethane (µg/m^3)	Freon-12 (µg/m^3)	Methylene Chloride (µg/m^3)
Generic Deep SVSL (based on industrial air RSL and AF=1E-02)		*8,800*	*3,900*	*8,800*	*2,600*
OU1-52NS05-8-9-09D	8-9	--	3,900U	--	6,600U
OU1-52NS06-8-9-09D	8-9	9,200U	12,000U	12,000U	20,000U

Building 4533 Phase I Deep Exterior Soil Vapor Industrial Screening Level Exceedances (continued)

Sample ID	Screen Depth (ft bgs)	PCE (µg/m^3)	Trans-1,2-DCE (µg/m^3)
Generic Deep SVSL (based on industrial air RSL and AF=1E-02)		*210*	*2,600*
OU1-52NS05-8-9-09D	8-9	5,200U	3,000U
OU1-52NS06-8-9-09D	8-9	16,000U	9,200U

U - The material was analyzed for, but not detected
J – The analyte is present but the value is estimated
BOLD indicates exceedance of Industrial screening levels
"—" indicates COPC result does not exceed screening level

6.13.2 Refined CSM

Building 4533 was initially included in Phase I because it is located within 100 ft of two monitoring wells that contained TCE and VC in exceedance of the small building modeled site-specific GWSLs (**Figures 2-5 and 2-9**). The main cVOC plume at OU1 originating from Building 133 underlies Building 4533. Building 133 is approximately 100 ft hydraulically up-gradient from Building 4533.

Co-located groundwater grab and soil vapor samples were collected at two locations around Building 4533 during Phase I: one on the northwest side and one on the southeast side. Co-located groundwater and soil vapor samples as well as subslab soil vapor samples were collected at neighboring Building 133.

The TCE concentrations in the Phase I groundwater samples collected at 52TW05 (10 µg/L U) and 52TW06 (40 µg/L U) did not correlate with the TCE concentration in the historical groundwater samples at N2GW07 and N2GW17 in 2009. Additionally, VC concentrations in the Phase I groundwater samples collected at 52TW05 (20 µg/L U) and 52TW06 (80 µg/L U) did not correlate with the VC concentrations in the historical groundwater samples at N2GW07 and N2GW17 in 2009; the groundwater grab samples were collected from the top of the water table (10 to 12 ft bgs and 10 to 14 ft bgs, respectively) and the monitoring wells are screened from 20 to 30 ft bgs and 12.9 to 22.9 ft bgs, respectively.

There were no cVOCs detected in exceedance of the industrial generic screening levels in either groundwater or soil vapor at the two sample locations at Building 4533; however, there is significant uncertainty regarding cVOC concentrations in soil vapor and to a lesser extent groundwater concentrations at Building 4533 due to elevated reporting limits. The elevated reporting limit of Freon in deep soil vapor may be related to leaky refrigerant lines and the presence of Freon does not appear to mask the presence of other VOCs or affect the overall VI conclusions for Building 4533.

The groundwater grab samples collected from 52TW05 and 52TW06 and the soil vapor samples collected from 52NS05 and 52NS06 had elevated reporting limits for the analytes due to the presence of non-target compounds in the samples, as discussed in Section 4. Those non-target compounds are likely the result of the POL plume known to occur in the subsurface near Building (**Figures 2-11 and 2-12**). The potential presence of cVOCs in soil vapor near Building 4533 cannot be evaluated due to the elevated reporting limits.

Subslab soil vapor at neighboring Building 133 is impacted by cVOCs; however, the most significant impacts were observed at the east corner of the building furthest from Building 4533. The co-located groundwater and soil vapor samples collected west of Building 133 within 100 ft of Building 4533 did not contain cVOCs in exceedance of generic screening levels.

6.13.3 Conclusions

It is possible that subslab soil vapor at Building 4533 is impacted by cVOCs because it is 100 ft down-gradient from the main cVOC source at Building 133. However, the Phase I data were inconclusive due to elevated reporting limits, likely a result of the POL plume in the subsurface at Building 4533. Additional evaluation of cVOCs in soil vapor at Building 4533 is not possible at this time; if subslab soil vapor samples were collected, it is likely that similar reporting limit issues would be encountered. The results will be investigated in a cooperative effort between NAVFAC and Unites States Marine Corps (USMC) POL team.

6.14 Building 4498

Building 4498 is the Nose Gearbox Test Facility, built in 1997. It is classified as a small industrial building for this evaluation. A 3-D CSM is provided as **Figure 6-7,** with select features summarized in the following paragraphs.

The building is one-story and approximately 2,000 ft². It is constructed primarily of brick. The building was not accessed during the building survey activities and was unoccupied during field activities.

The depth to water is approximately 7 ft bgs in the vicinity of Building 4498 based on historic permanent monitoring well data, with groundwater flowing in the southwesterly direction. A dense sandy clay lens and perched water at 2 ft bgs were encountered in the subsurface around Building 4498. The building is surrounded by asphalt parking lot space and roadway. The TCE plume is located beneath Building 4498 and the surrounding area. The investigation area with which the Building 4498 samples are associated is Site 52, which is located due east of Building 4498. Site 52 is located within Building 133 on the northeast end of the building. Site 52's source area is the Plating Shop cleaning vats and metal degreaser, which were located on the northeastern end of Building 133. Additionally, the source area wastes were disposed of in a drainage ditch associated with Site 15 on the southeast side of the building before the industrial sewerage system (Site 47) was installed (Section 2.2).

6.14.1 Analytical Results

Historical (2009) shallow groundwater cVOC concentrations within 100 ft of Building 4498 that exceeded the site-specific GWSLs for small buildings (CH2M HILL, 2009a) are summarized in this section. The historical TCE, 1,2-DCE, and VC shallow groundwater concentrations exceeding NC2L standards are shown in **Figures 2-5, 2-7, and 2-9**. Although the plumes are based on exceedances of NC2L standards, groundwater concentrations were compared to site-specific GWSLs for this evaluation. The Phase I co-located groundwater and soil vapor sample locations are shown on **Figure 3-4**. The Phase I analytical results are provided in **Table 5-3 (groundwater) and Tables 5-4 through 5-6 (soil vapor)**. A summary of cVOCs with exceedances of generic screening levels is provided in **Table 6-14** and on **Figure 5-7**.

TABLE 6-14
Summary of Building 4498 Evaluation Results

Building 4498 Historical (2009) Site-Specific Groundwater Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	VC (µg/L)
Site Specific Small Building GWSL		*3.5*
OU1-N2GW15-0309	20-30	**37**

Building 4498 Phase I Groundwater Grab Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	VC (µg/L)	1,1,2,2-PCA (µg/L)	1,1-DCA (µg/L)	TCE (µg/L)
Generic GWSL(based on industrial air RSL)		*2.7*	*19*	*39*	*19*
OU1-52TW06-09D	10-14	80U	40U	40U	40U

Building 4498 Phase I Deep Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	VC (µg/m^3)	1,1,2,2-PCA (µg/m^3)	1,1-DCA (µg/m^3)	TCE (µg/m^3)	1,1-DCE (µg/m^3)	Chloromethane (µg/m^3)
Generic Deep SVSL (based on industrial air RSL and AF=1E-02)		*280*	*21*	*770*	*610*	*8,800*	*3,900*
OU1-52NS06-8-9-09D	8-9	6,000U	16,000U	9,400U	6,300U	9,200U	12,000U

Building 4498 Phase I Deep Exterior Soil Vapor Industrial Screening Level Exceedances (continued)

Sample ID	Screen Depth (ft bgs)	Freon-12 (µg/m^3)	Methylene Chloride (µg/m^3)	PCE (µg/m^3)	Trans-1,2-DCE (µg/m^3)
Generic Deep SVSL (based on industrial air RSL and AF=1E-02)		*8,800*	*2,600*	*210*	*2,600*
OU1-52NS06-8-9-09D	8-9	12,000U	20,000U	16,000U	9,200U

U - The material was analyzed for, but not detected
BOLD indicates exceedance of Industrial screening levels

6.14.2 Refined CSM

Building 4498 was initially included in Phase I because it is located within 100 ft of one monitoring well that contained VC in exceedance of the small building modeled site-specific GWSL (**Figure 2-9**). The main cVOC plume at OU1 originating from Building 133 underlies Building 4498. Building 133 is approximately 200 ft hydraulically up-gradient from Building 4498.

One co-located groundwater and soil vapor sample was planned for the east corner of Building 4498 during Phase I; however, the groundwater sample could not be collected because the temporary well did not produce water and the soil vapor sample could not be collected due to perched water. Co-located groundwater and soil vapor samples were collected at neighboring Buildings 4533, 4497, and 4224. One of the sample locations (52TW06/52NS06) at Building 4533 was within 100 ft of Building 4498.

The VC concentration in the Phase I groundwater sample collected at 52TW06 (80 µg/L U) did not correlate with the VC concentrations in the historical groundwater sample at N2GW15 in 2009; the groundwater grab sample was collected from the top of the water table (10-14 ft bgs), and the monitoring well is screened from 20 to 30 ft bgs.

There were no cVOCs detected in exceedance of the industrial generic screening levels in either groundwater or soil vapor at the two sample locations near Building 4533; however, there is significant uncertainty regarding cVOC concentrations in soil vapor and to a lesser extent groundwater concentrations at Building 4533 due to elevated reporting limits. The elevated reporting limit of Freon in deep soil vapor may be related to leaky refrigerant lines and the presence of Freon does not appear to mask the presence of other VOCs or affect the overall VI conclusions for Building 4498.

The groundwater grab sample collected from 52TW06 and the soil vapor sample collected from 52NS06 had elevated reporting limits for the target analytes due to the presence of non-target compounds in the samples, as discussed in Section 4. Those non-target compounds are likely a result of the POL plume known to occur in the subsurface near Building 4498 and are being addressed by the Air Station UST Program (**Figures 2-11 and 2-12**). The potential presence of cVOCs in soil vapor near Building 4498 cannot be evaluated due to the elevated reporting limits.

At neighboring Buildings 4497 and 4224, there were no cVOCs detected in exceedance of the industrial generic screening levels. Subslab soil vapor at Building 133 is impacted by cVOCs; however, the most significant impacts were observed at the east corner of the building furthest from Building 4498. The co-located groundwater and soil vapor samples collected west of Building 133 within 200 ft of Building 4498 did not contain cVOCs in exceedance of generic screening levels.

6.14.3 Conclusions

It is possible that subslab soil vapor at Building 4498 is impacted by cVOCs because it is 200 ft down-gradient from the main cVOC source at Building 133. However, the Phase I data were inconclusive due to elevated reporting limits, likely a result of the POL plume in the subsurface at Building 4533. Additional evaluation of cVOCs in soil vapor at Building 4498 is not possible at this time; if subslab soil vapor samples were collected, it is likely that similar reporting limit issues would be encountered. The results will be investigated in a cooperative effort between NAVFAC and Unites States Marine Corps (USMC) POL team.

6.15 Building 4497

Building 4497 was initially included in Phase I because it is located within 100 ft of two monitoring wells that contained TCE in exceedance of the small building modeled site-specific GWSL (**Figure 2-5**). The main cVOC plume at OU1 originating from Building 133 underlies Building 4497. Building 133 is approximately 100 ft hydraulically up-gradient from Building 4497.

Two co-located groundwater and soil vapor samples were planned for Phase I at Building 4497: one on the northwest side and one on the southeast side of the building. The groundwater and soil vapor samples at the northwest side of the building could not be collected due to dense clay in the subsurface. The soil vapor sample at the southeast side of the building could not be collected due to dense clay in the vadose zone.

The TCE concentrations in the Phase I groundwater sample collected at 52TW02 (1 µg/L U) and 52TW03 (40 µg/L U) did not correlate with the TCE concentrations in the historical groundwater samples at 52GW31 or 52GW76 in 2009; the groundwater grab samples were collected from the top of the water table (5 to 7 ft bgs and 13 to 15 ft bgs, respectively) and the monitoring wells are screened from 20 to 30 ft bgs.

There were no cVOCs detected in exceedance of the industrial generic GWSLs in the groundwater samples at Building 4497 or neighboring Building 4224. No cVOCs were detected in exceedance of the industrial generic screening levels in either groundwater or soil vapor at the two sample locations at Building 4533; however, there is significant

uncertainty regarding cVOC concentrations in soil vapor and to a lesser extent groundwater concentrations at Building 4533 due to elevated reporting limits.

The groundwater grab samples collected from 52TW03 and the soil vapor samples collected from 52NS05 and 52NS06 had elevated reporting limits for the analytes due to the presence of non-target compounds in the samples, as discussed in Section 4. Those non-target compounds are likely the result of the POL plume known to occur in the subsurface near Building (**Figures 2-11 and 2-12**). The potential presence of cVOCs in soil vapor near Building 4498 cannot be evaluated due to the elevated reporting limits.

Subslab soil vapor at Building 133 is impacted by cVOCs; however, the most significant impacts were observed at the east corner of the building furthest from Building 4497. The co-located groundwater and soil vapor samples collected west of Building 133 within 200 ft of Building 4497 did not contain cVOCs in exceedance of generic screening levels.

6.15.1 Analytical Results

Historical (2009) shallow groundwater cVOC concentrations within 100 ft of Building 4497 that exceeded the site-specific GWSLs for small buildings (CH2M HILL, 2009a) are summarized in this section. The historical TCE, 1,2-DCE, and VC shallow groundwater concentrations exceeding NC2L standards are shown on **Figures 2-5, 2-7, and 2-9**. Although the plumes are based on exceedances of NC2L standards, groundwater concentrations were compared to site-specific GWSLs for this evaluation. The Phase I groundwater locations are shown on **Figure 3-4**. The Phase I analytical results are provided in **Table 5-3 (groundwater)**. A summary of cVOCs with exceedances of generic screening levels is provided in **Table 6-15** and on **Figure 5-7**.

TABLE 6-15
Summary of Building 4497 Evaluation Results

Building 4497 Historical (2009) Site-Specific Groundwater Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	TCE (µg/L)
Site Specific Small Building GWSL		*28.2*
OU1-52GW31-0309	20-30	**820**
OU1-52GW76-0309	20-30	**38**

Building 4497 Phase I Groundwater Grab Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	TCE (µg/L)	1,1,2,2-PCA (µg/L)	1,1-DCA (µg/L)	VC (µg/L)
Generic GWSL(based on industrial air RSL)		*19*	*19*	*39*	*2.7*
OU1-52TW02-09D	5-7	--	--	--	--
OU1-52TW03-09D	13-15	40U	40U	40U	80U

U - The material was analyzed for, but not detected
BOLD indicates exceedance of Industrial screening levels
"—" indicates COPC result does not exceed screening level

6.15.2 Refined CSM

Building 4497 was initially included in Phase I because it is located within 100 ft of two monitoring wells that contained TCE in exceedance of the small building modeled site-specific GWSL (**Figure 2-5**). The main cVOC plume at OU1 originating from Building 133 underlies Building 4497. Building 133 is approximately 100 ft hydraulically up-gradient from Building 4497.

Two co-located groundwater and soil vapor samples were planned for Phase I at Building 4497: one on the northwest side and one on the southeast side of the building. The groundwater and soil vapor samples at the northwest side of the building could not be collected due to dense clay in the subsurface. The soil vapor sample at the southeast side of the building could not be collected due to dense clay in the vadose zone.

The TCE concentrations in the Phase I groundwater sample collected at 52TW02 (1 µg/L U) and 52TW03 (40 µg/L U) did not correlate with the TCE concentrations in the historical groundwater samples at 52GW31 or 52GW76 in 2009; the groundwater grab samples were collected from the top of the water table (5 to 7 ft bgs and 13 to 15 ft bgs, respectively) and the monitoring wells are screened from 20 to 30 ft bgs.

There were no cVOCs detected in exceedance of the industrial generic GWSLs in the groundwater samples at Building 4497 or neighboring Building 4224. There were no cVOCs detected in exceedance of the industrial generic screening levels in either groundwater or soil vapor at the two sample locations at Building 4533; however, there is significant uncertainty regarding cVOC concentrations in soil vapor and to a lesser extent groundwater concentrations at Building 4533 due to elevated reporting limits.

The groundwater grab samples collected from 52TW03 and the soil vapor samples collected from 52NS05 and 52NS06 had elevated reporting limits for the analytes due to the presence of non-target compounds in the samples, as discussed in Section 4. Those non-target compounds are likely result of the POL plume known to occur in the subsurface near Building 4497 (**Figures 2-11 and 2-12**). The potential presence of cVOCs in soil vapor near Building 4498 cannot be evaluated due to the elevated reporting limits.

Subslab soil vapor at Building 133 is impacted by cVOCs; however, the most significant impacts were observed at the east corner of the building furthest from Building 4497. The co-located groundwater and soil vapor samples collected west of Building 133 within 200 ft of Building 4497 did not contain cVOCs in exceedance of generic screening levels.

6.15.3 Conclusions

There were no cVOCs detected in groundwater above industrial generic GWSLs during Phase I at Building 4497. However, the Phase I data were inconclusive due to elevated reporting limits, likely a result of the POL plume in the subsurface at Building 4497. Additional evaluation of cVOCs in soil vapor at Building 4497 is not possible at this time; if subslab soil vapor samples were collected, it is likely that similar reporting limit issues would be encountered. The results will be investigated in a cooperative effort between NAVFAC and USMC POL team.

6.16 Building 3402

Building 3402 is the Engine Test Cell building, built in 1968. The building is classified as a small industrial building for this evaluation. A 3-D CSM is provided as **Figure 6-7,** with select features summarized in the following paragraphs.

The building is one-story and approximately 3,820 ft^2. The building is constructed on a concrete slab elevated above grade. Multiple expansion joints are present in the slab; however, they appeared to be sealed. Sumps and floor drains are located throughout the building. The above-ground structure is constructed of concrete and cinder blocks. The building is predominantly used for a control room and administrative offices. The ceiling height is approximately 12 ft in the control room area. The windows are left open periodically.

The depth to water is approximately 7 ft bgs in the vicinity of Building 3402 based on historic permanent monitoring well data, with groundwater flowing in the southwesterly direction. The building is surrounded by asphalt parking lot space and roadway, with grassy areas on the south side of the building. The TCE plume is located beneath Building 133, which is just north of Building 3402. The investigation area with which Building 3402 samples are associated is Site 52, which is located northeast of Building 3402. Site 52 is located within Building 133 on the northeast end of the building. Site 52's source area is the Plating Shop cleaning vats and metal degreaser, which were located on the northeastern end of the Building 133. Additionally, the source area wastes were disposed of in a drainage ditch associated with Site 15 on the southeast side of the building before the industrial sewerage system (Site 47) was installed (Section 2.2).

6.16.1 Analytical Results

Historical (2009) shallow groundwater cVOC concentrations within 100 ft of Building 3402 that exceeded the site-specific GWSLs for small buildings (CH2M HILL, 2009a) are summarized in this section. The historical TCE, 1,2-DCE, and VC shallow groundwater concentrations exceeding NC2L standards are shown on **Figures 2-5, 2-7, and 2-9.** Although the plumes are based on exceedances of NC2L standards, groundwater concentrations were compared to site-specific GWSLs for this evaluation. The Phase I co-located groundwater and soil vapor sample locations are shown on **Figure 3-4**. The Phase I analytical results are provided in **Table 5-3 (groundwater) and Tables 5-4 through 5-6 (soil vapor)**. A summary of cVOCs with exceedances of generic screening levels is provided in **Table 6-16** and on **Figure 5-7**.

TABLE 6-16
Summary of Building 3402 Evaluation Results

Building 3402 Historical (2009) Site-Specific Groundwater Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	VC (µg/L)
Site Specific Small Building GWSL		*3.5*
OU1-52GW68-0309		--
OU1-N4GW07-0309		--
OU1-N4GW14-0309		**11**
OU1-N5GW03-0309		--

Building 3402 Phase I Groundwater Grab Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	VC (µg/L)
Generic GWSL(based on industrial air RSL)		*2.7*
OU1-52TW11-09D	8.5-12.5	**4.5**

Building 3402 Phase I Deep Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	VC ($\mu g/m^3$)	1,1,2,2-PCA ($\mu g/m^3$)
Generic Deep SVSL (based on industrial air RSL and AF=1E-02)		*279*	*21*
OU1-52NS11-6-7-09D	6-7	**7,200**	96U

U - The material was analyzed for, but not detected
BOLD indicates exceedance of Industrial screening levels
"—" indicates COPC result does not exceed screening level

6.16.2 Refined CSM

Building 3402 was initially included in Phase I because it is located within 100 ft of one monitoring well that contained VC in exceedance of the small building modeled site-specific GWSL (**Figure 2-9**). The main cVOC plume at OU1 originating from Building 133 is 100 ft north and cross-gradient from Building 3402.

One co-located groundwater and soil vapor sample was collected at the north corner of Building 3402 during Phase I. One co-located groundwater and soil vapor sample (52TW/NS15) was collected at the south corner of neighboring Building 133 during Phase I approximately 125 ft up-gradient of Building 3402.

VC was detected in groundwater and deep soil vapor in exceedance of the industrial generic screening levels at Building 3402. VC in groundwater was less than 2 times the GWSL; however, VC in soil vapor was approximately 26 times the SVSL.

As discussed in Section 4, there was a non-detect result for 1,1,2,2-PCA in the soil vapor sample (52NS11) that had a reporting limit greater than the industrial generic SVSL. There is some uncertainty regarding this result; however, it does not have an impact on the conclusions for Building 3402 because the industrial generic SVSLs are fairly conservative (i.e., based on a conservative AF of 1 in 10 and a 10-6 ELCR).

Subslab soil vapor at Building 133 is impacted by cVOCs; however, the most significant impacts were observed at the east corner of the building on the opposite side from Building 3402. No cVOCs were detected in exceedance of the industrial generic screening levels at 52TW/NS15.

6.16.3 Conclusions

It is possible that subslab soil vapor at Building 3402 is impacted by VC, as suggested by the exceedance of SVSLs in exterior deep soil vapor at the north corner of the building. A thorough building survey is recommended to document building characteristics, which will be needed to evaluate the vapor intrusion pathway using a multiple-lines-of-evidence approach. Subslab soil vapor samples should be collected in Building 3402 during Phase II to further evaluate the potential for vapor migration from cVOC-contaminated groundwater into the building, and to determine if any building occupants are currently subject to unacceptable risks.

6.17 Building 4026

Building 4026 is the Engine Examination and Evaluation Shop, built in 1984. The building is classified as a small industrial building for this evaluation. A 3-D CSM is provided as **Figure 6-7,** with select features summarized in the following paragraphs.

The building is one-story and approximately 5,000 ft^2. The building is constructed of brick and predominantly used as an administration office. There is a portion of the building which utilizes Cat Scan technologies to examine the aircraft engines and has restricted access.

The depth to water is approximately 7 ft bgs in the vicinity of Building 4026 based on historic permanent monitoring well data, with groundwater flowing in the southwesterly direction. The building is surrounded by asphalt parking lot space and roadway, with the flightline directly east of Building 4026. The TCE plume is located beneath Building 133, which is just north of Building 4026. The investigation area with which Building 4026 samples are associated is Site 52, which is located north of Building 4026. Site 52 is located within Building 133 on the northeast end of the building. Site 52's source area is the Plating Shop cleaning vats and metal degreaser, which were located on the northeastern end of the Building 133. Additionally, source area wastes were disposed of in a drainage ditch associated with Site 15 on the southeast side of the Building before the industrial sewerage system (Site 47) was installed (Section 2.2). This drainage ditch extends along the north side of Building 4026. A concrete pad is located just east of Building 4026 where mechanics work on helicopters and perform activities such as draining oil from the engines.

6.17.1 Analytical Results

Historical (2009) shallow groundwater cVOC concentrations within 100 ft of Building 4026 (CH2M HILL, 2009a) are summarized in this section. The historical TCE, 1,2-DCE, and VC shallow groundwater concentrations exceeding NC2L standards are shown in **Figures 2-5, 2-7, and 2-9**. Although the plumes are based on exceedances of NC2L standards, groundwater concentrations were compared to site-specific GWSLs for this evaluation. The Phase I co-located groundwater and soil vapor sample locations are shown on **Figure 3-4**. The Phase I analytical results are provided in **Table 5-3 (groundwater) and Tables 5-4 through 5-6 (soil vapor)**. A summary of cVOCs with exceedances of generic screening levels is provided in **Table 6-17** and on **Figure 5-7**.

TABLE 6-17
Summary of Building 4026 Evaluation Results

Building 4026 Historical (2009) Site-Specific Groundwater Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	
Site Specific Small Building PAL		*NA*
OU1-52GW74-0309	20-30	--
OU1-MW73-0309		--

Building 4026 Phase I Groundwater Grab Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	
Generic GWSL(based on industrial air RSL)		*NA*
OU1-52TW09-09D	7-9	--
OU1-52TW10-09D	6-10	--

Building 4026 Phase I Shallow Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	1,1,2,2-PCA (µg/m^3)	1,1-DCA (µg/m^3)	1,1-DCE (µg/m^3)	Chloromethane (µg/m^3)
Generic Shallow SVSL (based on industrial air RSL and AF=1E-01))		*2.1*	*77*	*880*	*390*
OU1-52NS09-5-6-09D	5-6	2,500U	1,500U	1,400U	**30,000**
OU1-52NS10-4-5-09D	4-5	2,200U	1,300U	1,300U	**18,000**

Building 4026 Phase I Shallow Exterior Soil Vapor Industrial Screening Level Exceedances (continued)

Sample ID	Screen Depth (ft bgs)	Freon-12 (µg/m^3)	Methylene Chloride (µg/m^3)	PCE (µg/m^3)
Generic Shallow SVSL (based on industrial air RSL and AF=1E-01))		*880*	*260*	*21*
OU1-52NS09-5-6-09D	5-6	1,800U	3,100U	2,500U
OU1-52NS10-4-5-09D	4-5	1,600U	2,800U	2,200U

Building 4026 Phase I Shallow Exterior Soil Vapor Industrial Screening Level Exceedances (continued)

Sample ID	Screen Depth (ft bgs)	Trans-1,2-DCE (µg/m^3)	TCE (µg/m^3)	VC (µg/m^3)
Generic Shallow SVSL (based on industrial air RSL and AF=1E-01))		*260*	*61*	*28*
OU1-52NS09-5-6-09D	5-6	1,400U	970U	920U
OU1-52NS10-4-5-09D	4-5	1,300U	860U	820U

NA – Not Applicable
U - The material was analyzed for, but not detected
BOLD indicates exceedance of Industrial screening levels
"—" indicates COPC result does not exceed screening level

6.17.2 Refined CSM

Building 4026 was included in Phase I because it is located within 100 ft of the main cVOC plume at Building 133 (**Figures 2-5, 2-7 and 2-9**). Building 4026 is approximately 100 ft southeast and hydraulically up-gradient of Building 133.

Co-located groundwater grab and soil vapor samples were collected at two locations around Building 4026 during Phase I: one on the northwest side and one on the southeast side.

Chloromethane was detected in exceedance of the industrial generic SVSL in both shallow soil vapor samples at Building 4026. These detections were approximately 46 and 77 times the SVSLs. The source of these VOCs (e.g. chloromethane, Freon) is unclear. They were not previously detected at significant levels in groundwater suggesting a potential vadose zone source. There were no cVOCs detected in groundwater at Building 4026 in exceedance of the industrial generic GWSLs.

As discussed in Section 4, there were non-detect results for several analytes in soil vapor (52NS09 and 52NS10) that had reporting limits greater than the industrial generic SVSLs. There is some uncertainty regarding these results; however, it does not have an impact on the conclusions for Building 4026 because the industrial generic SVSLs are fairly conservative (i.e., based on a conservative AF of 1 in 10 and a 10-6 ELCR).

Subslab soil vapor at Building 133 is impacted by cVOCs (TCE, PCE and trans-1,2-DCE); the most significant impacts were observed at the east corner of the building closest to Building 4026. However, these cVOCs were not detected in exceedance of the screening levels at Building 4026 and Building 133 is hydraulically up-gradient of Building 4026.

6.17.3 Conclusions

It is possible that subslab soil vapor at Building 4026 is impacted by chloromethane, as suggested by the SVSL exceedances in exterior shallow soil vapor at the building. A thorough building survey is recommended to document building characteristics, which will be needed to evaluate the vapor intrusion pathway using a multiple-lines-of-evidence approach. Subslab soil vapor samples should be collected in Building 4026 during Phase II to further evaluate the potential for vapor migration from cVOC-contaminated groundwater into the building, and to determine if any building occupants are currently subject to unacceptable risks.

6.18 Building 137

Building 137 is the Aircraft Rework Shop Overhaul and Repair Shops built in 1943. The building is classified as a large industrial building for this evaluation. A 3-D CSM is provided as **Figure 6-8,** with select features summarized in the following paragraphs.

The building is one-story and approximately 505,000 ft^2. The structure is constructed of cinderblock and brick. The building's concrete slab is elevated above grade. The concrete slab ranges from approximately 8 to 10 inches thick. Multiple expansion joints are present but appear to be sealed. Most of the floor is sealed with an epoxy paint. Multiple sumps and floor drains are located throughout the building.

The building is predominantly used for manufacturing and storage; however, there are several administrative offices located within the maintenance area. Building 137 is air conditioned within multiple zones; however, the offices are air conditioned from outside units. The hangar doors typically remain open during business hours and there is frequent pedestrian and vehicular traffic in and out of the structure. There are large exhaust fans throughout the manufacturing floor.

The depth to water is approximately 5 ft bgs in the vicinity of Building 137 based on historic permanent monitoring well data, with groundwater flowing in the southwesterly direction. A large steel pipe was encountered on the north side of Building 137, which prevented the installation of the water and soil vapor probes at select locations as listed below. The building is surrounded by asphalt ground covering, roadway, and the flightline to the south of the building. The groundwater plume is located beneath Building 137 in the northern area of the building. The investigation area with which Building 137 samples are associated is Site 51, which encompasses the area of the northeast end of the building. The source zone (electroplating shop sump) is just northwest of the plume (Section 2.2).

6.18.1 Analytical Results

Historical (2009) shallow groundwater cVOC concentrations within 100 ft of Building 137 that exceeded the site-specific GWSLs for large buildings (CH2M HILL, 2009a) are summarized in this section. The historical TCE, 1,2-DCE, and VC shallow groundwater concentrations exceeding NC2L standards are shown on **Figures 2-5, 2-7, and 2-9.** Although the plumes are based on exceedances of NC2L standards, groundwater concentrations were compared to site-specific GWSLs for this evaluation. The Phase I subslab soil vapor and co-located groundwater and soil vapor sample locations are shown on **Figure 3-4**. The Phase I analytical results are provided in **Table 5-3 (groundwater) and Tables 5-4 through 5-6 (soil vapor)**. A summary of cVOCs with exceedances of generic screening levels is provided in **Table 6-18** and on **Figure 5-8**.

TABLE 6-18
Summary of Building 137 Evaluation Results

Building 137 Historical (2009) Site-Specific Groundwater Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	1,1-DCA (µg/L)	TCE (µg/L)	VC (µg/L)
Site Specific Large Building GWSL		*202*	*89.6*	*13.1*
OU1-47GW05-0309	9-19	--	--	**49**
OU1-47GW07-0309	7-17	**850**	**440**	50U
OU1-47GW09-0309	14.5-24.5	--	--	--
OU1-47GW17-0309	9-19	--	--	**19**
OU1-47GW18-0309	8-18	--	--	--
OU1-47GW19-0309	7-17	**240**	--	**18**
OU1-47GW20-0309	7-17	--	--	--
OU1-51GW02-0309	5-15	--	--	**110**
OU1-MW20-0309	5-20	--	--	--

Building 137 Phase I Groundwater Grab Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	1,1-DCA (µg/L)	TCE (µg/L)	VC (µg/L)
Generic GWSL(based on industrial air RSL)		*39*	*19*	*2.7*
OU1-51TW01-09D	5-7	--	--	--
OU1-51TW03-09D	8-12	--	--	--
OU1-51TW04-09D	8-12	--	--	--
OU1-51TW06-09D	8-12	--	--	--
OU1-51TW08-09D	8-12	--	--	--
OU1-51TW09-09D	9-11	--	--	--

Building 137 Phase I Shallow Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	1,1-DCA ($\mu g/m^3$)	TCE ($\mu g/m^3$)	VC ($\mu g/m^3$)	1,1,2,2-PCA ($\mu g/m^3$)
Generic Shallow SVSL (based on industrial air RSL and AF=1E-01)		*77*	*61*	*28*	*2.1*
OU1-51NS01-3-4-09D	3-4	--	--	--	5.5U
OU1-51NS04-4.5-5.5-09D	4.5-5.5	--	--	--	5.5U
OU1-51NS06-5-6-09D	5-6	--	--	--	5.5U

Building 137 Phase I Shallow Exterior Soil Vapor Industrial Screening Level Exceedances (continued)

Sample ID	Screen Depth (ft bgs)	PCE (µg/m^3)
Generic Shallow SVSL (based on industrial air RSL and AF=1E-01)		*21*
OU1-51NS01-3-4-09D	3-4	**71**
OU1-51NS04-4.5-5.5-09D	4.5-5.5	5.4U
OU1-51NS06-5-6-09D	5-6	5.4U

Building 137 Phase I Deep Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	1,1-DCA (µg/m^3)	TCE (µg/m^3)	VC (µg/m^3)	1,1,2,2-PCA (µg/m^3)
Generic Deep SVSL (based on industrial air RSL and AF=1E-02)		*770*	*210*	*280*	*21*
OU1-51NS03-6-7-09D	6-7	--	--	--	--
OU1-52NS08-6-9-09D	6-7	--	--	--	--
OU1-51NS09-6-709D	6-7	--	--	--	27U

Building 137 Phase I Deep Exterior Soil Vapor Industrial Screening Level Exceedances (continued)

Sample ID	Screen Depth (ft bgs)	PCE (µg/m^3)
Generic Deep SVSL (based on industrial air RSL and AF=1E-02)		*210*
OU1-51NS03-6-7-09D	6-7	--
OU1-51NS08-6-9-09D	6-7	--
OU1-51NS09-6-709D	6-7	--

Building 137 Phase I Subslab Soil Vapor Industrial Screening Level Exceedances

Sample ID	1,1-DCA (µg/m^3)	TCE (µg/m^3)	VC (µg/m^3)	1,1,2,2-PCA (µg/m^3)
Generic Subslab SVSL (based on industrial air RSL and AF=1E-01)	*77*	*61*	*28*	*2.1*
OU1-51SG01-09D	**55,000**	**1,800**	330U	890U
OU1-51SG02-09D	**3,700**	**3,100**	--	24U
OU1-51SG03-09D	**96,000**	**61,000**	270U	740U

Building 137 Phase I Subslab Soil Vapor Industrial Screening Level Exceedances (continued)

Sample ID	PCE (µg/m^3)	1,1,1-TCA (µg/m^3)	1,1-DCE (µg/m^3)	Chloro-methane (µg/m^3)	Methylene Chloride (µg/m^3)	Trans 1,2-DCE (µg/m^3)
Generic Subslab SVSL (based on industrial air RSL and AF=1E-01)	*21*	*21,900*	*880*	*390*	*260*	*260*
OU1-51SG01-09D	880U	**120,000**	**11,000**	670U	1100U	510U
OU1-51SG02-09D	**38**	--	**1,200**	--	--	--
OU1-51SG03-09D	730U	**530,000**	**23,000**	550U	930U	**1,300**

U - The material was analyzed for, but not detected
BOLD indicates exceedance of Industrial screening levels
"—" indicates COPC result does not exceed screening level

6.18.2 Refined CSM

Building 137 was included in Phase I because it is located within 100 ft of five shallow monitoring wells which had cVOC exceedances of the modeled site-specific GWSLs for large buildings (**Figures 2-5, 2-7 and 2-9**). Site 51 (former Plating Shop) at Building 137 is one of the cVOC groundwater source areas at OU1, as discussed in Section 2.2. There is a small cVOC plume (primarily TCE and VC) in the north portion of the building. The main cVOC source area at Building 133 (Site 52) is more than 1,000 ft southwest and hydraulically up-gradient of Building 137; it does not appear to be impacting shallow groundwater within 100 ft of Building 137.

Co-located groundwater grab and soil vapor samples were collected at five locations around Building 137 during Phase I. Three additional co-located groundwater and soil vapor sample were planned for the building; however, the two samples on the northwest side of the building could not be collected due to subsurface utilities, and 51TW/NS07 was removed because it was within approximately 25 ft of 51TW/NS06. Subslab soil vapor samples were collected from three locations within Building 137.

The 1,1-DCE, TCE, and VC concentrations in the Phase I groundwater samples collected at 51TW01, 51TW03, 51TW04, 51TW06, 51TW08, and 51TW09 did not correlate with the 1,1-DCE, TCE, and VC concentrations in the historical groundwater samples collected from area monitoring wells in 2009.

There were no cVOCs detected in exceedance of the industrial generic screening levels in either groundwater or soil vapor at four of the five exterior sample locations at Building 137. PCE was detected in exceedance of the industrial generic SVSL in shallow soil vapor at the sample location southwest of the building (51NS01); this is the sample location furthest from Site 51 and closest to the cVOC plume at Site 52. There is some uncertainty regarding the concentrations of 1,1,2,2-PCA in exterior soil vapor because the laboratory reporting limits exceeded the SVSLs.

Multiple cVOCs were detected in exceedance of the industrial generic SVSLs in subslab soil vapor at Building 137. The highest concentrations of cVOCs were detected at 51SG03; TCE was detected at 1,000 times the SVSL and 1,1-DCA was detected at approximately 1,247 times the SVSL. At exterior sample location 51TW/SN06, approximately 50 to 100 ft from

the three subslab soil vapor sample locations, cVOCs were not detected in exceedance of the industrial generic screening levels. There is some uncertainty regarding the concentrations of cVOCs in subslab soil vapor because the laboratory reporting limits exceeded the SVSLs.

As discussed in Section 4, there were non-detect results for several analytes in shallow and deep soil vapor (51NS01, 51NS04, 51NS06, and 51NS09) and in subslab soil vapor (51SG01, 51SG02, and 51SG03) that had reporting limits greater than the industrial generic SVSLs. There is some uncertainty regarding these results; however, it does not have an impact on the conclusions for Building 137 because the industrial generic SVSLs are fairly conservative (i.e., based on a conservative AF of 1 in 10 and a 10-6 ELCR).

The pressure monitoring conducted during Phase I indicated that Building 137 is neutral to negatively pressurized (**Figure 5-11**). The fluctuations observed in pressure differential at Building 137 mimicked those in barometric pressure, indicating that indoor air is primarily influenced by outdoor air. These conditions could reduce the favorability for a complete vapor intrusion pathway.

6.18.3 Conclusions

Subslab soil vapor at Building 137 is impacted by cVOCs. At one sample location the concentrations of TCE and 1,1-DCA were greater than two orders of magnitude above the SVSLs. PCE was detected in exterior soil vapor southwest of the building in exceedance of the SVSL. A thorough building survey is recommended to document building characteristics, which will be needed to evaluate the vapor intrusion pathway using a multiple-lines-of-evidence approach. An additional round of subslab soil vapor sampling should be performed at Building 137 to address temporal variability associated with soil vapor sampling during Phase II. Additional subslab soil vapor samples should be collected at Building 137 in the northern portion of the building to assess the spatial variability of cVOCs in subslab soil vapor during Phase II. Subslab soil vapor samples should be collected in the southwest section of Building 137 to determine if the PCE present in shallow soil vapor next to the building is also present in subslab soil vapor at concentrations above the SVSLs. Co-located indoor and outdoor air samples should be collected with the subslab soil vapor samples at Building 137 during Phase II to determine if indoor air is currently being significantly impacted by subslab soil vapor.

6.19 Building 4808

Building 4808 is the V-22 Prop Rotor Blade Repair Facility, built in 2008. It is classified as a medium industrial building for this evaluation. A 3-D CSM is provided as **Figure 6-8,** with select features summarized in the following paragraphs.

The building is one-story and approximately 12,000 ft^2. Construction of this building was recently completed in the former footprint of Building 4224. The building is constructed of brick. It contains two automated bay doors which remain closed unless in use. There are two restrooms with floor drains and the entire floor is covered with epoxy paint. At the time of the Phase I field investigation, the building was unoccupied.

The depth to water is approximately 5 ft bgs in the vicinity of Building 4808 based on historic permanent monitoring well data, with groundwater flowing in the southwesterly direction. The building is surrounded by asphalt, roadway, and the flightline to the

southeast of the building. The TCE groundwater plume is located beneath the northern area of Building 137. The investigation area with which Building 4808 samples are associated is Site 51, which encompasses the northeastern area of the Building 137, west of Building 4808. The source zone (electroplating shop sump) is just northwest of the plume in Building 137 (Section 2.2).

6.19.1 Analytical Results

Historical (2009) shallow groundwater cVOC concentrations within 100 ft of Building 4808 were taken from the Remedial Investigation Addendum (CH2M HILL, 2009a) and are summarized in this section. The historical TCE, 1,2-DCE, and VC shallow groundwater concentrations exceeding NC2L standards are shown on **Figures 2-5, 2-7, and 2-9.** Although the plumes are based on exceedances of NC2L standards, groundwater concentrations were compared to site-specific GWSLs for this evaluation. The Phase I co-located groundwater and soil vapor sample locations are shown on **Figure 3-4**. The Phase I analytical results are provided in **Table 5-3 (groundwater) and Tables 5-4 through 5-6 (soil vapor)**. A summary of cVOCs with exceedances of generic screening levels is provided in **Table 6-19** and on **Figure 5-8**.

TABLE 6-19
Summary of Building 4808 Evaluation Results

Building 4808 Historical (2009) Site-Specific Groundwater Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	
Site Specific Medium Building GWSL		*NA*
OU1-47GW09-0309	14.5-24.5	--
OU1-47GW20-0309	7-17	--

Building 4808 Phase I Groundwater Grab Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	
Generic GWSL(based on industrial air RSL)		*NA*
OU1-51TW06-09D	8-12	--
OU1-51TW08-09D	8-12	--

Building 4808 Phase I Shallow Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	1,1,2,2-PCA ($\mu g/m^3$)
Generic SVSL (based on industrial air RSL and AF=1E-01)		*2.1*
OU1-51NS06-5-6-09D	5-6	5.5U

Building 4808 Phase I Deep Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	1,1,2,2-PCA ($\mu g/m^3$)
Generic SVSL (based on industrial air RSL and AF=1E-02)		*21*
OU1-51NS08-6-7-09D	6-7	--

NA – Not Applicable
U - The material was analyzed for, but not detected
"—" indicates COPC result does not exceed screening level

6.19.2 Refined CSM

Building 4808 was included in Phase I because it is located within 100 ft of the cVOC plume that is associated with Site 51 (Building 138); this plume is located to the west and up-gradient of the building. Shallow monitoring wells within 100 ft of the building did not contain cVOCs in exceedance of the modeled site-specific GWSLs for small buildings (**Figures 2-5, 2-7 and 2-9).** The main cVOC source area at Building 133 is more than 1,000 ft southwest and up-gradient of Building 4808 and does not appear to be impacting shallow groundwater within 100 ft of Building 4808.

Co-located groundwater grab and soil vapor samples were collected at two locations southwest of Building 4808 during Phase I; these locations were next to Building 137 and within the shallow cVOC groundwater plume. No constituents were detected in the groundwater or the soil vapor samples in exceedance of the industrial generic screening levels at the two sample locations southwest of the building.

There was a non-detect result for 1,1,2,2-PCA in soil vapor that had a reporting limit greater than the industrial generic SVSL. There is some uncertainty regarding these results; however, it does not have an impact on the conclusions for Building 4808 because the industrial generic SVSLs are fairly conservative (i.e., based on a conservative AF of 1 in 10 and a 10-6 ELCR).

Significant cVOC concentrations were detected in subslab soil vapor at Building 137; however, the subslab soil vapor sample locations were more than 100 ft from Building 4808 and the exterior soil vapor samples without SVSL exceedances were between Buildings 137 and 4808.

6.19.3 Conclusions

It is unlikely that the vapor intrusion pathway would result in cVOC concentrations above the indoor air screening levels (IASLs) in indoor air at Building 4808 based on a review of the Phase I data and the following lines of evidence:

- Shallow monitoring wells within 100 ft of the building did not contain cVOCs in exceedance of the modeled site-specific GWSLs for small buildings and the main cVOC source area at Building 133 is more than 1,000 ft southwest and up-gradient of Building 4808 and does not appear to be impacting shallow groundwater within 100 ft of Building 4808.

- cVOCs were not detected above industrial generic screening levels in the Phase I groundwater samples collected from the top of the water table or the Phase I soil vapor samples.
- The attenuation factor used to calculate the generic screening levels is significantly more conservative (2 to 3 orders of magnitude) than the empirically based attenuation factors calculated for industrial buildings at other Bases.
- Building 4808 is hydraulically up-gradient of Building 137.
- The building is newly built with a brand new concrete and epoxy slab that may hinder the potential for vapor intrusion.

Based on this evaluation, additional evaluation of the vapor intrusion pathway at Building 4808 is not recommended for Phase II.

6.20 Building 3997

Building 3997 is the Engine Maintenance Shop (MALS-14), built in 1987. The building is classified as a medium industrial building for this evaluation. A 3-D CSM is provided as **Figure 6-9,** with select features summarized in the following paragraphs.

The building is two-stories and approximately 29,000 ft^2. The building primarily consists of an open warehouse, although some shop and administration spaces are located throughout. The building is constructed of brick. The northwestern portion of the building is office space and classrooms, with vinyl tile covering the floor. The ceilings are 8-foot drop paneling construction. The office space and classrooms contain AC units.

The depth to water is approximately 9 ft bgs in the vicinity of Building 3997 based on historic permanent monitoring well data, with groundwater flowing in the southwesterly direction. The building is surrounded by asphalt parking lot space and roadway, with the flightline directly south and east of Building 3997.

6.20.1 Analytical Results

Historical (2006) shallow groundwater cVOC concentrations within 100 ft of Building 4808 (CH2M HILL, 2006) are summarized in this section. The historical TCE, 1,2-DCE, and VC shallow groundwater concentrations exceeding NC2L standards are shown on **Figures 3-1 through 3-3**. Although the plumes are based on exceedances of NC2L standards, groundwater concentrations were compared to site-specific GWSLs for this evaluation. The Phase I co-located groundwater and soil vapor sample locations are shown on **Figure 3-4**. The Phase I analytical results are provided in **Table 5-3 (groundwater) and Tables 5-4 through 5-6 (soil vapor)**. A summary of cVOCs with exceedances of generic screening levels is provided in **Table 6-20** and on **Figure 5-9**.

TABLE 6-20
Summary of Building 3997 Evaluation Results

Building 3997 Historical (2006) Site-Specific Groundwater Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	
Site Specific Medium Building GWSL		*N/A*
OU1-74GW08-0406	6-36	--
OU1-74GW10-0406	6-16	--
OU1-74GW12-0406	6-16	--
OU1-74GW16-0406	3.9-13.9	--
OU1-74GW17-0406	5-15	--
OU1-74GW23-0406	4.3-14.3	--
OU1-74GW24-0406	30-35	--

Building 3997 Phase I Groundwater Grab Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	1,1-DCA (µg/L)	VC (µg/L)
Generic GWSL(based on industrial air RSL)		*39*	*2.7*
OU1-74TW01-09D	9-11	--	--
OU1-74TW02-09D	9-11	**210**	20U

Building 3997 Phase I Deep Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	1,1-DCA ($\mu g/m^3$)	VC ($\mu g/m^3$)	1,1,2,2-PCA ($\mu g/m^3$)	Freon-113 ($\mu g/m^3$)	1,1-DCE ($\mu g/m^3$)
Generic SVSL (based on industrial air RSL and AF=1E-01)		*770*	*280*	*21*	*1,300,000*	*8,800*
OU1-74NS01-7-8-09D	7-8	--	--	27U	--	--
OU1-74NS02-6-7-09D	6-7	**140,000**	2,700U	7,400U	**11,000,000**	**9,900**

Building 3997 Phase I Deep Exterior Soil Vapor Industrial Screening Level Exceedances (continued)

Sample ID	Screen Depth (ft bgs)	Chloromethane ($\mu g/m^3$)	Methylene Chloride ($\mu g/m^3$)	PCE ($\mu g/m^3$)	Trans-1,2-DCE ($\mu g/m^3$)
Generic SVSL (based on industrial air RSL and AF=1E-01)		*3,900*	*2,600*	*210*	*2,600*
OU1-74NS01-7-8-09D	7-8	--	--	--	--
OU1-74NS02-6-7-09D	6-7	5,500U	9,300U	7,300U	4,300U

Building 3997 Phase I Deep Exterior Soil Vapor Industrial Screening Level Exceedances (continued)

Sample ID	Screen Depth (ft bgs)	TCE ($\mu g/m^3$)
Generic SVSL (based on industrial air RSL and AF=1E-01)		*610*
OU1-74NS01-7-8-09D	7-8	--
OU1-74NS02-6-7-09D	6-7	2,900U

NA – Not Applicable
U - The material was analyzed for, but not detected
BOLD indicates exceedance of Industrial screening levels
"—" indicates COPC result does not exceed screening level

6.20.2 Refined CSM

Building 3997 was initially included in Phase I because it was located partially within a small TCE plume in 2006 that is associated with Site 74. However, TCE concentrations in groundwater within 100 ft of Building 3997 did not exceed the modeled site-specific GWSL for medium buildings. In spring 2006, TCE was detected in three monitoring wells at concentrations ranging from 1J to 5J µg/L; however, TCE was not detected in 11 other shallow monitoring wells nearby (**Figure 3-1**). Monitoring wells in the vicinity of Building 3997 were not sampled in 2009 since they did not have sustained detections of cVOCs and are sampled as part of the UST program (Section 2.2). Building 3997 is at least 2,000 ft northeast and up-gradient of the other cVOC groundwater source areas at OU1.

Co-located groundwater grab and soil vapor samples were collected at two locations around Building 3997 during Phase I: one on the northwest side and one on the southwest side. At the sample location southwest of the building (OU1-74TW/NS01), there were no cVOCs detected in exceedance of the industrial generic screening levels in either groundwater or soil vapor; however, there is uncertainty about the VC concentration in groundwater because the reporting limit exceeded the GWSL. At sample location OU1-74TW/NS02, located to the northwest of Building 3997, cVOCs were detected in exceedance of the industrial generic screening levels in groundwater and soil vapor. 1,1-DCA exceeded the GWSL in groundwater and the SVSL in deep soil vapor. Freon-113 and 1,1-DCE exceeded the SVSLs in deep soil vapor, but did not exceed the GWSLs in groundwater. The source of these VOCs (e.g. Freon) is unclear. They were not previously detected at significant levels in groundwater suggesting a potential vadose zone source. The detection of Freon in deep soil vapor may be related to leaky refrigerant lines and the presence of Freon does not appear to mask the presence of other VOCs. The presence of Freon in this sample is unlikely to affect the overall VI conclusions for Building 3997.

The soil vapor samples collected from 74NS01 and 74NS02 had elevated reporting limits for many of the non-detected analytes due to the dilutions performed during the TO-15 analysis process , as discussed in Section 4.

6.20.3 Conclusions

It is possible that subslab soil vapor at Building 3997 is impacted by cVOCs, as suggested by the exceedances of SVSLs on the northwest side of the building. A thorough building survey is recommended to document building characteristics, which will be needed to evaluate the vapor intrusion pathway using a multiple–lines-of-evidence approach. Subslab soil vapor

samples should be collected in the northwest section of Building 3997 during Phase II to further evaluate the potential for vapor migration from cVOC-contaminated groundwater into the building, and to determine if any building occupants are currently subject to unacceptable risks.

6.21 Building 131

Building 131 is the Aircraft Maintenance Hangar (MALS-14), built in 1942. The building is classified as a large industrial building for this evaluation. A 3-D CSM is provided as **Figure 6-9,** with select features summarized in the following paragraphs.

The building is two-stories and approximately 124,000 ft^2. The VMR-1, Air Ops, Avionics, GSE, and Parachute Riggers are currently housed in Building 131. The building is constructed of corrugated metal and glass. Several of the exterior walls slide open to allow for aircraft to access the interior of the hangar.

The depth to water is approximately 9 ft bgs in the vicinity of Building 131 based on historic permanent monitoring well data, with groundwater flowing in the southwesterly direction. The building is surrounded by asphalt parking lot space and roadway, with the flightline directly south and east of Building 131.

6.21.1 Analytical Results

Historical (2006) shallow groundwater cVOC concentrations within 100 ft of Building 131 (CH2M HILL, 2006) are summarized in this section. The historical TCE, 1,2-DCE, and VC shallow groundwater concentrations exceeding NC2L standards are shown in **Figures 3-1 through 3-3.** Although the plumes are based on exceedances of NC2L standards, groundwater concentrations were compared to site-specific GWSLs for this evaluation. The Phase I co-located groundwater and soil vapor sample locations are shown on **Figure 3-4**. The Phase I analytical results are provided in **Table 5-3 (groundwater) and Tables 5-4 through 5-6 (soil vapor)**. A summary of cVOCs with exceedances of generic screening levels is provided in **Table 6-21** and on **Figure 5-9**.

TABLE 6-21
Summary of Building 131 Evaluation Results

Building 131 Historical (2006) Site-Specific Groundwater Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	
Site Specific Small Building GWSL		*N/A*
OU1-74GW08-0406	6-36	--
OU1-74GW10-0406	6-16	--
OU1-74GW12-0406	6-16	--
OU1-74GW16-0406	3.9-13.9	--
OU1-74GW17-0406	5-15	--
OU1-74GW23-0406	4.3-14.3	--
OU1-74GW24-0406	30-35	--

Building 131 Phase I Groundwater Grab Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	1,1-DCA (µg/L)	VC (µg/L)
Generic GWSL(based on industrial air RSL)		*39*	*2.7*
OU1-74TW01-09D	9-11	--	--
OU1-74TW02-09D	9-11	**210**	20U

Building 131 Phase I Deep Exterior Soil Vapor Industrial Screening Level Exceedances

Sample ID	Screen Depth (ft bgs)	1,1-DCA (µg/m^3)	VC (µg/m^3)	1,1,2,2-PCA (µg/m^3)	Freon-113 (µg/m^3)	1,1-DCE (µg/m^3)
Generic SVSL (based on industrial air RSL and AF=1E-01)		*770*	*280*	*21*	*1,300,000*	*8,800*
OU1-74NS01-7-8-09D	7-8	--	--	27U	--	--
OU1-74NS02-6-7-09D	6-7	**140,000**	2,700U	7,400U	**11,000,000**	**9,900**

Building 131 Phase I Deep Exterior Soil Vapor Industrial Screening Level Exceedances (continued)

Sample ID	Screen Depth (ft bgs)	Chloromethane (µg/m^3)	Methylene Chloride (µg/m^3)	PCE (µg/m^3)	Trans-1,2-DCE (µg/m^3)
Generic SVSL (based on industrial air RSL and AF=1E-01)		*3,900*	*2,600*	*210*	*2,600*
OU1-74NS01-7-8-09D	7-8	--	--	--	--
OU1-74NS02-6-7-09D	6-7	5,500U	9,300U	7,300U	4,300U

Building 131 Phase I Deep Exterior Soil Vapor Industrial Screening Level Exceedances (continued)

Sample ID	Screen Depth (ft bgs)	TCE (µg/m^3)
Generic SVSL (based on industrial air RSL and AF=1E-01)		*610*
OU1-74NS01-7-8-09D	7-8	--
OU1-74NS02-6-7-09D	6-7	2,900U

NA – Not Applicable
U - The material was analyzed for, but not detected
BOLD indicates exceedance of Industrial screening levels
"—" indicates COPC result does not exceed screening level

6.21.2 Refined CSM

Building 131 was initially included in Phase I because it was located within 100 ft of a small TCE plume in 2006. However, TCE concentrations in groundwater within 100 ft of Building 131 did not exceed the modeled site-specific GWSL for large buildings. In spring 2006, TCE was detected in three monitoring wells at concentrations ranging from 1J to 5J µg/L; however, TCE was undetected in 11 other shallow monitoring wells nearby (**Figure 3-1**). Monitoring wells in the vicinity of Building 3997 were not sampled in 2009 since they did not have sustained detections of cVOCs and are sampled as part of the UST program

(Section 2.2). Building 3997 is at least 2,000 ft northeast and up-gradient of the other cVOC groundwater source areas at OU1.

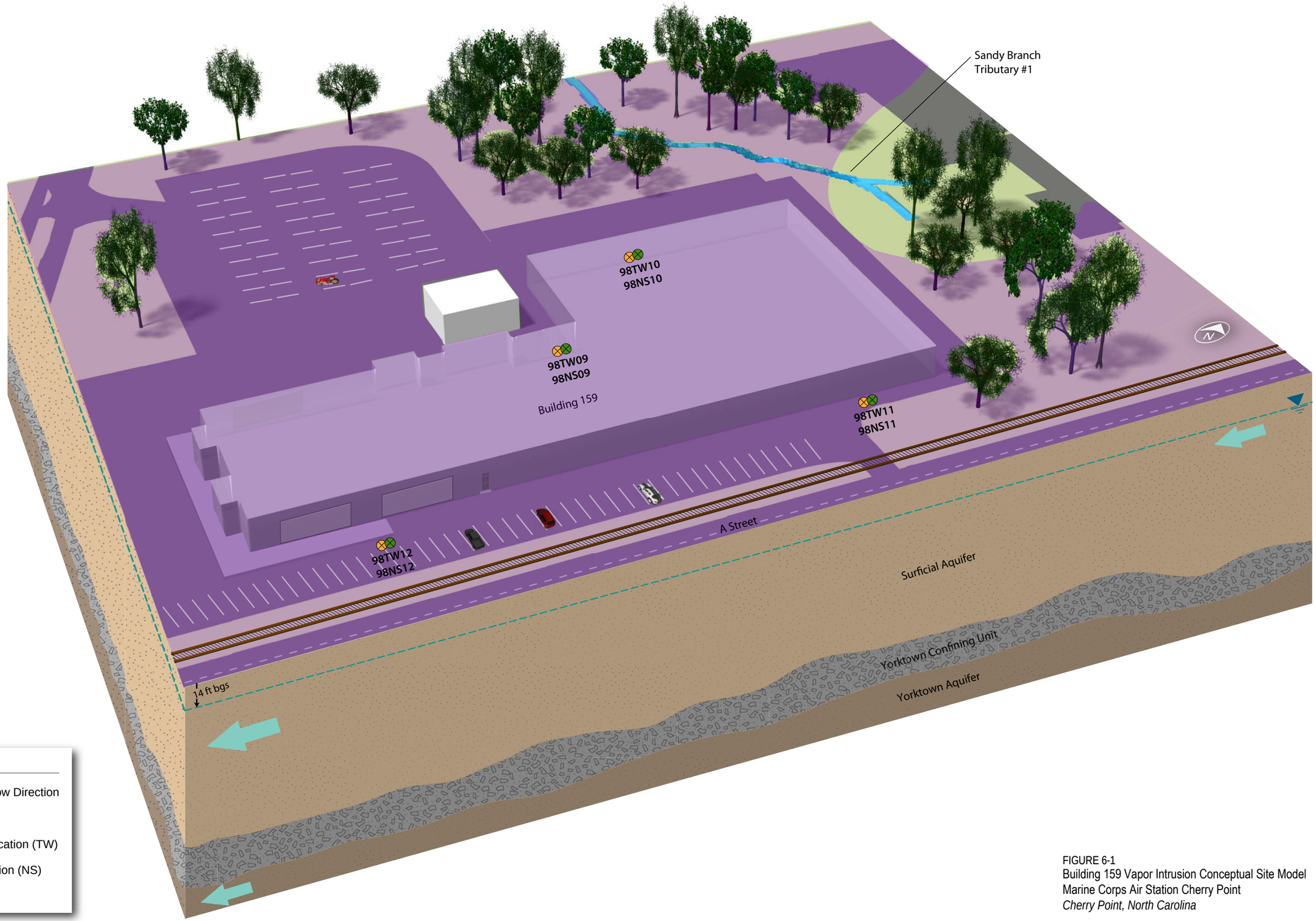
One co-located groundwater and soil vapor sample was planned for Phase I at Building 131 at the southwest side of the building. However, a sample probe could not be installed at this location due to extensive utilities present in the corridor between Buildings 131 and 3997 (**Figure 3-13**). Additionally, a sample probe could not be installed on the northwest side of Building 131 because of the presence of utilities.

Two co-located groundwater grab and soil vapor samples were collected at the neighboring Building 3997; these samples were within 200 ft of Building 131. At one of these locations, Freon-113, 1,1-DCA, and 1,1-DCE were detected in deep soil vapor and 1,1-DCA was detected in groundwater at concentrations exceeding the industrial generic GWSLs. The source of these VOCs (e.g. Freon) is unclear. They were not previously detected at significant levels in groundwater suggesting a potential vadose zone source. The detection of Freon in deep soil vapor may be related to leaky refrigerant lines and the presence of Freon does not appear to mask the presence of other VOCs. The presence of Freon in this sample is unlikely to affect the overall VI conclusions for Building 131.

The soil vapor samples collected from 74NS01 and 74NS02 had elevated reporting limits for many of the non-detected analytes due to the dilutions performed during the TO-15 analysis process, as discussed in Section 4.

6.21.3 Conclusions

Concentrations of cVOCs in soil vapor within 200 ft of Building 131 exceeded industrial generic SVSLs. Because of the lack of data within 100 ft of Building 131, data from the samples taken near Building 3997 were utilized to draw conclusions. Based on these data, there is a potential for indoor air impacts from the vapor intrusion pathway at Building 131. A thorough building survey is recommended to document building characteristics, which will be needed to evaluate the vapor intrusion pathway using a multiple-lines-of-evidence approach. Subslab soil vapor samples should be collected in the southwest section of Building 131 during Phase II to further evaluate the potential for vapor migration from cVOC-contaminated groundwater into the building, and to determine if any building occupants are currently subject to unacceptable risks.

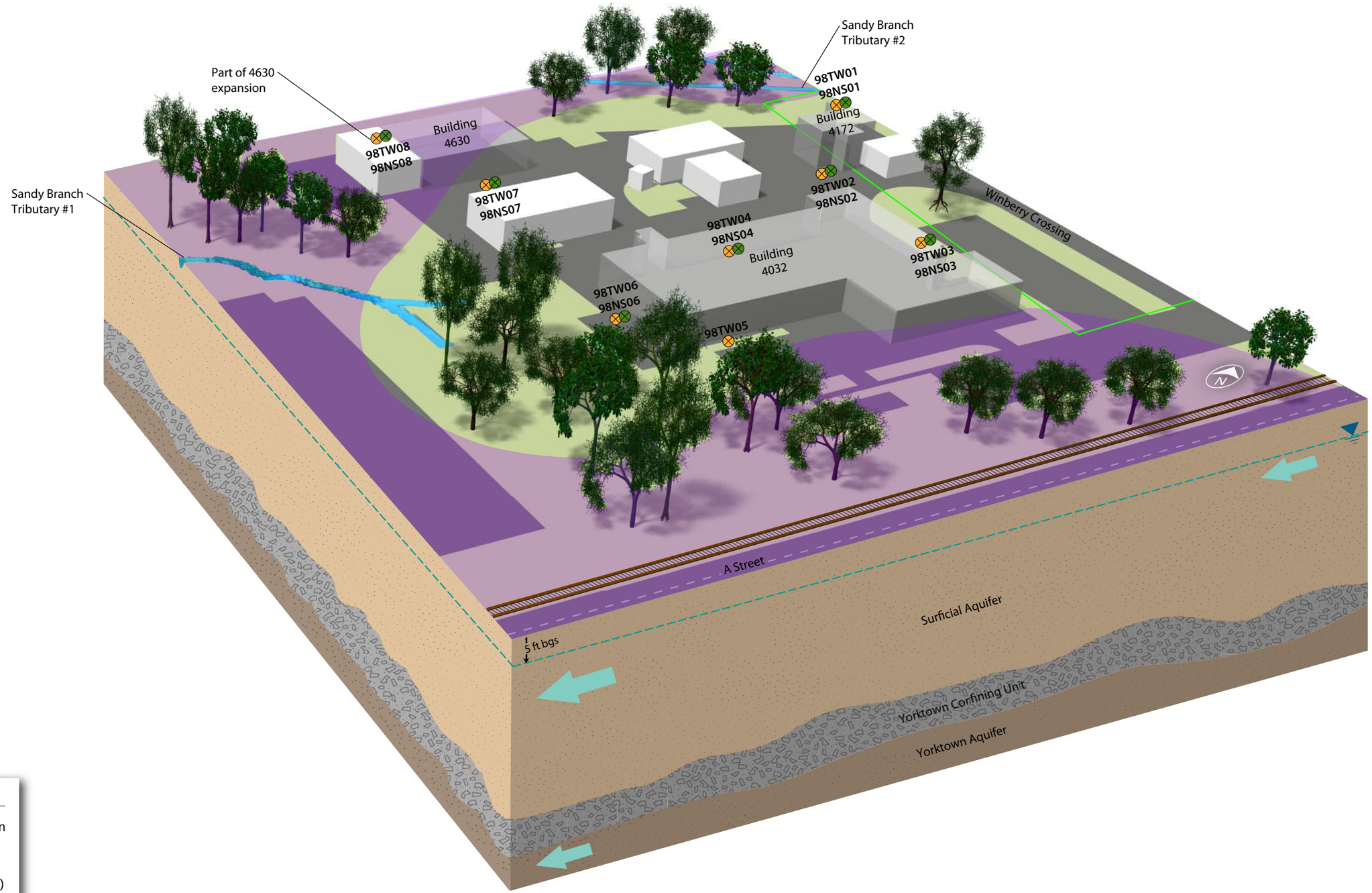


LEGEND

- Primary Groundwater Flow Direction
- Water Table
- Groundwater Sample Location (TW)
- Soil Vapor Sample Location (NS)
- TCE plume

FIGURE 6-1
Building 159 Vapor Intrusion Conceptual Site Model
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

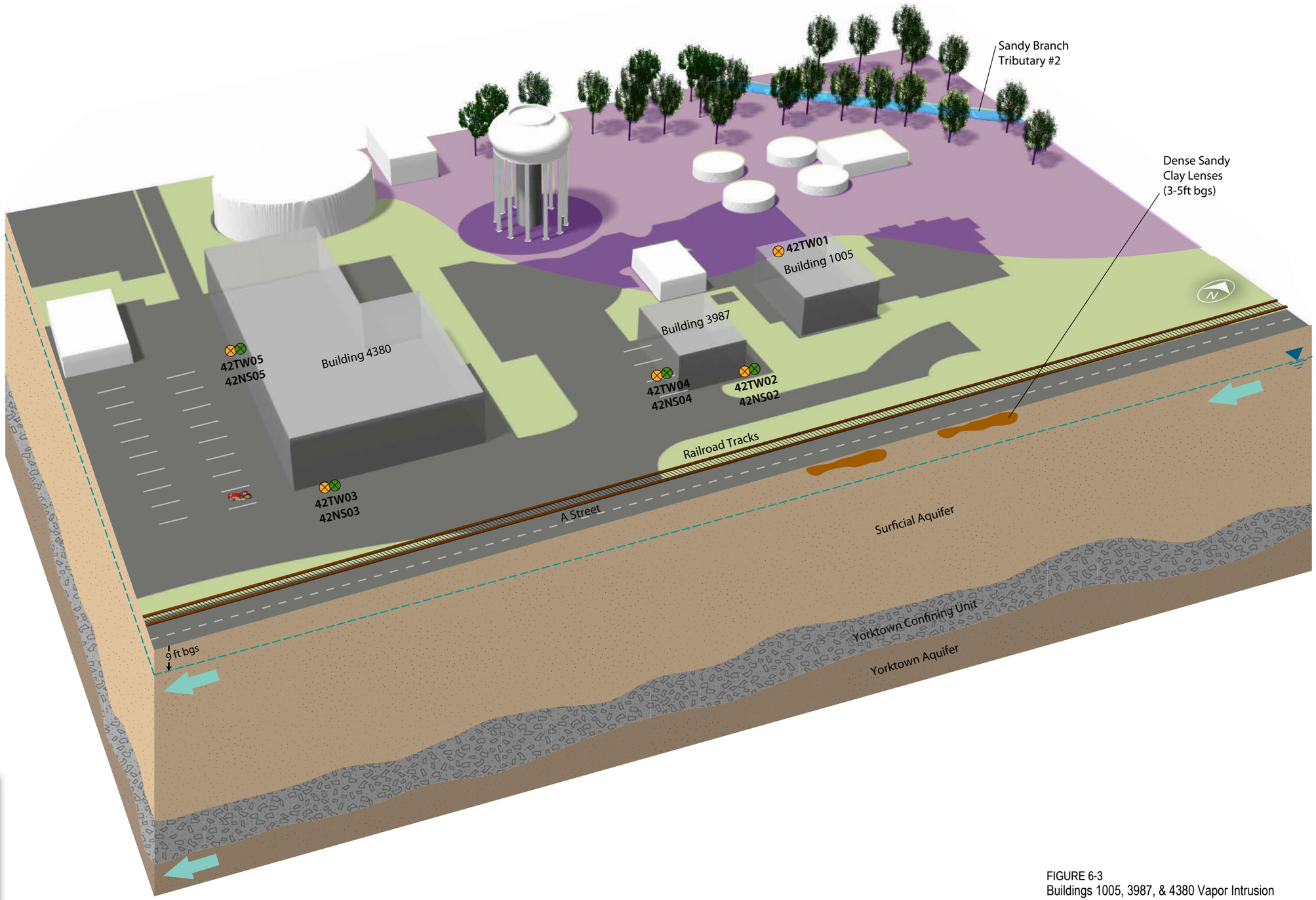
CH2MHILL



LEGEND

- Primary Groundwater Flow Direction
- Water Table
- Groundwater Sample Location (TW)
- Soil Vapor Sample Location (NS)
- TCE plume
- Site 98 Boundary

FIGURE 6-2
Buildings 4032, 4172, & 4630 Vapor Intrusion
Conceptual Site Model
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina



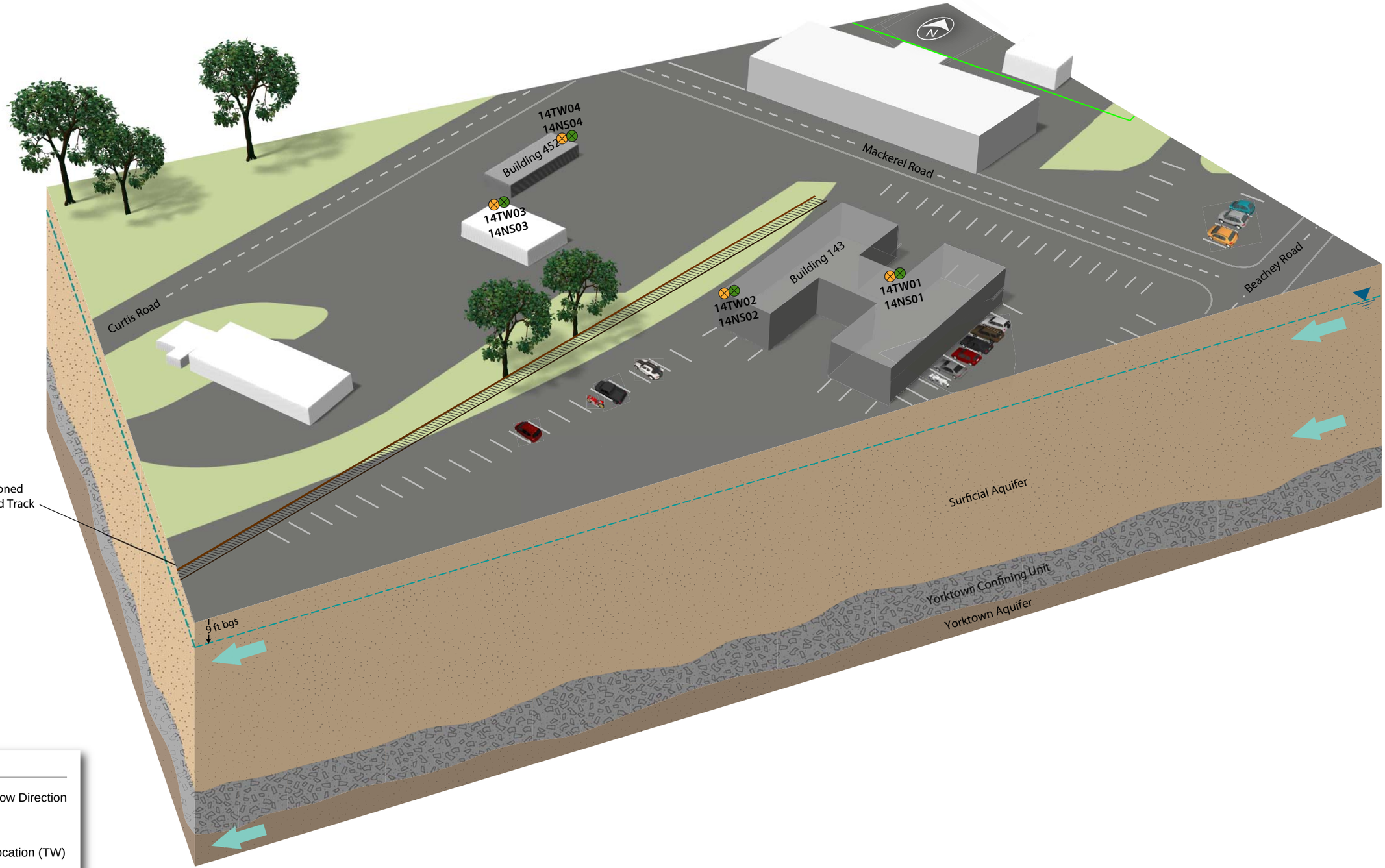
LEGEND

- Primary Groundwater Flow Direction
- Water Table
- Groundwater Sample Location (TW)
- Soil Vapor Sample Location (NS)
- TCE plume

FIGURE 6-3
Buildings 1005, 3987, & 4380 Vapor Intrusion
Conceptual Site Model
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

ES121509103328WDC Figure_6-3_v7.ai 3-10-10 mlb

CH2MHILL

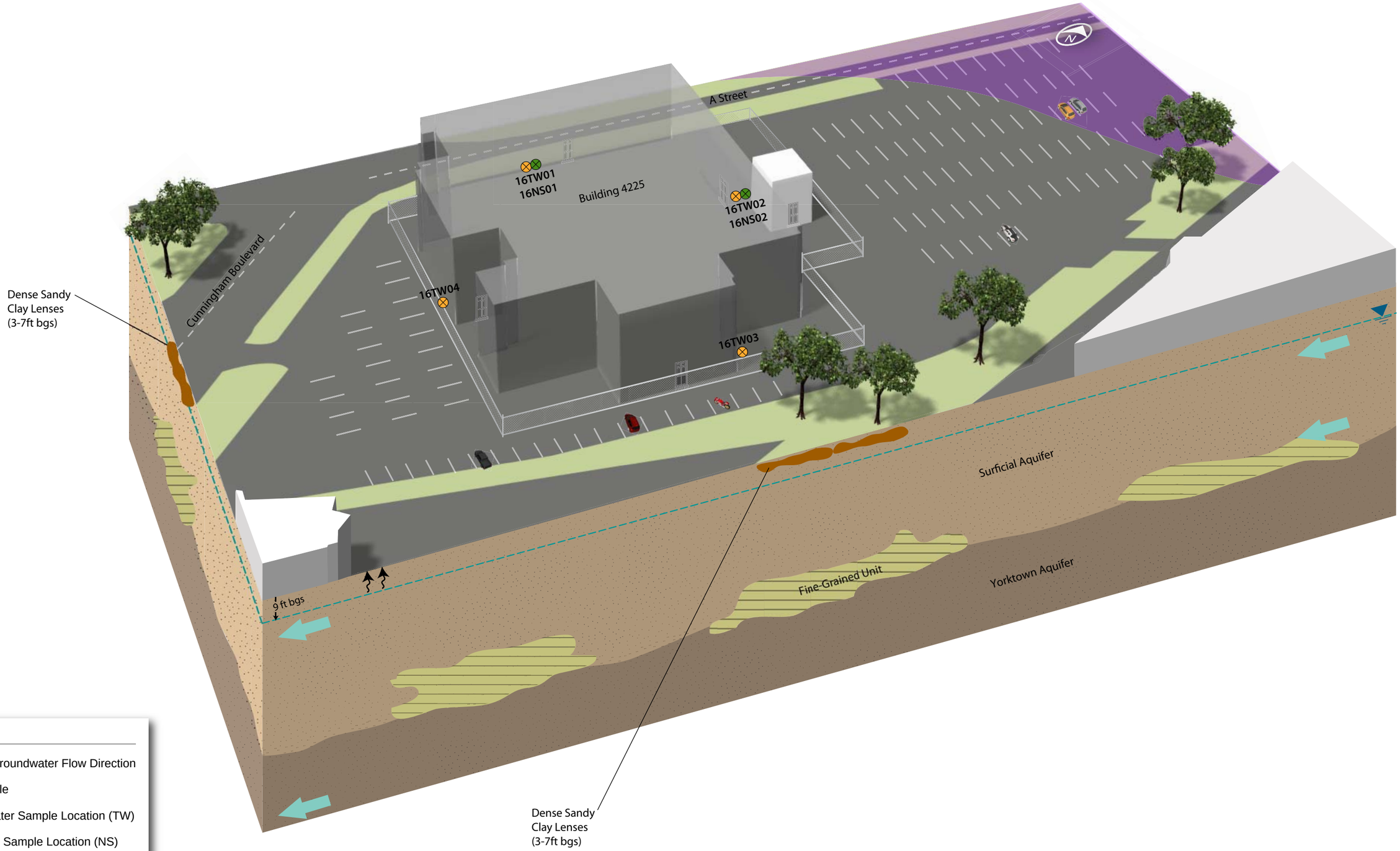


LEGEND

- Primary Groundwater Flow Direction
- Water Table
- Groundwater Sample Location (TW)
- Soil Vapor Sample Location (NS)
- TCE plume
- Site 14 Boundary

FIGURE 6-4
Buildings 143, 452 Vapor Intrusion
Conceptual Site Model
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

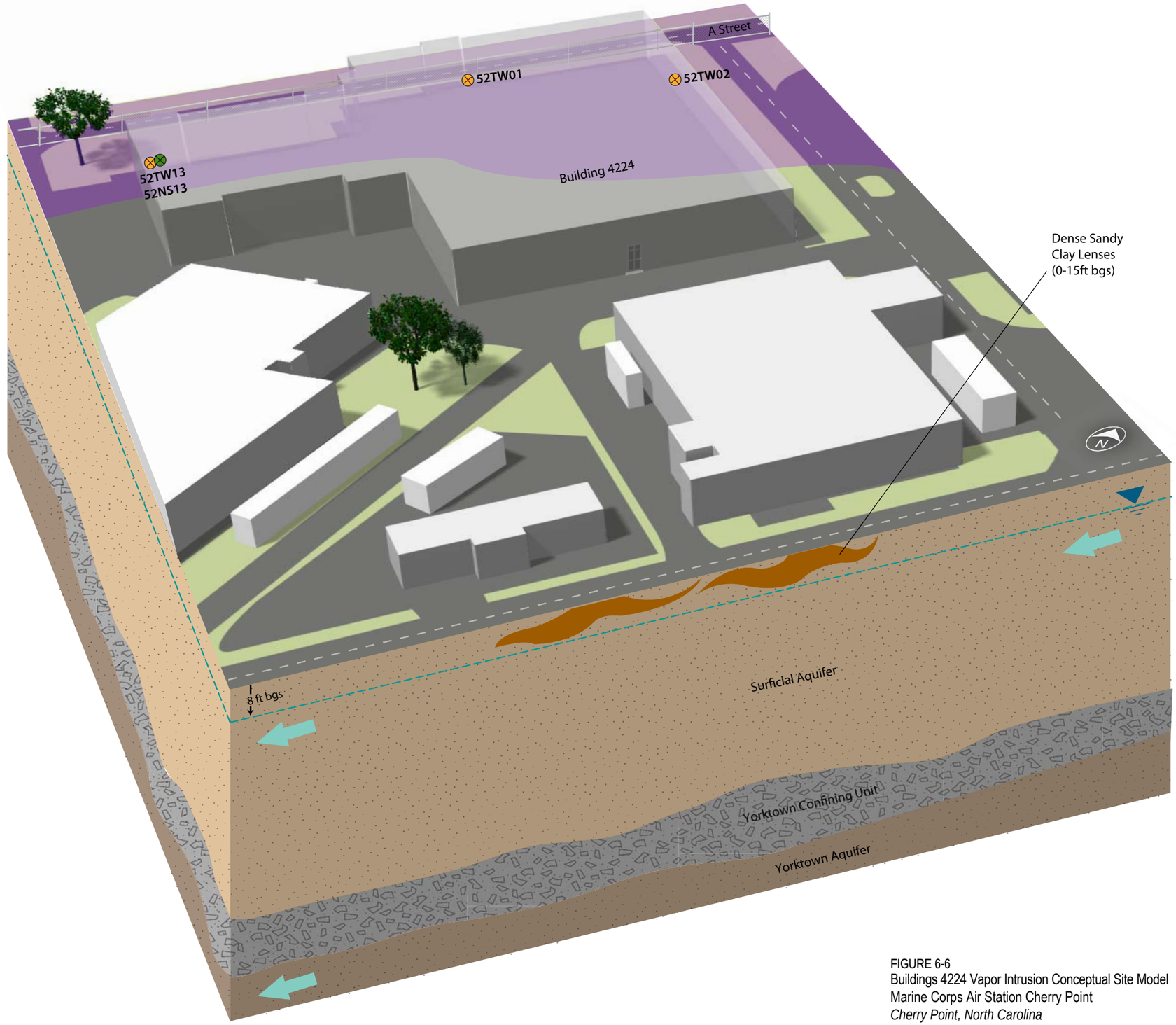
CH2MHILL



LEGEND

- Primary Groundwater Flow Direction
- Water Table
- Groundwater Sample Location (TW)
- Soil Vapor Sample Location (NS)
- TCE plume
- Volatilization

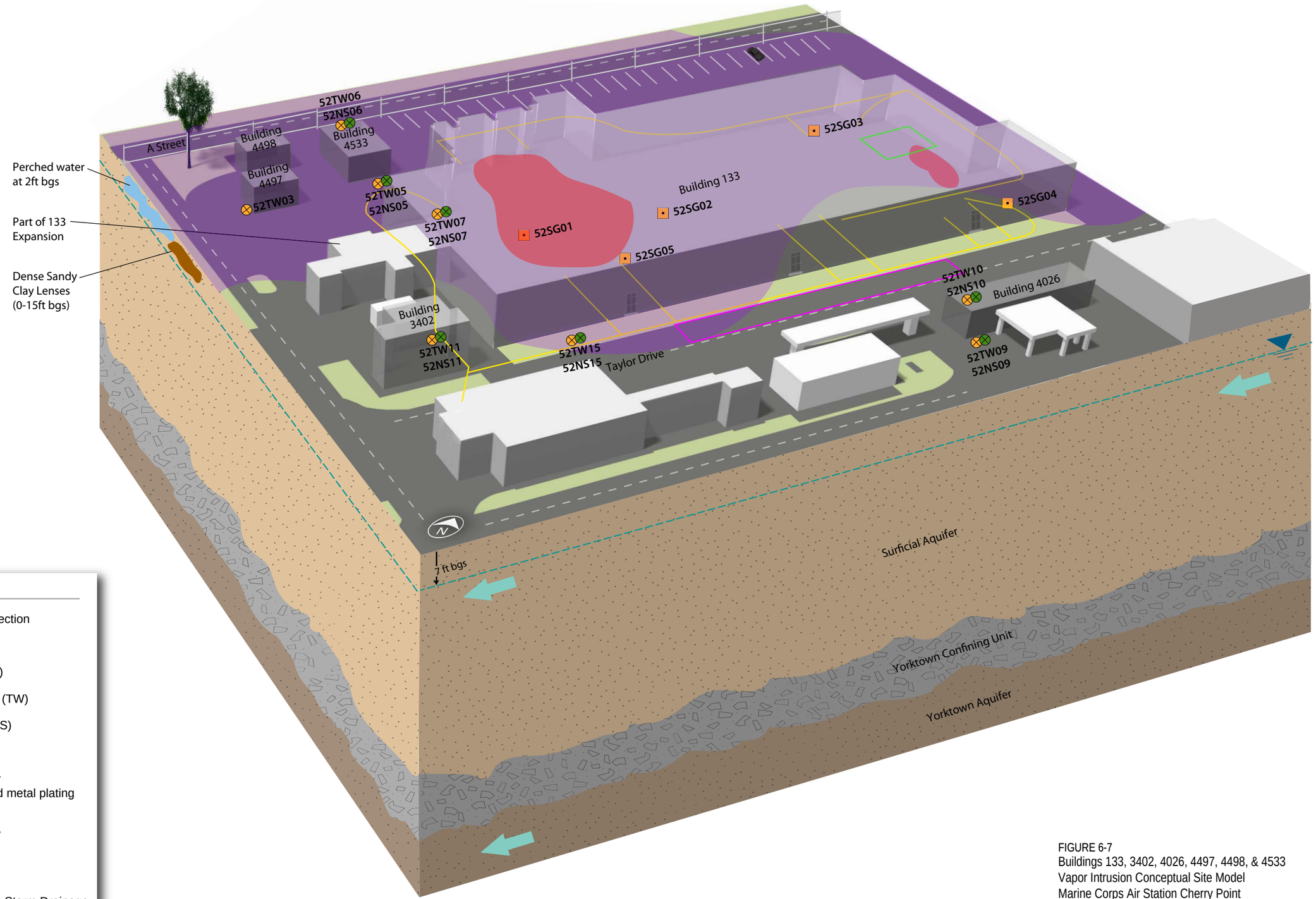
FIGURE 6-5
Buildings 4225 Vapor Intrusion Conceptual Site Model
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina



LEGEND

- Primary Groundwater Flow Direction
- Water Table
- Groundwater Sample Location (TW)
- Soil Vapor Sample Location (NS)
- TCE plume

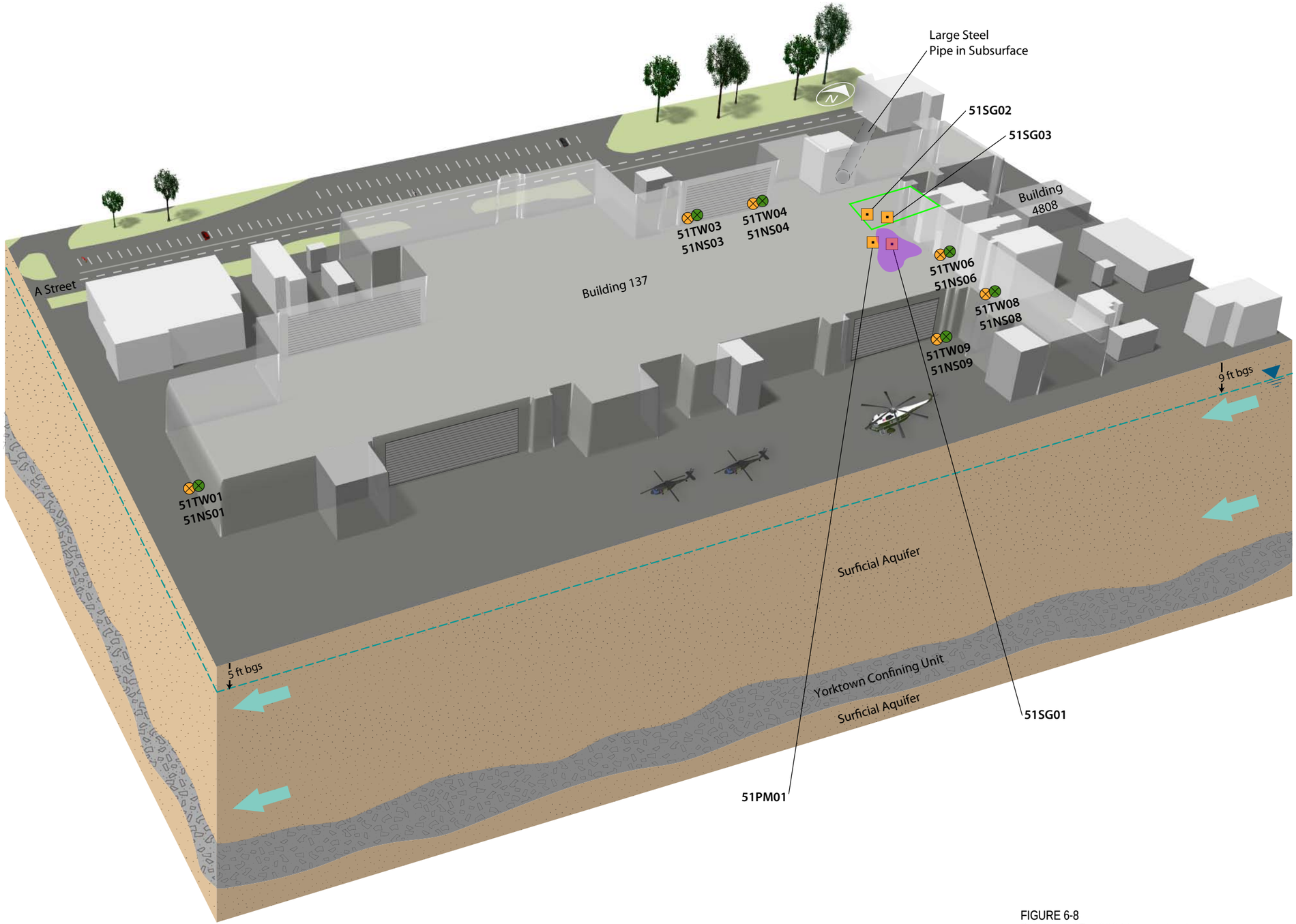
FIGURE 6-6
Buildings 4224 Vapor Intrusion Conceptual Site Model
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina



LEGEND

- Primary Groundwater Flow Direction
- Water Table
- Soil Gas Sample Location (SG)
- Groundwater Sample Location (TW)
- Soil Vapor Sample Location (NS)
- TCE plume
- Site 52 Source Zone Boundary (Plating shop cleaning vats and metal plating shop degreaser)
- Site 15 Source Zone Boundary (Waste Ditch)
- DNAPL plume
- Conceptual Locations of 1940s Storm Drainage

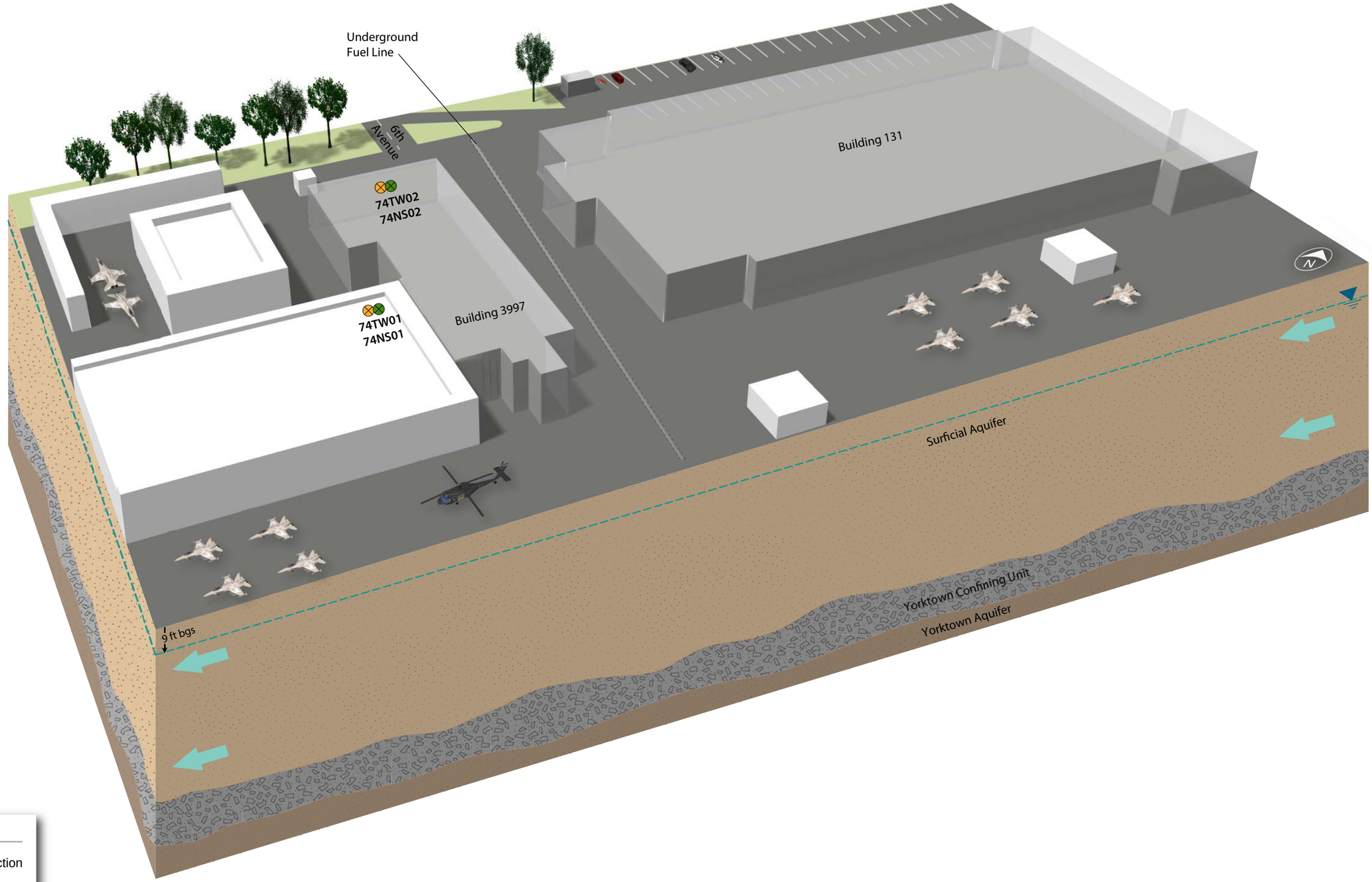
FIGURE 6-7
Buildings 133, 3402, 4026, 4497, 4498, & 4533
Vapor Intrusion Conceptual Site Model
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina



LEGEND

- Primary Groundwater Flow Direction
- Water Table
- Soil Gas Sample Location (SG)
- Groundwater Sample Location (TW)
- Soil Vapor Sample Location (NS)
- TCE plume
- Volatilization
- Site 51 Source Zone Boundary (Electroplating Shop Sump)

FIGURE 6-8
Building 137, 4808 Vapor Intrusion
Conceptual Site Model
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina



LEGEND

- Primary Groundwater Flow Direction
- Water Table
- Groundwater Sample Location (TW)
- Soil Vapor Sample Location (NS)

FIGURE 6-9
Building 131, 3997 Vapor Intrusion
Conceptual Site Model
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

CH2MHILL

SECTION 7

Conclusions and Recommendations

This section summarizes the conclusions and recommendations from the Phase I vapor intrusion evaluation that was performed at OU1, MCAS, Cherry Point.

7.1 Conclusions

Co-located top-of-the-water-table grab groundwater and exterior soil vapor samples were collected adjacent to 21 buildings of interest. Subslab soil vapor sampling and pressure differential monitoring were also performed at the two buildings (133 and 137) with the highest historical cVOC shallow groundwater concentrations. Prior to the Phase I event, a detailed building survey (site reconnaissance) was conducted at seven buildings (133, 137, 80, 3402, 4224, 4497, and 4533) considered to have the highest vapor intrusion potential based on the highest historical shallow groundwater concentrations, the presence of DNAPL, and/or location within assumed source areas. As part of the desktop screening evaluation, a general building survey was performed at the remaining 34 buildings to determine the building type, size, status, occupancy, and construction (slab on grade, materials, windows, etc.). The historical shallow groundwater data, building survey information, and Phase I groundwater and soil vapor data were used as multiple lines of evidence to refine the building-specific vapor intrusion CSMs, draw conclusions, and make recommendations.

Uncertainties associated with evaluating the vapor intrusion pathway are acknowledged throughout the report and include sample reporting limits in exceedance of risk-based screening levels, correlation of duplicate sample results, AFs, and variability (spatial). Because of these uncertainties and to prevent premature elimination of buildings of interest, the Phase I data were compared to screening levels calculated using methods consistent with USEPA (2002), USEPA (2009) air RSLs, and the USEPA (2002) default generic shallow soil-vapor-to-indoor-air AF (1E-01) and groundwater-to-indoor-air AF (1E-03). These fairly conservative AFs were applied in the evaluation to mitigate these uncertainties. The conclusions and recommendations are based on only one round of sample data. The inherent uncertainties involved with making conclusions based on a single round of data could be reduced by re-evaluating the results of Phase I after an additional round of sampling is completed, consistent with recommendations in DOD (2009), ITRC (2007), and USEPA (2002) vapor intrusion guidance documents.

The results of this initial Phase I vapor intrusion assessment indicated it is unlikely that the vapor intrusion pathway would result in current cVOC concentrations above indoor air risk-based screening levels at Buildings 159, 4630, 4032, 4172, 4380, 3987, 1005, 452, and 4808; therefore, a Phase II evaluation is not recommended for these buildings. The significance of the vapor intrusion pathway would need to be re-evaluated at Building 159 if cVOCs continue to migrate and higher concentrations are detected under the building in the future. It is recommended that cVOCs continue to be monitored in groundwater wells within 100 ft of Building 159.

Although significant vapor intrusion of cVOCs at Buildings 4533, 4498, and 4497 is unlikely, elevated reporting limits were observed and may have been caused by the presence of the POL plume in the subsurface. The results will be investigated in a cooperative effort between NAVFAC and USMC POL team.

The potential for a completed vapor intrusion pathway could not be ruled out based on this Phase I assessment for Buildings 143, 4225, 4224, 133, 3402, 4026, 137, 3997, and 131. A thorough building survey is recommended to document building characteristics, which will be needed to evaluate the vapor intrusion pathway using a multiple-lines-of-evidence approach at each of the buildings to be investigated during Phase II. Subslab soil vapor probes should be installed and sampled during Phase II at Buildings 143, 4225, 4224, 3402, 4026, 3997, and 131to further evaluate the potential for vapor migration from cVOC-contaminated groundwater into the building, and to determine if any building occupants are currently subject to unacceptable risks. It is recommended that additional subslab soil vapor samples be collected from the existing subslab probes at Building 133 and 137, that additional subslab probes be installed and sampled, and that indoor and outdoor air samples be collected to further evaluate the potential for vapor intrusion during Phase II. A detailed evaluation of the Phase I results for each building of interest is presented in Section 6.

Buildings 4525, 129, and 188 were identified during the preferential pathway analysis. These buildings are located along the northeast side of Building 133. cVOCs were detected in exceedance of the industrial generic SVSLs in subslab soil vapor at Building 133 and the highest detections occurred in the east and northeast sections of the building. The two buildings to the northeast of Building 133 that were not included in the Phase I vapor intrusion evaluation should be evaluated during Phase II, with greater emphasis placed on the portions of the buildings closest to Building 133 and areas where subsurface utilities enter the buildings. A detailed preferential pathway analysis is presented in Section 7.3.

Table 7-1 summarizes the Phase I recommendations for each OU1 building of interest. These recommendations will be implemented during the Phase II investigation at OU1.

7.2 Recommendations for Additional Sampling

The conclusions discussed above were based primarily on a single round of groundwater, exterior soil vapor, and/or subslab soil vapor data. Consistent with DOD (2009), ITRC (2007), and presentations at multiple USEPA vapor intrusion conferences including the recent March 2010 workshop (e.g., http://iavi.rti.org/WorkshopsAndConferences.cfm), temporal variability is a significant issue for consideration during vapor intrusion investigations. Consideration should be given to confirming the conclusions at Buildings 133 and 137 with only one round of subslab data based on the magnitude of temporal variability and uncertainty generally observed during vapor intrusion investigations. Collection of concurrent indoor and outdoor air samples is also recommended at both of these buildings.

Phase II evaluation is not recommended at 9 (Buildings 159, 4630, 4032, 4172, , 4380, 3987, 1005, 452, and 4808) of the 21 buildings investigated during Phase I since there were no exceedances of the industrial generic screening levels in groundwater or exterior soil vapor

samples. However, vapor intrusion pathway would need to be re-evaluated if cVOCs continue to migrate and higher concentrations are detected under Building 159.

TABLE 7-1
Summary of Recommendations

Bldg #	Phase II Evaluation Recommended	Evaluation Recommended under UST Program	Monitor cVOCs in Groundwater	Perform Building Survey	Additional Round of Subslab Sampling	Install and Sample Subslab Probes	Sample Indoor and Outdoor Air at Building
Building 159	NO		X				
Building 4630	NO						
Building 4032	NO						
Building 4172	NO						
Building 4380	NO						
Building 3987	NO						
Building 1005	NO						
Building 452	NO						
Building 143	YES			X		X	
Building 4225	YES			X		X	
Building 4224	YES			X		X	
Building 133	YES			X	X	X	X
Building 4533	NO	X					
Building 4498	NO	X					
Building 4497	NO	X					
Building 3402	YES			X		X	
Building 4026	YES			X		X	
Building 137	YES			X	X	X	X
Building 4808	NO						
Building 3997	YES			X		X	
Building 131	YES			X		X	
Buildings Recommended for Sampling Based on Preferential Pathway Analysis							
Building 4525/129	YES			X		X	
Building 188	YES			X		X	

Additional investigation of the vapor intrusion pathway is recommended at 9 (Buildings 143, 4225, 4224, 133, 3402, 4026, 137, 3997, and 131) of the 21 buildings investigated during Phase I based on a review of the multiple lines of evidence, including cVOC exceedances of industrial generic screening levels in groundwater, exterior soil vapor, or subslab soil vapor samples.

Additional investigation of the vapor intrusion pathway at Buildings 4533 and 4498 is recommended based on the presence of petroleum hydrocarbons in the subsurface in the vicinity of these buildings. The Phase I cVOC groundwater and exterior soil vapor sample results associated with these buildings were inconclusive due to elevated reporting limits, presumably caused by the petroleum hydrocarbons known to in the subsurface environment beneath those buildings. Consistent with the Partnering Team recommendation and the UFP-SAP (CH2M HILL, 2009c), the decision to conduct additional

vapor intrusion investigations at Buildings 4533, 4498 and 4497 should be addressed in a cooperative effort between NAVFAC and USMC POL team.\

7.3 Preferential Pathways

A preferential pathway is defined by ITRC (2007) as a subsurface feature that would increase the likelihood that there would be significant flow of soil vapor into a building. Per ITRC (2007), "Most buildings have subsurface utility penetrations, so their presence alone is not considered 'preferential.' For this guidance, some increased component of soil vapor flow into the building is usually required to consider the pathway to be preferential. Anthropogenic preferential pathways include building sumps or drainage pits (that can serve as conduits for soil vapor to enter buildings) or subsurface utility conduits or drains (that intersect vapor sources or soil vapor migration routes and a building foundation)." Since underground utilities can serve as conduits for vapor migration in the subsurface, they were identified and mapped using GIS (see **Figures 3-5 to 3-13**). The locations of utilities with the greatest potential for significant horizontal vapor transport in the backfill material (e.g., stormwater and wastewater lines) were reviewed relative to the areas with elevated shallow groundwater, exterior soil vapor, and/or subslab soil vapor concentrations during Phase I. A preliminary review of Phase I data from nearby buildings was conducted to determine if the utility lines were creating significant preferential pathways for horizontal transport.

The utilities in the vicinity of Building 133 are shown on **Figure 3-11**. There are multiple utilities present along the northeast side of the building; cVOCs were detected in exceedance of the industrial generic SVSLs in subslab soil vapor at Building 133 and the highest detections occurred in the east and northeast sections of the building: 100,000 $\mu g/m^3$ at 52SG04. The two buildings to the northeast of Building 133 that were not included in the Phase I vapor intrusion evaluation should be evaluated during Phase II, with greater emphasis placed on the portions of the buildings closest to Building 133 and areas where subsurface utilities enter the buildings. Based on the data collected during Phase II at Buildings 4525,129, and 188, it may be necessary to review adjacent buildings for potential preferential pathway influences.

SECTION 8

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Appendix A
Chain-of-Custody Records

CTO - 177

TAL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
phone 865-291-3000 fax 865-584-4315

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information
Company: CH2M HILL
Address: 5700 Cleveland St Suite 101
City/State/Zip VA Beach, VA
Phone: 757-671-8311
FAX: 757-497-6885
Project Name: MCAS Cherry Pt OU1
Site/location: MCAS Cherry Pt, NC
PO # 358484

Project Manager: Bill Hannah
Phone: 757-671-6277
Site Contact: Will Potter
TAL Contact: Linda McWhirter

Analysis Turnaround Time
Standard (Specify) 28 days
Rush (Specify)

Sampled By: K Stokes/M Smith

1 of 2 COCs

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)	VOCs (ppm)
OU1-98NS08-4.5-5.5-09D	11/2/09	1534	1549	-29	-2	39	L-5188	X									X			2.8
OU1-98NS07-4.5-5.5-09D	11/3/09	1103	1113	-30	-3	103	L-8189	X									X			0
OU1-98NS07-4.5-5.5-09DP	11/3/09	1103	1112	-30	-4	153	L-5130	X									X			0
OU1-98NS02-6-7-09D	11/3/09	1248	1300	-30	-3	68	L-3841	X									X			2.8
OU1-98NS01-5-6-09D	11/3/09	1607	1617	-30	-3	141	L-5105	X									X			0
OU1-98NS03-3-4-09D	11/4/09	0836	0848	-29.5	-2	113	L-8197	X									X			0

Sampled by :
Kim Stokes /DFW
Maggie Smith /RDU

Temperature (Fahrenheit)	Interior	Ambient
Start	N/A	77 °F
Stop	N/A	77.1 °F

Pressure (Inches of Hg)	Interior	Ambient
Start	N/A	30.19 in
Stop	N/A	30.19 in

Special Instructions/QC Requirements & Comments:

Airbill # 8709 5376 7304

Canisters Shipped by: Kimberly P Stokes	Date/Time: 11/6/09 0700	Canisters Received by:
Samples Relinquished by:	Date/Time:	Received by:
Relinquished by:	Date/Time:	Received by:

TAL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
phone 865-291-3000 fax 865-584-4315

CTO - 177

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information
Company: CH2M HILL
Address: 5700 Cleveland St. Suite 101
City/State/Zip VA Beach, VA
Phone: 757-671-8311
FAX: 757-497-6885
Project Name: MCAS Cherry Point OU1
Site/location: MCAS Cherry Point, NC
PO # 358484

Project Manager: Bill Hannah
Phone: 757-671-6277
Site Contact: Will Potter
TAL Contact: Linda McWhirter

Analysis Turnaround Time
Standard (Specify) 28 days
Rush (Specify)

Sampled By: K. Stokes / M. Smith

2 of 2 COCs

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)	VOCS (ppm)
OU1-98NS06-5-6-09D	11/4/09	1021	1029	-30	-4	12	L-5182	X									X			0
OU1-98NS04-5-6-09D	11/4/09	1316	1325	-29	-4	24	L-5129	X									X			0
OU1-98NS11-6-7-09D	11/5/09	0758	0808	-29.5	-3	37	SL-1215	X									X			3.2
OU1-98NS09-6-7-09D	11/5/09	0935	0945	-30	-4	76	L-5193	X									X			1.6

Sampled by :
Kim Stokes / DFW
maggie Smith / RDU

Temperature (Fahrenheit)

	Interior	Ambient
Start	N/A	77 °F
Stop	N/A	77.1 °F

Pressure (inches of Hg)

	Interior	Ambient
Start	n/a	30.19 in
Stop	n/a	30.19 in

Special Instructions/QC Requirements & Comments:

Airbill # 8709 5376 7304

Canisters Shipped by:	Date/Time:	Canisters Received by:
Kimberly O Stokes	11/6/09 0700	
Samples Relinquished by:	Date/Time:	Received by:
Relinquished by:	Date/Time:	Received by:

CTO-177

TAL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
phone 865-291-3000 fax 865-584-4315

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information	Project Manager: Bill Hannah	Sampled By: K Stokes/M Smith	1 of 2 COCs
Company: CH2M HILL	Phone: 757-671-6277		
Address: 5700 Cleveland St Suite 101	Site Contact: Will Potter		
City/State/Zip VA Beach, VA 23462	TAL Contact: Linda McWhirter		
Phone: 757-671-6252			
FAX: 757-497-6885			
Project Name: MCAS Cherry Pt CTO-177	Analysis Turnaround Time		
Site/location: Cherry Pt., NC	Standard (Specify) 28 days		
PO #	Rush (Specify)		

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)	VOCs (ppm)
OU1-98NS12-9-10-09D	11/5/09	1108	1118	-29.5	-3.5	70	L-A7176	X									X			4.7
OU1-98NS10-11-12-09D	11/5/09	1535	1547	-30	-4	14	L-5148	X									X			0.8
OU1-42NS05-7-8-09D	11/6/09	916	926	-30	-3	125	L-4147	X									X			0.5
OU1-42NS05-7-8-09DP	11/6/09	916	926	-30	-3	64	L-5186	X									X			0.5
OU1-42NS03-6-7-09D	11/6/09	1035	1046	-29.5	-3	120	L-5168	X									X			1.0
OU1-42NS04-6-7-09D	11/6/09	1146	1157	-30	-4	169	L-A7056	X									X			0.9

Sampled by :
K Stokes/DFW
M Smith / RDU

Temperature (Fahrenheit)	Interior	Ambient	
Start	N/A	77.1°F	
Stop	N/A	~~30.19in~~	71.5°F

Pressure (inches of Hg)	Interior	Ambient	
Start	N/A	30.19 in	
Stop	N/A	30.37 in	

Special Instructions/QC Requirements & Comments:

Canisters Shipped by: Kimberly R Stokes	Date/Time: 11/9/09 0800	Canisters Received by:
Samples Relinquished by:	Date/Time:	Received by:
Relinquished by:	Date/Time:	Received by:

TAL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
phone 865-291-3000 fax 865-584-4315

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information
Company: CH2M HILL
Address: 5700 Cleveland St. Suite 101
City/State/Zip: VA Beach, VA 23462
Phone: 757-671-6252
FAX: 757-497-6885
Project Name: MCAS Cherry Pt
Site/location: Cherry Pt NC CTO-177
PO #

Project Manager: Bill Hannah
Phone: 757-671-6277
Site Contact: Will Potter
TAL Contact: Linda McWhirter

Analysis Turnaround Time
Standard (Specify)
Rush (Specify)

Sampled By: K Stokes/M Smith

2 of 2 COCs

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, 'Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)	VOCs (ppm)
OU1-42NS02-5-6-09D	11/6/09	1429	1439	-29.5	-4	240	L-3834	X									X			0.0
OU1-51NS01-3-4-09D	11/7/09	948	958	-30	-4	32	L-4153	X									X			1.2
OU1-52NS13-10-11-09D	11/7/09	1105	1115	-30	-4	65	SL-1216	X									X			2.5

Sampled by :
K Stokes / DFW
M Smith / RDU

Temperature (Fahrenheit)	Interior	Ambient
Start	N/A	77.1°F
Stop	N/A	71.5°F

Pressure (inches of Hg)	Interior	Ambient
Start	N/A	30.19 in
Stop	N/A	30.37 in

Special Instructions/QC Requirements & Comments:

Canisters Shipped by: Kimberly R Stok	Date/Time: 11/9/09 08 00	Canisters Received by:
Samples Relinquished by:	Date/Time:	Received by:
Relinquished by:	Date/Time:	Received by:

CTO 177

TAL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
phone 865-291-3000 fax 865-584-4315

CTO-177

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information	**Project Manager:** Bill Hannah	**Sampled By:** K Stokes/M Smith	1 of 3 COCs
Company: CH2M HILL	Phone: 757-671-6277		
Address: 5700 Cleveland St. Suite 101	Site Contact: Will Potter		
City/State/Zip VA Beach, VA 23462	TAL Contact: Linda McWhirter		
Phone: 757-671-6252			
FAX: 757-497-6885			
Project Name: MCAS Cherry Pt	**Analysis Turnaround Time**		
Site/location: Cherry Pt NC CTO-177	Standard (Specify) 28 days		
PO #	Rush (Specify)		

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, 'Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Canister Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)	VOCs (ppm)
OU1-52NS05-8-9-09D	11/8/09	1059	1107	-30	-3	115	L-5150	X									X			116
OU1-52NS07-8-9-09D	11/8/09	1206	1217	-29	-3	204	L-8176	X									X			358
OU1-52NS06-9-10-09D	11/8/09	1433	1443	-29	-3	195	L-5134	X									X			55
OU1-16NS01-7-8-09D	11/8/09	1650	1701	-29.5	-3	203	L-5183	X									X			245
OU1-16NS02-3-4-09D	11/9/09	1050	1100	-29	-4	89	L-5170	X									X			135
OU1-52NS11-6-7-09D	11/9/09	1327	1337	-30	-4	189	L-A7058	X									X			16

Sampled by :
K Stokes / DFW
M Smith / RDU

Temperature (Fahrenheit)	Interior	Ambient
Start	N/A	83.6
Stop	N/A	62.6

Airbill # 870953767348

Pressure (inches of Hg)	Interior	Ambient
Start	N/A	30.36
Stop	N/A	30.31

Special Instructions/QC Requirements & Comments:

Canisters Shipped by: Kimberly L Stokes	Date/Time: 11/11/09 0800	Canisters Received by:
Samples Relinquished by:	Date/Time:	Received by:
Relinquished by:	Date/Time:	Received by:

TAL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
phone 865-291-3000 fax 865-584-4315

CTO-177

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information			
Company: CH2M HILL	Project Manager: Bill Hannah	Sampled By: K Stokes/M Smith	2 of 3 COCs
Address: 5700 Cleveland St. Suite 101	Phone: 757-671-6277		
City/State/Zip VA Beach, VA 23462	Site Contact: Will Potter		
Phone: 757-671-6252	TAL Contact: Linda McWhirter		
FAX: 757-497-6885			
Project Name: MCAS Cherry Pt	Analysis Turnaround Time		
Site/location: Cherry Pt NC CTO-177	Standard (Specify) 28 days		
PO #	Rush (Specify)		

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)	VOCs (ppm)
OU1-52NS11-6-7-09DP	11/9/09	1327	1338	-28.5	-3	145	SL-1228	X									X			16
OU1-52NS10-4-5-09D	11/9/09	1449	1459	-29.5	-2.5	116	L-A7170	X									X			3.9
OU1-52NS09-5-6-09D	11/9/09	1607	1615	-29	-3.5	19	L-A7212	X									X			1
OU1-51NS03-6-7-09D	11/10/09	838	846	-29.5	-3	194	L-A7116	X									X			20
OU1-51NS04-4.5-5.5-09D	11/10/09	938	948	-30	-3	137	L-A7166	X									X			21.5
OU1-51NS06-5-6-09D	11/10/09	1353	1402	-29	-4	50	L-A7077	X									X			23.6

Sampled by :
K Stokes / DFW
M Smith / RDU

Temperature (Fahrenheit)	Interior	Ambient
Start	N/A	83.6
Stop	N/A	62.6

Airbill # 8709 5376 7348

Pressure (Inches of Hg)	Interior	Ambient
Start	N/A	30.36
Stop	N/A	30.31

Special Instructions/QC Requirements & Comments:

Canisters Shipped by: Kimberly D Stokes	Date/Time: 11/11/09 0800	Canisters Received by:
Samples Relinquished by:	Date/Time:	Received by:
Relinquished by:	Date/Time:	Received by:

TAL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
phone 865-291-3000 fax 865-584-4315

CTO-177

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information
Company: CH2M HILL
Address: 5700 Cleveland St. Suite 101
City/State/Zip VA Beach, VA 23462
Phone: 757-671-6252
FAX: 757-497-6885
Project Name: MCAS Cherry Pt
Site/location: Cherry Pt NC CTO-177
PO #

Project Manager: Bill Hannah
Phone: 757-671-6277
Site Contact: Will Potter
TAL Contact: Linda McWhirter

Analysis Turnaround Time
Standard (Specify) 28 days
Rush (Specify)

Sampled By: K Stokes/M Smith

3 of 3 COCs

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)	VOCs (ppm)
OU1-51NS08-6-7-09D	11/10/09	1502	1512	-29	-3	66	L-5196	X									X			19.5

Sampled by :
K Stokes / DFW
M Smith / RDU

Airbill # 8709 5376 7348

Temperature (Fahrenheit)	Interior	Ambient
Start	N/A	83.6
Stop	N/A	62.6

Pressure (inches of Hg)	Interior	Ambient
Start	N/A	30.36
Stop	N/A	30.31

Special Instructions/QC Requirements & Comments:

Canisters Shipped by: Kimberly Osborn	Date/Time: 11/11/09 0800	Canisters Received by:
Samples Relinquished by:	Date/Time:	Received by:
Relinquished by:	Date/Time:	Received by:

TestAmerica Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone 865 291-3000 (Main)
Phone 865-291-3031 (Receiving)

CTO-177

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact	Project Manager: Bill Hannah	Site Contact: Will Potter	COC Record 1 of 2
Company Name CH2M HILL	Tel/Mobile:	Lab Contact: Linda McWhirter Carrier: FedEx	COC No: 01295
Address 5700 Cleveland St.	Analysis Turnaround Time	Analysis (Attach list if more space is needed)	Lab Use Only:
City/State/Zip VA Beach, VA 23462	Calendar (C) or Work Days (W) 28 days		Custody Seals Intact? Y N NA
Phone	TAT if different from Below _____		Number of Packages: _____
Project Name/Number: MCAS Cherry Point	☐ 2 weeks		Temperature: _____ deg C
Site: OU 1	☐ 1 week		Shipper: __FedEx __UPS __Other:
PO# 358484	☐ 2 days		Tracking Number:
Sampled by: K Stokes / D Seed	☐ 1 day		Recorded by: _____ Date: _____

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Field Filtered Sample	8260B											Sample Specific Notes:
OU1-52TW15-09D	11/20/09	0935	AQ	GW	9		X											ms/msD
OU1-51TW09-09D	11/20/09	1200	AQ	GW	3		X											
OU1-51TW09-09DP	11/20/09	1205	AQ	GW	3		X											duplicate
OU1-74TW02-09D	11/20/09	1555	AQ	GW	3		X											
OU1-747TW01-09D	11/21/09	0820	AQ	GW	3		X											
OU1-EB112009	11/20/09	1615	AQ	EB	3		X											equipment blank
OU1-FB112009	11/20/09	1630	AQ	FB	3		X											field blank
OU1-TB112309	11/23/09	0700	AQ	TB	2		X											trip blank

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 5=NaOH; 6= $Na_2S_2O_3$ Other _____

Possible Hazard Identification
☒ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments:
AQ = aqueous
Fed Ex # 8673 3612 7559

Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Kimberly P. Stokes	CH2MHILL	11/23/09 08:00		
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:

RETURN WHITE COPY TO LAB WITH SAMPLES
KEEP YELLOW COPY FOR YOUR RECORDS

TAL-0046-140 (0208)

CTO-177

TestAmerica Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone 865 291-3000 (Main)
Phone 865-291-3031 (Receiving)

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact	Project Manager: B. HANNAH	Site Contact:	COC Record 1 of 2
Company Name CH2M HILL	Tel/Mobile:	Lab Contact: LINDA McWhirter Carrier: FED EX	COC No: 01292
Address 5700 Cleveland St.	Analysis Turnaround Time	Analysis (Attach list if more space is needed)	Lab Use Only:
City/State/Zip VA Beach, VA 23462	Calendar (C) or Work Days (W) 28		Custody Seals Intact? Y N NA
Phone 757-671-6252	TAT if different from Below _____		Number of Packages: _____
Project Name/Number: MCAS Cherry Pt CTO-177	☐ 2 weeks		Temperature: _____ deg C
Site: MCAS Cherry Pt NC	☐ 1 week		Shipper: __FedEx __UPS __Other:
PO# 358454	☐ 2 days		Tracking Number:
Sampled by: Maggie Smith	☐ 1 day		Recorded by: _____ Date: _____

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Field Filtered Sample	8260B											Sample Specific Notes:
OU1-98TW08-090	11/3/09	1247	GW	GW	3		X											
OU1-98TW08-0900	11/3/09	1252	|	GW	3		X											
OU1-98TW07-090	11/3/09	1329	|	GW	3		X											
OU1-98TW02-090	11/3/09	1402	|	GW	3		X											
OU1-EB-110309	11/3/09	1425	EB	~~GW~~	3		X											
OU1-FB-110309	11/3/09	1430	FB	—	3		X											
OU1-98TW01-090	11/3/09	1552	GW	GW	3		X											
OU1-98TW03-090	11/4/09	0807	|	GW	3		X											

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 5=NaOH; 6= $Na_2S_2O_3$ Other _____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☒ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Kimberly Stokes	CH2M HILL	11/5/09 0700		
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:

RETURN WHITE COPY TO LAB WITH SAMPLES
KEEP YELLOW COPY FOR YOUR RECORDS

TAL-0046-140 (0208)

TestAmerica Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone 865 291-3000 (Main)
Phone 865-291-3031 (Receiving)

CTO - 177

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact	Project Manager: B. HANNAN	Site Contact:	COC Record 2 of 2
Company Name CH2M HILL	Tel/Mobile:	Lab Contact: LINDA McWhirter Carrier: Fed EX	COC No: 01293
Address 5700 Cleveland St.	Analysis Turnaround Time	Analysis (Attach list if more space is needed)	Lab Use Only:
City/State/Zip VA Beach, VA 23462	Calendar (C) or Work Days (W) 28		Custody Seals Intact? Y N NA
Phone 757-671-6252	TAT if different from Below _____		Number of Packages: _____
Project Name/Number: MCAS Cherry Pt CTO-177	☐ 2 weeks		Temperature: _____ deg C
Site: MCAS Cherry Point, NC	☐ 1 week		Shipper: __FedEx __UPS __Other:
PO# 358454	☐ 2 days		Tracking Number:
Sampled by: Maggie Smith	☐ 1 day		Recorded by: _____ Date: _____

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Field Filtered Sample	8260B											Sample Specific Notes:
OU1-98TW06-090	11/4/09	0955	GW	GW	3		X											
OU1-98TW04-090	11/4/09	1300	GW	GW	3		X											
OU1-98TW05-090	11/4/09	1435	GW	GW	3		X											
OU1-TB-110409	11/4/09	1600	GW	GW	3		X											

Preservation Used: (1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 5=NaOH; 6= $Na_2S_2O_3$ Other _____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☒ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Kimberly Stokes	CH2M HILL	11/5/09 07 00		
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:

RETURN WHITE COPY TO LAB WITH SAMPLES
KEEP YELLOW COPY FOR YOUR RECORDS

TAL-0046-140 (0208)

CTO-177

TestAmerica Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone 865 291-3000 (Main)
Phone 865-291-3031 (Receiving)

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact	Project Manager: Bill Hannah	Site Contact: Will Potter	COC Record 1 of 2
Company Name CH2M HILL	Tel/Mobile: 757-671-6277	Lab Contact: Linda McWinder Carrier: Fed Ex	COC No: 01294
Address 5700 Cleveland St.	Analysis Turnaround Time	Analysis (Attach list if more space is needed)	Lab Use Only:
City/State/Zip VA Beach, VA 23462	Calendar (C) or Work Days (W) _____		Custody Seals Intact? Y N NA
Phone 757-671-6252	TAT if different from Below _____		Number of Packages: _____
Project Name/Number: 358434	☐ 2 weeks		Temperature: _____ deg C
Site: MCAS Cherry Point	☐ 1 week		Shipper: __FedEx __UPS __Other:
PO#	☐ 2 days		Tracking Number:
Sampled by: K Stokes / M Smith	☐ 1 day		Recorded by: _____ Date: _____

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Field Filtered Sample	8260B											Sample Specific Notes:
OU1-98TW11-09D	11/5/09	0737	GW	GW	3		X											
OU1-98TW09-09D	11/5/09	0940	GW	GW	9		X											MS/MSD
OU1-98TW12-09D	11/5/09	1115	GW	GW	3		X											
OU1-98TW10-09D	11/5/09	1455	GW	GW	3		X											
OU1-42TW05-09D	11/6/09	837	GW	GW	3		X											
OU1-42TW05-09DP	11/6/09	842	DUP	GW	3		X											Duplicate
OU1-42TW03-09D	11/6/09	1015	GW	GW	3		X											
OU1-42TW04-09D	11/6/09	1140	GW	GW	3		X											

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 5=NaOH; 6= $Na_2S_2O_3$ Other _____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Kimberly L Stokes	CH2M HILL	11/9/09 0700		
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:

RETURN WHITE COPY TO LAB WITH SAMPLES
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TAL-0046-140 (0208)

TestAmerica Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone 865 291-3000 (Main)
Phone 865-291-3031 (Receiving)

CTO-177

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact	Project Manager: Bill Hannah	Site Contact: Will Potter	COC Record 2 of 2
Company Name CH2M HILL	Tel/Mobile: 757-671-6277	Lab Contact: Linda McWhirter Carrier: FED EX	COC No: 01322
Address 5700 Cleveland St.	Analysis Turnaround Time	Analysis (Attach list if more space is needed)	Lab Use Only:
City/State/Zip VA Beach, VA 23462	Calendar (C) or Work Days (W) 28 days		Custody Seals Intact? Y N NA
Phone 757-671-6252	TAT if different from Below _____		Number of Packages: _____
Project Name/Number: 358484	☐ 2 weeks		Temperature: _____ deg C
Site: MCAS Cherry Point	☐ 1 week		Shipper: __FedEx __UPS __Other:
PO#	☐ 2 days		Tracking Number:
Sampled by: K Stokes / M Smith	☐ 1 day		Recorded by: _____ Date: _____

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Field Filtered Sample	8260B	Sample Specific Notes:
OU1-42TW02-09D	11/6/09	1401	GW	GW	3		X	
OU1-42TW01-09D	11/6/09	1539	GW	GW	3		X	
OU1-51TW01-09D	11/7/09	940	GW	GW	3		X	
OU1-52TW02-09D	11/7/09	1410	GW	GW	3		X	
OU1-52TW13-09D	11/7/09	1100	GW	GW	3		X	
OU1-EB-110709	11/7/09	1500	EB	EB	3		X	Equipment Blank
OU1-52TW03-09	11/7/09	1525	GW	GW	3		X	
~~OU1-52TW05-09D~~ OU1-TB-110909	11/9/09	0700	TB	GW	2		X	Trip Blank

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 5=NaOH; 6= $Na_2S_2O_3$ Other _____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Kimberly L Stokes	CH2M HILL	11/9/09 0700		
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:

RETURN WHITE COPY TO LAB WITH SAMPLES
KEEP YELLOW COPY FOR YOUR RECORDS

TAL-0046-140 (0208)

TAL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
phone 865-291-3000 fax 865-584-4315

CTO-177

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information	Project Manager: Bill Hannah	Sampled By: K Stokes / D Seed	2 of 2 COCs
Company: CH2M HILL	Phone: 757-671-6277		
Address:	Site Contact: Will Potter		
City/State/Zip	TAL Contact: LINDA McWhirter		
Phone:			
FAX:			
Project Name:	**Analysis Turnaround Time**		
Site/location:	Standard (Specify) 28 days		
PO #	Rush (Specify)		

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, 'Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas (Subslab)	Landfill Gas	Other (Please specify in notes section)
OU1-51SG01-09D	11/18/09 11/19/09	1459	1540	-32	-8	K100		X									X		
OU1-51SG02-09D	|	1515	1600	-32	-6.5	K316		X									X		
OU1-51SG03-09D	|	1507	1532	-32	-7.5	K177		X									X		

Sampled by :
Kim Stokes / DFW
David Seed / RDU

Temperature (Fahrenheit)	Interior	Ambient
Start	N/A	64.6 °F
Stop	N/A	68.1 °F

Pressure (inches of Hg)	Interior	Ambient
Start	N/A	30.16
Stop	N/A	30.12

Did not use Canister (11287) or Flow Controller (114)

Special Instructions/QC Requirements & Comments:

Canisters Shipped by: Kimberly D Stokes	Date/Time: 11/20/09 08 00	Canisters Received by:
Samples Relinquished by:	Date/Time:	Received by:
Relinquished by:	Date/Time:	Received by:

TAL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
phone 865-291-3000 fax 865-584-4315

CTO-177

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information
Company: CH2M HILL
Address: 5700 Cleveland St Suite 101
City/State/Zip VA Beach VA 23462
Phone:
FAX:
Project Name: MCAS Cherry Point
Site/location: OU1
PO #

Project Manager: Bill Hannah
Phone: 757-671-6277
Site Contact: Will Potter
TAL Contact: Linda McWhirter

Analysis Turnaround Time
Standard (Specify) 28 days
Rush (Specify)

Sampled By: K Stokes / D Seed

1 of 2 COCs

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas (Sublab)	Landfill Gas	Other (Please specify in notes section)
OU1-52SG01-09D	11/18/09 11/19/09	1346	1236	-29.5	-7	K151	6392	X									X		
OU1-52SG02-09D		1337	1239	-32	-7.5	K347	2644	X									X		
OU1-52SG03-09D		1424	1245	-32	-8	K349	2951	X									X		
OU1-52SG04-09D		1414	1324	-32	-8	K157	92042	X									X		
OU1-52SG05-09D		1406	0710	-30	-4	K256	1332	X									X		
OU1-52SG05-09DP		1406	1309	-32	-8	K212	1140	X									X		

Sampled by :
Kim Stokes / DFW
David Seed / RDU

Temperature (Fahrenheit)	Interior	Ambient
Start	N/A	64.6 °F
Stop	N/A	68.1 °F

Pressure (inches of Hg)	Interior	Ambient
Start	N/A	30.16
Stop	N/A	30.12

Special Instructions/QC Requirements & Comments:

Canisters Shipped by: Kimberly L. Stokes	Date/Time: 11/20/09 08 00	Canisters Received by:
Samples Relinquished by:	Date/Time:	Received by:
Relinquished by:	Date/Time:	Received by:

TAL Knoxville
5815 Middlebrook Pike CTO-177
Knoxville, TN 37921
phone 865-291-3000 fax 865-584-4315

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information	Project Manager: Bill Hannah	Sampled By: K Stokes / D Seed	1 of 2 COCs
Company: CH2M HILL	Phone:		
Address: 5700 Cleveland St. Suite 101	Site Contact: Will Potter		
City/State/Zip VA Beach VA 23462	TAL Contact: LINDA McWhirter		
Phone:			
FAX:			
Project Name: MCAS Cherry Pt.	Analysis Turnaround Time		
Site/location: OU1	Standard (Specify)		
PO # 358484	Rush (Specify)		

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type:	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
OU1-52NS15-4-5-09D	11/20/09	1025	1033	-29.5	-4	100	L-A7206	X									X		
OU1-52NS15-4-5-09DP	11/20/09	1025	1035	-29	-4	46	L-A7165	X									X		
OU1-51NS09-6-7-09D	11/20/09	1201	1211	-29	-3	77	L-5156	X									X		
OU1-74NS02-6-7-09D	11/20/09	1603	1614	-29	-3	42	L-A7168	X									X		
OU1-74NS01-7-8-09D	11/21/09	817	828	-30	-3.5	59	L-A7209	X									X		
OU1-14NS03-7-8-09D	11/21/09	946	959	-30	-3	74	L-5112	X									X		

Sampled by :
Kim Stokes / DFW
David Seed / RDU

Temperature (Fahrenheit)	Interior	Ambient
Start	N/A	63.8 °F
Stop	N/A	62.7 °F

Pressure (inches of Hg)	Interior	Ambient
Start	N/A	30.11 in
Stop	N/A	30.16 in

Special Instructions/QC Requirements & Comments:

Fed Ex Airbill # 8673 3612 7629

Canisters Shipped by:	Date/Time:	Canisters Received by:
[signature]	11/23/09 08 00	
Samples Relinquished by:	Date/Time:	Received by:
Relinquished by:	Date/Time:	Received by:

TAL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
phone 865-291-3000 fax 865-584-4315

CTO-177

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information	Project Manager: Bill Hannah	Sampled By: K Stokes / D Seed	2 of 2 COCs
Company: CH2M HILL	Phone:		
Address: 5700 Cleveland St	Site Contact: Will Potter		
City/State/Zip VA Beach, VA	TAL Contact: Linda McWhirter		
Phone:			
FAX:			
Project Name: MCAS Cherry Pt	Analysis Turnaround Time		
Site/location: OU 1	Standard (Specify)		
PO # 358484	Rush (Specify)		

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
OU1-14NS04-6-7-09D	11/21/09	1041	1053	-29	-2.5	145	SL-1218	X									X		
OU1-14NS01-6-7-09D	11/21/09	1305	1317	-29.5	-3	33	L-A7057	X									X		
OU1-14NS02-5-6-09D	11/21/09	1428	1441	-29	-3.5	5	L-5144	X									X		

Sampled by :
Kim Stokes / DFW
David Seed / RDU

Temperature (Fahrenheit)	Interior	Ambient
Start	N/A	63.8 °F
Stop	N/A	62.7 °F

Pressure (inches of Hg)	Interior	Ambient
Start		30.11 in
Stop		30.16 in

Special Instructions/QC Requirements & Comments:

Fed Ex Airbill # 8673 3612 7629

Canisters Shipped by: Kimberly Stokes	Date/Time: 11/23/09 0800	Canisters Received by:
Samples Relinquished by:	Date/Time:	Received by:
Relinquished by:	Date/Time:	Received by:

Appendix B
Soil Boring Logs

CH2MHILL

PROJECT NUMBER	BORING NUMBER
358454.AR.FI	~~98TW12~~ 51TW09 SHEET 1 OF 1

SOIL BORING LOG

11/20/09

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : ~~Bldg 159 98TW12~~ Bldg 137

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : START : 11 20 END : LOGGER : K Stokes

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
0					Concrete slab (4" thick) Gravel fill w/ ~~rebar~~ wire mesh (4"-12") support under concrete slab	Hand auger to 5 ft bgs.
4"						
1'					Brown medium grain sand, moist, little silt, well sorted (1-3')	
3'					Light tan, fine grain sand, moist, some mottelling (4.5-4.6' ftbgs) 3'-5'	
5'				3.5'	Light gray, fine sand, moist (5'-9')	PID = 1.0 ppm @ 6' PID = 0.4 ppm @ 10' ▽ 8 ft bgs Set well screen @ 9-11' bgs
9'					Light brown, sand some silt, motteling (orange) from 9'-10', wet	Set soil gas screen from 6'-9' bgs

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	52TW15	SHEET 1 OF 1

SOIL BORING LOG

11/20/09

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : Bldg 133

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : START : 0746 END : LOGGER : K Stokes

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
0					Concrete (0 - 4")	Hand auger to 5' bgs
4"					Fine to medium grain sand, light brown, moist, well sorted, (4" - 5')	
5'						
5.5'					Same as above	
					Dense sandy clay, gray, dark, moist (5.5' - 7')	PID = 149 ppm @ 5.5' bgs
7'						
					Light gray, well sorted, fine grain sand little silt (7' - 8.5'), moist	
8'						
					Light brown, fine to medium grain sand, mottling (orange), wet (8.5' - 10')	PID = 25 ppm @ 8' bgs
						9' ▽ water table
						Set well screen from 9' - 10' bgs Set soil gas screen from 7' - 8' bgs Bottom of liner

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	14TW01	SHEET 1 OF 1

SOIL BORING LOG

11/21/09

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : Bldg 143

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : START : 1225 END : 1245 LOGGER : K Stokes

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
0					Asphalt (0-2")	
2"					Light brown, medium grain sand, well sorted, moist (2"-5')	Hand auger to 5 ft
5'					Light brown, fine to med sand, moist (5'-7')	PID = 0 ppm
7'					Light gray/tan, dense sandy clay, med. plasticity (7'-8')	
8'					Light brown, fine to med sand, some orange motteling, moist - wet (8'-10')	
9'						▽ Water Table ~9 ft bgs 14TW01 screened 9'-12' bgs
10'						14NS01 screened 6-7' to avoid clayey soil.

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	14TW02	SHEET 1 OF 1

SOIL BORING LOG

11/21/09

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : Bldg 143

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : START : 13 30 END : 13 45 LOGGER : K Stokes

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
0					0-5 sand, SP, light brown, dry; fine grained	Hand auger to 5 ft bgs
5'			4'		Light brown, fine to medium sand, moist (5'-6')	5
6'					Dense sandy clay - brown w/ orange motteling (6'-6.5')	6
7'					Brown fine to medium grained sand, moist (6.5'-7.5')	7 ▽ Water table
					SAA, wet (7.5'-10')	Set TW02 screen @ 7-9' bgs NS02 screened @ 5'-6' bgs
10'						10' Bottom of liner

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	OU1-147W03	SHEET 1 OF 1

SOIL BORING LOG

11/21/09

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : Bldg 452

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : START : END : LOGGER : David Seed

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
0					0-5 ft sand (SP); tan; dry; soft	
					5-10 sand (SP); tan; coarse sand. water encountered at 9.5 ft bgs	▽ 9.5' ft bgs
10						

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	14 TW 04	SHEET 1 OF 1

SOIL BORING LOG 11/21/09

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : Bldg 452

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : START : 10 15 END : LOGGER : K. Stokes

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
0					0-1" Asphalt	Hand auger to 5 ft bgs
					Light brown, well sorted fine to med grain sand, moist (1"-5'	
5'					SAA (5'-7.5')	
				4.5'	Light gray, dense, sandy clay (7.5'-8.5') moist	
					Light tan to light gray, moist-wet, sand, (8.5'-10') fine grained	
					9'	▽ Water table 14TW04 9-12' 14NS04 6-7' to avoid sandy clay.
10'						Bottom of liner

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	74TW01	SHEET 1 OF 1

SOIL BORING LOG

11/21/09

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : Bldg 3997

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : START : 0730 END : LOGGER : K Stokes

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
0						
4"					Concrete w/ gravel underlay (0-4")	Hand auger to 5 ftbgs
3'					Light brown, fine to medium grain sand, moist (4"-3')	
4'					Sand with angular poorly sorted gravel (3'-3.5')	
5'					Dark gray dense sandy clay (3.5'-4')	
					Light brown, fine to med sand moist (4'-5')	
6'					(5'-6') SAA	PID = 0 ppm
					Light tan, fine sand, moist (6'-10')	
					water @ tip of liner	▽ water table
10'						Screened TW01 9-11 ftbgs
						Screened NS01 7-8 ftbgs

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	74TW02	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : Bldg 3997

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : START : END : LOGGER : David Seed

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
0					0-3.5 silty sand, dark brown, dry	
					3.5-4.0 clay, dark	
					4.0-~~5.0~~ 5.25 fine sand, black, dry	
					~~5.0-5.25 sand, black~~	
					5-10 Sand, ~~tan~~ light brown; water encountered at 8ft bgs	▽ 8 ft bgs
10						

CH2MHILL

PROJECT NUMBER	BORING NUMBER
358454.AR.FI	OU1 - 16TW01 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : 16TW01

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: probe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : 9' BGS START : 1615 END : 1625 LOGGER : M. SMITH / RDU

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
					POORLY GRADED SAND (SP), MED BROWN, DRY-MOIST, LOOSE	HAND AUGER TO 5' BGS
3'					CLAY, GRAY, MOIST, DENSE, (CL) LEAN CLAY W/ SAND	SOIL GAS SCREEN SET 8'-7'
						TEMP WELL SCREEN SET
7'					POORLY GRADED SAND (SP) MED BROWN - GREY, MOIST LOOSE	
						WATER LEVEL 9' BGS

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	16TW02	SHEET 1 OF 1

SOIL BORING LOG

PROJECT: MCAS Cherry Point OU1 VI Evaluation LOCATION: OU1 - 16TW02

ELEVATION: DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS: 10' BGS START: 0943 11/9/09 END: 0953 LOGGER: M. SMITH/RDU

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
	0-8"				CONCRETE	HAND AUGER TO 5' BGS
8"					AT 8" BGS FS	
11"	8"-1'				~~POORLY~~ WELL GRADED GRAVEL (GW) W/ FINE SAND, GREY, DRY, LOOSE	
					AT 1' BGS POORLY GRADED SAND (SP), GREY, DRY-MOIST, LOOSE	
						~~NO SOIL GAS SCREEN PLACED DUE TO CLAY BELOW 4' BGS.~~ FS
4'					SANDY CLAY (SC) GREY-BROWN, DRY-MOIST, DENSE	SOIL GAS SCREEN PLACED 4'-3'
						TEMP WELL SCREEN SET TO 13'-9'
						PID @ 7' BGS VOC = 0.0 PPM
9'					POORLY GRADED SAND (SP) GREY, MOIST-WET, MED DENSITY	
					SANDY CLAY (SC) GREY-BROWN, WET, MED DENSITY	WATER LEVEL 10' BGS

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	16TW03	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : OU1-16TW03

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : 9' BGS START : 0855 11/9/09 END : 0910 LOGGER : M. SMITH/CDU

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
41"					CONCRETE	
					POORLY GRADED GRAVE W/ SAND (GP), GREY, DRY, LOOSE	HAND AUGER TO 5' BG
2'					POORLY GRADED SAND (SP), GREY-BROWN, DRY-MOIST, LOOSE	NO SOIL GAS SCREEN SET DUE TO CLAY BELOW 5'.
	2'-5'					
						WELL SCREEN SET 12'-8'
5'					SANDY CLAY (SC), GREY-BROWN, MOIST, DENSE	
	5'-9'					PID @ 9' BGS = 0.0PPM
						▽ WATER LEVEL 9' BGS
9'					POORLY GRADED SAND (SP), GREY-BROWN, WET, MED. DENSITY	
10'						END OF LINER

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	16TW04	SHEET 1 OF

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : OU1-16TW04

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : 8' BGS START : 0740 11/9/09 END : 0755 LOGGER : M. SMITH /12DX

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
6"					CONCRETE	HAND AUGER TO 5' BGS
1'					GRAVEL POORLY GRADED (GP), DRY, LOOSE, GREY	
					POORLY GRADED SAND (SP) W/ ANGULAR GRAVEL, DRY, LOOSE, MED. BROWN	NO SOIL GAS SCREEN SET DUE TO CLAY BELOW 4'
3.5'						
4'					SANDY CLAY (SC), GREY-BROWN, DRY-MOIST, DENSE	TEMP WELL SCREEN SET TO 9'-13' BGS.
						PID @ 9' BGS = 0.0 PPM
7'					AT 8' BGS POORLY GRADED SAND (SP) BROWN-GRAY, MOIST, MED. DENSITY	
8'						▽ WATER LEVEL 8' BGS

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	OU1-42TW01	SHEET 1 OF 1

SOIL BORING LOG

PROJECT: MCAS Cherry Point OU1 VI Evaluation LOCATION: 42TW01

ELEVATION: DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS: 5' BGS START: 1500 END: 1505 LOGGER: M. SMITH/ROU

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
	0-5'				ASPHALT	HAND AUGER TO 5' BGS
5'					SANDY CLAY (SC) GREY-BROWN, MOIST, DENSE	
5'						▽ WATER LEVEL 5' BGS TEMP WELL SCREEN SET 7'-5' BGS ~~5' BGS END OF HAND~~
						Soil gas not collected @ 42NS01 due to tight sandy clay from 8"-5' bgs. Attempted 42NS01 - drew vacuum ~-25" Hg.

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	OU1-42TW02	SHEET 1 OF 1

SOIL BORING LOG

PROJECT: MCAS Cherry Point OU1 VI Evaluation LOCATION: 42TW02

ELEVATION: DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS: 7' BGS START: 1315 END: 1323 LOGGER: M. SMITH (RAC)

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
					POORLY GRADED SAND (SP) LIGHT GRAY, DRY, LOOSE	HAND AUGER TO 5' BGS
3'					SANDY CLAY (SC), BROWN-GRAY, DRY-MOIST, MED. DENSE	TEMP WELL SCREEN SET 4'-7'
						SOIL GAS SCREEN SET 6'-5'
5					POORLY GRADED SAND (SP), BROWN-ORANGE, DRY, LOOSE	PID @ 6' BGS = 0.2PPM
7'					SANDY CLAY (SC), ORANGE-BROWN, WET, DENSE	▽ WATER LEVEL 7' BGS
10						BOTTOM OF LINER

CH2MHILL

PROJECT NUMBER	BORING NUMBER
358454.AR.FI	OU1-42TW03 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : 42TW03

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : 9' BGS START : 0945 END : 0955 LOGGER : M SMITH / RDD

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
	0-3"				ASPHAULT	
	0-1'				POORLY GRADED SAND (SP) MED. BROWN, DRY-MOIST, LOOSE	HAND AUGER 1st 5 FT. BGS
1'						
					SANDY CLAY (SC) ORANGE-BROWN, DRY-MOIST, DENSE	
	1'-4'					
4'						SOIL GAS SCREEN SET 7'-6' BGS
					POORLY GRADED SAND (SP) MED. BROWN, DRY-MOIST, LOOSE	
5'						
	4-7'					~~WATER~~ TEMP WELL SCREEN SET 11'-9' BGS
						PID @ 6' BGS=0.4 PPM
7					SANDY CLAY (SC), MED. BROWN, DRY-MOIST, DENSE	
	7'-8'					
8					POORLY GRADED SAND (SP), MED BROWN, DRY-MOIST, LOOSE	
9'	8'-11'					▽ WATER LEVEL 9' BGS
10'						
11'						BOTTOM OF TEMP WELL SCREEN @ 11' BGS

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	OU1-42TW04	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : 42TW04

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : START : 1058 END : 1108 LOGGER : M. SMITH / RDU

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
	0-4"				ASPHALT	
	4"-1'				~~WELL S~~ FS POORLY SORTED SAND (SP), MED. GRAY, DRY, LOOSE	HAND AUGER TO 5' BGS
1'					SANDY CLAY (SC) BROWN-GRAY, DRY-MOIST, DENSE	
3'	~~1'-10'~~ MS				POORLY SORTED SAND (SP) MED. BROWN, DRY-MOIST, LOOSE	
						TEMPWELL SCREEN SET 11'-9'
						~~10'-11'~~ FS SOIL GAS 7'-6' SCREEN
9'						▽ WATER LEVEL 9' BGS
	10'				SANDY CLAY (SC) BROWN, ~~MO~~ MS WET, DENSE	11' BGS BOTTOM OF WELL SCREEN
11'					CLAY (CL) GREY, WET, DENSE	11' ▽ ~~WATER LEVEL 11' BGS~~ MS

CH2MHILL

PROJECT NUMBER	BORING NUMBER
358454.AR.FI	OU1-412TW05 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : 412TW05

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : 9' BGS START : 0810 END : 0815 LOGGER : M. SMITH / RDG

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
	0-1"				ASPHALT	
					SANDY SILT (SM), MED. ORANGE, DRY-MOIST, MED. DENSITY.	HAND AUGER TOP 5' BGS
						TEMP WELL SCREEN SET 11'-9'
	1'-5'					
						SOIL GAS SCREEN SET TO 8'-7'
5'					POORLY GRADED SAND (SP), TAN, DRY-MOIST, LOOSE	
	5'-7'					
7'	7'-8'				SANDY CLAY (SC), ORANGE-BROWN, DRY MOIST, DENSE	PID @ 7.5' BGS =0.2 PPM
8'					POORLY GRADED SAND (SP) ORANGE-BROWN, DRY-MOIST, LOOSE	
	8'-10'					▽ 9' BGS WATER LEVEL
10'						

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	OU1-51TW01	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : 51TW01

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : 5' BGS START : 0855 END : 0910 LOGGER : M. SMITH / RDU

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
	0-5'				ASPHALT	HAND AUGER TO 5' BGS
					POORLY GRADED SAND (SP) GREY, DRY-MOIST, LOOSE	
	5"-2'					
2'					SANDY CLAY (SC), BROWN-GREY, DRY-MOIST, DENSE	
	2'-4'					
4'					POORLY GRADED SAND (SP), TAN, DRY-MOIST, DENSE	SOIL GAS SCREEN SET 4'-3' BGS
						PID @ 4.5 ft. BGS = 0.1 PPM
5'					▽	WATER LEVEL AT 5' BGS
						TEMP WELL SCREEN SET 7'-5' BGS

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	51TW03	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : OU1-51TW03

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : 9' BGS START : 0755 11/10/09 END : 0810 LOGGER : M. SMITH/RG

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
4"					ASPHALT	HAND AUGER TO 5' BGS
					POORLY GRADED SAND (SP), BROWN-ORANGE, DRY-MOIST, LOOSE	
						SOIL GAS SCREEN SET TO 7'-6'
						TEMP WELL SET TO 12'-8' BGS
7					SANDY CLAY (SC), GREY MOIST, MED. DENSITY	PID @ 7' BGS VOC=0.0PPM
10'					POORLY GRADED SAND (SP), TAN-GREY, MED. DENSITY	WATER LEVEL 9' BGS

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	SITW04	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : OU1-SITW04

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : 9' BGS START : 0900 11/10/09 END : 0910 LOGGER : M. SMITH/RPL

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
1"					ASPHALT	
					POORLY GRADED SAND (SP), BROWNISH ORANGE, MOIST-DRY, LOOSE	HAND AUGER TO 5' BGS
2'					NO SOIL PRESENT VOID	
						SOIL GAS SCREEN SET 4.5'-5.5' BGS
5'					POORLY GRADED SAND (SP) BROWNISH-ORANGE, MOIST-DRY, LOOSE	
6'					SANDY CLAY (SC), TAN-BROWN, MOIST, DENSE	TEMP WELL SCREEN SET 8'-12' BGS
9'					POORLY GRADED SAND (SP), TAN-GRAY, WET, MED. DENSITY	WATER LEVEL 9' BGS

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	51TW05	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION :

ELEVATION : OU1-51TW05 DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : START : 0957 11/10/09 END : LOGGER : M. SMITH/RDW

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
4"					ASPHALT	HAND AUGER TO 5' BGS
					POORLY GRADED SAND (SP) ORANGEISH BROWN, DRY-MOIST, LOOSE	
						ENCOUNTERED SOLID OBJECT IN 2 LOCATIONS DID NOT PROGRESS BORING

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	51TW06	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : OU1-51TW06

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : 8.5' BGS START : 1025 10/10/09 END : 1040 LOGGER : M. SMITH RDU

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
4"					ASPHALT	
					POORLY GRADED SAND (SP), ORANGE-BROWN, DRY-MOIST, MED. DENSITY	HAND AUGER TO 5' BGS
2					SANDY CLAY (SC), ORANGE-BROWN, DRY-MOIST, MED. DENSITY	SET TEMP WELL SCREEN TO 12'-8' BGS
3					POORLY GRADED SAND (SP), TAN-BROWN, DRY-MOIST, LOOSE	SOIL GAS SCREEN SET 5'-6' BGS
6					SANDY CLAY (SC), BROWN-ORANGE, MOIST, DENSE	
8.5					POORLY GRADED SAND (SP), TAN-BROWN, WET, MED. DENSITY	▽ WATER LEVEL 8.5' BGS

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	SITW08	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : OU1-SITW07

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : 10' BGS START : 1420 END : 1480 LOGGER : M. SMITH/ROU

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
4"					ASPHAULT	HAND AUGER TO 5' BGS
					POORLY GRADED SAND (SP) BROWN-GRAY, MOIST, MED. DENSITY	
						SOIL GAS SCREEN SET 7'-6' BGS
						TEMP WELL SCREEN SET 12'-8' BGS
						▽ WATER LEVEL 10' BGS

CH2MHILL

PROJECT NUMBER	BORING NUMBER
358454.AR.FI	OU1-52TW01 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : 52TW01

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : 14' BGS START : 1500 END : 1515 LOGGER : M. SMITH/ROW

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
6"	0'-6"				CONCRETE	
					SANDY CLAY (SC), BLACK - GRAY, DRY-MOIST, DENSE, ORGANIC	SEWAGE ODOR HAND AUGER TO 5' BGS
	6"-12"					
						TEMP WELL SCREEN SET TO 17'-13'
						No soil gas collected @ 52NS01 due to tight sandy clay from 3' to 14' bgs.
12'						▽ WATER LEVEL 14' BGS

CH2MHILL

PROJECT NUMBER	BORING NUMBER
358454.AR.FI	OU1-52TW02 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : 52TW02

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : 4' BGS START : 1330 END : 1335 LOGGER : M. SMITH/RPW

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
2'	0-2'				ASPHALT	HAND AUGER TO ~~WATER LEVEL~~ AS 5' BGS
					POORLY GRADED SAND (SP) DARK GRAY, MOIST-WET, LOOSE	
						TEMP WELL SCREEN SET TO ~~6'-4'~~ AS 5'-9' BGS
						▷ WATER LEVEL 4' BGS
4'					SANDY CLAY (SC) GRAY, WET, DENSE	▷ ~~WATER LEVEL~~ AS ~~@ 4' BGS~~
						Fill material (wood chunks, gravel, etc.) @ 4 ft bgs.
						Soil gas not collected due to tight sandy clay from 3'-4' bgs; water table @ 4' bgs
						Fill material (wood, gravel)

15'

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	52TW03	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : OU2-52TW03

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : START : 1425 END : 1435 LOGGER : M. SMITH / RDU

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
3"					ASPHAULT	HAND AUGER TO 5' BGS
	3"-4'				POORLY GRADED SAND (SP) TAN-GRAY, DRY-MOIST, LOOSE	
3'						
4'					3" SANDY CLAY (SC) GREY-BLACK, WET, DENSE W/ ANGULAR GRAVEL	▽ WATER LEVEL 4' BGS
						TEMP WELL SCREEN SET ~~17-15'~~ 15'-13'
14'						▽ WATER LEVEL 14' BGS
						Soilgas not collected; 3'-4' bgs not sufficient interval in sand befor-water table.

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	SZTW04	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION :

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : START : 1540 END : 1555 LOGGER : M. SMITH IRDV

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
					CONCRETE	
					POORLY GRADED SAND (SP), GREY-BROWN, DRY-MOIST, LOOSE	HAND AUGER TO 5' BGS
2.5'					SANDY CLAY (SC), GREY, MOIST, DENSE	- UNABLE TO DRAW WATER W/ TEMP WELL SCREEN SET 17'-15'
4'					ORGANIC CLAY, BLACK, DRY-MOIST, DENSE	
14'						▷ WATER LEVEL @ 14' BGS
15'						END OF LINER

Soil gas not collected due to tight sandy clay from 3'-14' bgs.

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	OU1-52TW05	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : 52TW05

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : 11' BGS START : 1010 END : 1025 LOGGER : M. SMITH / ROU

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
	1"				ASPHALT	
	1"-5'				POORLY GRADED SAND (SP) MED GRAY, DRY, LOOSE	
						SOIL GAS SCREEN SET 9'-8'
5'					SANDY CLAY (SC), BLACK BROWN, MOIST, DENSE	TEMP WELL SCREEN SET 12'-10'
	5'-7'					
7'					POORLY GRADED SAND (SP), BROWN-GRAY, MOIST, MED. DENSITY	
	7'-11'					
9'					~~SANDY CLAY~~ AS	PID @ 9' BGS VOC = 890 PPM
					11' BGS SANDY CLAY (SC), GRAY, WET, MED. DENSITY	GAS ODOR
11						WATER LEVEL AT 11' BGS

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	OU1-52TW06	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : 52TW06

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : 11' BGS START : 1340 END : 1350 LOGGER : M. SMITH/ROW

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
	0-2"				ASPHAULT	
	2"-2'				POORLY GRADED SAND (SP), GREY, DRY, LOOSE	HAND AUGER TO 5' BGS
2'					SANDY CLAY (SC), GREY-BLACK, DRY-MOIST, DENSE	
						SOIL GAS SCREEN SET 10'-9'
						~~TEMP~~ WELL SCREEN SET 14'-10'
9'					POORLY GRADED SAND (SP) GREY-BLACK, MOIST, DENSE	PID @ 9' BGS = 151 PPM IN BAG VOL = 2100 PPM
11'						▽ WATER LEVEL 11' BGS

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	52TW07	SHEET 1 OF 1

CH2MHILL

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : OU1-52TW07

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : 9' BGS START : 1120 END : 1135 LOGGER : M. SMITH / BRK

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
					ASPHALT	
					POORLY GRADED SAND (SP), GREY-BROWN, DRY-MOIST, LOOSE	
						SOIL GAS SCREEN SET ~~8'-7'~~ 9'-8'
6'					SANDY CLAY (SC) BLACK-BROWN, DRY-MOIST, DENSE	
6.5'					POORLY GRADED SAND (SP) GREY-BROWN, MOIST, LOOSE	TEMP WELL SCREEN SET ~~11'-9'~~ 13-9'
						▽ WATER LEVEL @ 9' BGS
						PID @ 10' BGS VOC = 40 PPM IN A BAG = 1300 PPM

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	52TW09	SHEET 1 OF 1

SOIL BORING LOG

11/9/09

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : 52TW09 Bldg 4026

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : 7' BGS START : 1510 11/9/09 END : 1525 LOGGER : K Stokes

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
					CONCRETE	HAND AUGER TO 5' BGS
1'					POORLY GRADED SAND (SP), GREYISH BROWN DRY-MOIST, LOOSE	
						SOIL GAS SCREEN SET 5-6' BGS
						4' BGS FUEL ODOR
						TEMP WELL SCREEN SET TO 7'-11' BGS
6'						PID AT 6' BGS VOC = 25.5 PPM IN A BAG VOC = 1-3 PPM
					6.1' BGS SANDY CLAY (SC), GREY, MOIST, MED. DENSITY	D WATER LEVEL @ 7' BGS
					AT 7' BGS POORLY GRADED SAND (SP), GREY, WET, MED DENSITY	

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	SZTW10	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : OU1-SZTW10

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : 7' BGS START : 1350 8/9/09 END : 1405 LOGGER : M. SMITH / RIDU

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
					CONCRETE	HAND AUGER TO 5' BGS
1'					POORLY GRADED SAND (SP) DARK GRAY, DRY, LOOSE	
3'					SANDY CLAY (SC), GREY DRY, MED. DENSITY	
4'					POORLY GRADED SAND (SP) TAN-GREY, DRY-MOIST, LOOSE	SOIL GAS SCREEN SET ~~4'-5'~~ 5'-4'
						TEMP WELL SCREEN SET 7'-11'
						PID @ 6' BGS VOL=0.0 PPM
7'						D WATER LEVEL 7' BGS

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	OU1-SZTW11	SHEET 1 OF 1

SOIL BORING LOG

PROJECT: MCAS Cherry Point OU1 VI Evaluation LOCATION: SZTW11

ELEVATION: DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS: 8' BGS START: 1245 11/9/09 END: 1255 LOGGER: M. SMITH / RDU

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
					ASPHALT	
6"					POORLY GRADED SAND (SP), GREY, DRY-MOIST, LOOSE	HAND AUGER TO 5' BGS
2'					SANDY CLAY (SC) GREY-BLACK, MOIST, DENSE	
						SOIL GAS SCREEN SET AT 7'-6' BGS
						TEMP WELL SCREEN SET
7'					POORLY GRADED SAND (SP) ORANGE-BROWN, MOIST, LOOSE	PID @ 7' BGS VOC=1.0 PPM
8'						D WATER LEVEL @ 8' BGS

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	~~13FW52~~ 52FW13	SHEET 1 OF 1

CH2MHILL

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : 52FW13

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : 12' BGS START : 1025 END : 1035 LOGGER : M. SMITH/DRL.

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
	0-5"				CONCRETE	
					SANDY SILT (SM), DARK GREY, DRY-MOIST, MED. DENSITY	HAND AUGER TO 5' BGS
	5"-4'					SOIL GAS SCREEN SET TO 11'-10' BGS
4'					POORLY GRADED SAND (SP) GREY-BROWN, DRY-MOIST, LOOSE	~~WATER~~ TEMP WELL SCREEN SET TO 12'-14' BGS.
	4'-6'					
6'					SANDY SILT (SM), GREY-BROWN, DRY-MOIST, MED. DENSITY	PID @ 10.5' BGS VOC = 0.5 ppm
	6'-10					
10'	10'-12'				SANDY CLAY (SC), ORANGE-BROWN	
11'						
12'					POORLY GRADED SAND (SP), MED. BROWN, WET, MED. DENSITY	▽ WATER LEVEL @ 12' BGS

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	OU1-52TW14	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : 52TW14

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : 6" BGS START : 0910 END : 0920 LOGGER : M. SMITH / R. DU

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
	1"				ASPHALT	
					SANDY CLAY W/ ANULAR GRAVEL, WET, LOOSE	WATER LEVEL @ 6" BGS
						HAND AUGER TO 5' BGS
8'						LINER NOT ADVANCED DUE TO SHALLOW WATER LEVEL
						TEMP WELL SCREEN SET 13'-11'
						No soil gas attempted @ 52NS14 due to perched water @ 6" and sandy clay from 7" to 13" bgs

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	98TW01	SHEET 1 OF 1

SOIL BORING LOG

PROJECT: MCAS Cherry Point OU1 VI Evaluation LOCATION: OU1 98TW01 Bldg 4172

ELEVATION: DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS: 7 ft bgs START: 1515 END: 1530 LOGGER: K Stokes

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
0					Concrete pavement 0-2"	
2"					2"-4" poorly graded gravel	
4"						
5"					Orange brown, silty sand some low plasticity clay (5"-5') moist	Hand auger to 5' bgs
5'					Orange brown, moist sand some silt, fine to medium (5'-9') moist	PID = 0 ppm @ ~5' bgs ▽ 7' bgs Set well screen 7'-8' bgs Soil gas screen 5'-6' bgs
9'					Light brown med. plasticity clay with orange motteling, little silty sand (9'-9.5')	
10'					Fine to medium sand some silt (9.5'-10')	

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	98TW02	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : Bldg 4172

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : 8 ft bgs START : 1130 END : 1200 LOGGER : K Stokes

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
0					Concrete pavement	
2"					40% gravel poorly graded with fine to medium sand 2" - 8"	
12"					Fine to medium light brown moist sandy silt	Hand auger to 5'
5'					Fine sandy silt, light gray moist with black motteling 5'-5.5' bgs	
					Fine to medium sandy silt with little clay, orangey brown, low plasticity, moist 5.5' - 7'	
					Fine to med sand some silt light gray with orange motteling 7' - 8'	
8'						▽ 8' bgs
					High plasticity clay with some sand, light gray 8'-9'	Set well screen from 8'-9' bgs
					moist to wet sandy silt light gray	Soil gas well screen set at 6'-7' bgs
10'						

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	98TW03	SHEET 1 OF 1

SOIL BORING LOG

PROJECT: MCAS Cherry Point OU1 VI Evaluation LOCATION: Bldg 4032

ELEVATION: DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS: 5.5 START: 07 30 END: 08 00 LOGGER: K Stokes

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
0					Concrete pavement	
3"					Dark gray, fine to medium grain sand, dry-moist (3"-5') Some angular gravel throughout.	Hand auger to 5'
5'					moist, fine grain sand and silt, light gray with tan striations, (5'-5.5')	▽ 5.5' bgs
					5.5'-10' Fine to medium grain sand little silt, light brown with orange motteling, moist to wet	Set well screen 6-7' bgs Set soil gas 3'-4' bgs
10'						

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	98TW04	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : Bldg 4032

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : 7 ft bgs START : 1227 END : 1245 LOGGER : K Stokes

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
0					Concrete pavement 0 - 3"	
3"					3" - 3' Dark gray fine sand 10% angular gravel, moist	Hand Augered down to 5 ft bgs.
3'					Light brown, dark gray Striations, moist, fine to medium grained sand some silt 3' - 5'	
5'					5' - 6.5' Light brown fine grained sand, moist 6.5' - 6.8' Dark brown Sand some silt, low plasticity clay, moist 6.8' - 7.0' Light gray fine grained sand some silt, moist 7.0 - 7.5' Light gray fine grained sand, wet 7.5' - 9.5' Brownish orange, medium plasticity clayey sand, moist to wet 9.5' - 10' light gray fine grained sand some sit	PID = 0 ppm ▽ 7 ft bgs Well screened from 7' - 8' bgs Soil gas screened 5' - 6' bgs.

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	98TW05	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION :

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : ~4 ft bgs START : 1330 END : 1335 LOGGER : K Stokes

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
0					1" grass cover	Hand Auger down to 5 ft bgs
					1" - 4' fine to medium sandy silt, orangey brown with dark gray	
4'						▽ 4 ft bgs
						Well screen set at 3 - 7 ' bgs
						No soil gas sample will be collected from 98NS05 Water table too shallow

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	98TW06	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : Bldg 4032

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : 7 ft bgs START : 915 END : 935 LOGGER :

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
0					Concrete pavement	
3"					Fine to medium grain sand, light gray, some (10%) gravel throughout, humic matter [root @ 4.5' bgs] (3" - 5') dry to moist.	Hand auger to 5' bgs
5'				3' recovery	Fine grain sand little silt, light gray with orange brown motteling (5' - 7') moist	▽ 7' bgs
					Fine grain sand, light gray, moist to wet 7' - 10'	Set well screen from 7' - 8' bgs Set soil gas screen from 5' - 6' bgs
10'						

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	98TW07	SHEET 1 OF 1

SOIL BORING LOG

PROJECT: MCAS Cherry Point OU1 VI Evaluation LOCATION: 98TW07

ELEVATION: DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS: ~6' bgs START: 1010 END: 1030 LOGGER: K Stokes

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
0"					Asphalt surface covering 0-10"	
10"					Fine to medium sand with gravel 10" - 2'	Hand auger to 5'
12"						
2'					Dark brown - black fine to medium silty sand, moist 2' - 4'	
3'						
4'					Grayish fine silty sand, moist some clay-silt (4.5'-5')	
5'			4' recovery		Silty-clay, moist, dark black mottling (5 - 5.5')	PID = 19.7 ppm* @ ~4.5 bgs
					Orange rust colored mottling from 5.5' - 9')	∇ ~6' bgs
						Set well screen 6' - 8' bgs
9'					medium-course grain sand light gray, wet	Will set soil gas screen 4.5' - 5.5' bgs.
						*Soil in ziploc @ 4.5' bgs PID = 35.1 ppm
10'						

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	98TW08	SHEET 1 OF 1

SOIL BORING LOG

PROJECT: MCAS Cherry Point OU1 VI Evaluation LOCATION: OU 1 Bldg 4630

ELEVATION: DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS: 6' bgs START: 1330 END: 1430 LOGGER: K Stokes

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
0					Asphalt 0-10"	Hand auger down to 5' bgs
					Fine to medium sand light tan 10" - 5'	
12"						
18"						No odor
3'					Light brown silty clay moist, soft, fine grain 3'-10'	
					Silty sand (ML), orange tan moist 5-10'	
5'						PID readings VOC = 0 ppm
6'					Wet, fine to medium silty sand (ML),	▽ water encountered
						Set well screen from 6'-10' since rig had to move to other location.
10'						End of liner

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	98TW09	SHEET 1 OF 1

SOIL BORING LOG

PROJECT: MCAS Cherry Point OU1 VI Evaluation LOCATION: Bldg 159

ELEVATION: DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS: 14 ft bgs START: 855 END: 915 LOGGER: K Stokes

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
0					Blacktop pavement (0-6")	
6"					6" - 5' Light brownish orange, fine-med grain sand some silty clay (low plasticity, moist	Hand auger to 5 ft bgs
5'						
			4.5'		5'-7' light gray fine sand moist	
					7'-10' high plasticity clay with little sand, moist, orangey brown	PID = 0.3 ppm @ ~9 ft bgs
10'						
					10'-10.5' same as above	
					10.5'-11.0 light gray fine sand	PID = 0.3 ppm @ ~13 ft bgs
					11.0'-12.0' same as 10'-10.5'	
					12'-13' clay	
					13-14.5' fine sand	
						▽ 14' bgs
			3'		14.5'-15.0 medium grained sand	Set screen @ 13-15' bgs
15'						

Set soil screen @ 6-7' bgs to avoid clay layers

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	OU1-98TW10 4 PS	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION :

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : 14 ft bgs START : END : LOGGER : M Smith

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
	0'-4'				POORLY GRADED SAND (SP), MED BROWN, DRY-MOIST, LOW DENSITY	HAND AUGER DOWN TO 5' BGS
4'	4'-5				POORLY GRADED SAND (SP) MED. GRAY, MOIST, MED. DENSITY.	PID = 0.3ppm @ 4.5'
5'					SILTY SAND (SM), MED-DARK GRAY, MOIST, DENSE	
7'					POORLY GRADED SAND (SP) DARK GRAY, MOIST, MED. DENSITY	PID @ 7' = 0.4ppm
						WELL SCREEN SET 16'-14'
						SOIL GAS SCREEN SET 12'-11'
14'						▽ WATER LEVEL 14' BGS
15'						

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	98TW11	SHEET 1 OF 1

SOIL BORING LOG

PROJECT: MCAS Cherry Point OU1 VI Evaluation LOCATION: Bldg 159

ELEVATION: DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE: Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS: 13 ft bgs START: 15 05 END: 15 30 LOGGER: K Stokes

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
0				2'	0-1" grass cover 1"-12" - poorly sorted gravel, angular 12"-5' fine grain sand, browinsh gray, moist	Hand augered to 1' bgs - below 1 foot was railroad gravel - could not auger PID = 0 ppm
5'				4'	5'-7.5' light tan, fine grained sand, moist	▽ 7.5' bgs (perched)
8'					7.5'-8.5' ~~orge~~ brownish orange low plasticity clayey sand wet/moist	PID = 0 ppm
					light tan fine sand, wet 8.5'-10'	Set well screen at ~~8'-9'~~ 13-15' bgs Set soil gas screen at 6'-7' bgs
10'						

▽ 13' bgs

PROJECT NUMBER	BORING NUMBER	
358454.AR.FI	OU1-98TW12	SHEET 1 OF 1

CH2MHILL

SOIL BORING LOG

PROJECT : MCAS Cherry Point OU1 VI Evaluation LOCATION : OU1-98TW12

ELEVATION : DRILLING CONTRACTOR Probe Technology Inc.

DRILLING METHOD AND EQUIPMENT USE Geoprobe Macro-Core® Sampler with polyvinyl chloride (PVC), or polyethylene terephalate glycol (PETG) line

WATER LEVELS : 14' BGS START : END : LOGGER : M Smith

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
	0-10				ASPHALT	
10"					SANDY SILT (SM) MED. GRAY, DRY-MOIST, MED. DENSITY	
	10'-4'					HAND AUGER TO 5' BGS
4'					POORLY GRADED SAND (SP) MED. ORANGE, DRY-MOIST, MED. DENSITY	
	4'-6.5'					
5'						5' WATER LEVEL 14' BGS
6.5'	6.5-7				CLAYEY SAND (SC) DENSE, DRY-MOIST, MED. ORANGE	WATER SCREEN SET TO 15'-13'
7'					POORLY GRADED SAND (SP) TAN-ORANGE, DRY-MOIST, LOW DENSITY	SOIL GAS SCREEN SET TO 10'-9'
	7'-10'					
10'	10'-11'				CLAYEY SAND (SC) DENSE, DRY TO MOIST, MED. ORANGE	
11'					POORLY GRADED SAND (SP), TAN-LIGHT ORANGE DRY TO MOIST, LOW DENSITY	
						▽ WATER LEVEL 14' BGS
14'						

Appendix C
Groundwater Sampling Field Data Sheets

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: 52 TW15

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW;

Date: 11/20/09

Well Depth (ft): 96

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): ??

Water Column (ft): ??

Well Diameter (in):

Gal. Per ft:

Well volume (gal):

Depth of Screen (ft):

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	0925										
1 VOL.	0928	N/A	300		—	20.88	0.489	-61	0.28	465	
2 VOL.	0929				—	20.92	0.475	-79	0.00	345	
3 VOL.	0930				—	21.03	0.471	-83	0.00	244	
4 VOL.	0931				—	21.15	0.466	-85	0.00	208	
5 VOL.	0932			2.3	—	21.21	0.465	-86	0.00	202	
6 VOL.											
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

Collected OU1-52TW15-09D @ 0935

Sampling

Depth to Water Before Sampling: Pine did not send WLM

Depth sample was acquired: ?

Sample Methodology: Low Flow

Sample Date/Time: 11/20/09

Signed Sampler:

Filtered Metals Collected: Y / N

Filter Size:

Sample Observations:

Parameters: VOCs (8260B)

OU1-52TW15-09D

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: OU1-51TW09

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW;

Date: 11/20/09

Well Depth (ft): 9

Purge Low Flow Methodology: Peristaltic Pump

DTW (ft): ??

Water Column (ft): ??

Well Diameter (in): 2"

Gal. Per ft:

Well volume (gal):

Depth of Screen (ft):

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1150	—	300								
1 VOL.	1152	—			4.97	21.77	0.384	36	1.87	orange	brown
2 VOL.	1153	—			4.87	21.79	0.382	38	1.59	" "	
3 VOL.	1154	—			4.78	21.79	0.380	48	1.51	" "	
4 VOL.	1155	—			4.69	21.85	0.376	61	1.47	" "	
5 VOL.	1156	—		7.3	4.68	21.88	0.376	63	1.49	" "	
6 VOL.											
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

Collected OU1-51TW09-09D @ 1200

OU1-51TW09-09DP 1205

*Ph error-5

Sampling

Depth to Water Before Sampling: ?? Pine did not send WLM Depth sample was acquired: 8

Sample Methodology: Low Flow

Sample Date/Time: 11/20/09

Signed Sampler:

Filtered Metals Collected: Y / N Filter Size:

Sample Observations:

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: OU1-14TW01

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW;

Date: 11/21/09

Well Depth (ft): 12

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 8.44

Water Column (ft): 3.56

Well Diameter (in): 1

Gal. Per ft: 0.041

Well volume (gal): 0.146

Depth of Screen (ft): 9-12

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
12 INT.	1245	8.44									
1 VOL.	1250		300		7.62	21.16	0.90	39	2.56	761	
2 VOL.	1251				7.65	21.15	0.90	41	2.29	584	
3 VOL.	1252				7.66	21.16	0.90	42	2.27	494	
4 VOL.	1253				7.80	21.19	0.90	43	2.24	481	
5 VOL.	1254				7.58	21.19	1.83	43	2.28	340	
6 VOL.											
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

1255 Collected OU1-14TW01-09D

Sampling

Depth to Water Before Sampling: 8.44 ft bgs

Depth sample was acquired: 9

Sample Methodology: Low Flow

Sample Date/Time: 11/21/09

Signed Sampler:

Filtered Metals Collected: Y / N

Filter Size:

Sample Observations:

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: OU1-MTW02

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW;

Date: 11/21/09

Well Depth (ft): 12

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 8.35

Water Column (ft): 3.65

Well Diameter (in): 1"

Gal. Per ft: 0.041

Well volume (gal): 0.1497

Depth of Screen (ft): 9-12

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1355	8.35									
1 VOL.	1400		300		7.36	20.93	15.9	-1	0.69	211	
2 VOL.	1401				7.42	20.96	13.0	0	0.64	174	
3 VOL.	1402				7.60	20.94	11.1	1	0.56	118	
4 VOL.	1403				7.59	20.95	10.5	1	0.51	104	
5 VOL.	1404			2.3	7.60	20.95	6.24	2	0.55	77	
6 VOL.											
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

1404 collected OU1-MTW02-09D

5 (DMS)

Sampling

Depth to Water Before Sampling: 8.35

Depth sample was acquired: 9 ft bgs

Sample Methodology: Low Flow

Sample Date/Time: 11/21/09 1404

Signed Sampler:

Filtered Metals Collected: Y / N

Filter Size:

Sample Observations:

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: OU1 - 14TW03

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW;

Date: 11/21/09

Well Depth (ft): 12

DTW (ft): 8.79

Water Column (ft): 3.21

Well Diameter (in): 1

Gal. Per ft: 0.041

Well volume (gal): 0.132

Depth of Screen (ft): 9-12

Purge Low Flow

Methodology: Peristaltic Pump

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	~~0925~~	~~8.79~~	~~300~~		~~6.46~~	~~21.41~~	~~0.90~~	~~-134~~	~~0.31~~	~~685~~	~~brn~~
1 VOL.	0930		300		6.39	21.46	0.90	-135	0.25	684	
2 VOL.	0931				6.40	21.49	0.94	-153	0.15	634	
3 VOL.	0932				6.44	21.54	1.26	-150	0.04	574	
4 VOL.	0933				6.48	21.59	1.26	-156	.31	374	
5 VOL.	0934			2.3	6.52	21.58	1.20	-148	0.07	304	
6 VOL.											
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

Collected OU1-14TW03-09D @ 0935

Sampling

Depth to Water Before Sampling: 8.79

Depth sample was acquired: 10

Sample Methodology: Low Flow

Sample Date/Time: 11/21/09

Signed Sampler:

Filtered Metals Collected: Y / N

Filter Size:

Sample Observations:

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: OU1-IATW04-09D

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW;

Date: 11/21/09

Well Depth (ft): 12

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 8.9

Water Column (ft): 3.1

Well Diameter (in): 1

Gal. Per ft: 0.041

Well volume (gal): 0.1271

Depth of Screen (ft): 9-12

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1030	8.90									
1 VOL.	1035		300		6.54	20.28	81.1	-70	0.01	692	
2 VOL.	1036				6.57	20.24	64.5	-70	0.01	541	
3 VOL.	1037				6.60	20.23	53.7	-72	0.00	460	
4 VOL.	1038				6.63	20.18	44.0	-72	0.03	554	
5 VOL.	1039			2.3	6.66	20.17	36.5	-74	0.02	492	
6 VOL.											
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

Collected OU1-IATW04-09D @ 1040

Sampling

Depth to Water Before Sampling: 8.90

Depth sample was acquired: 9

Sample Methodology: Low Flow

Sample Date/Time: 11/21/09 1040

Signed Sampler:

Filtered Metals Collected: Y / N

Filter Size:

Sample Observations:

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: OU1-74TW01

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW;

Date: 11/21/09

Well Depth (ft): 11

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 7.64

Water Column (ft): 3.36

Well Diameter (in): 1

Gal. Per ft: 0.041

Well volume (gal): 0.1378

Depth of Screen (ft): 9-11

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	7.64	0805	300								
1 VOL.		0811	300		6.13	20.93	0.90	-52	0.92	634	
2 VOL.		0812	300		6.00	21.51	0.90	-53	0.77	516	
3 VOL.		0813	300		6.09	21.72	0.90	-43	1.06	420	
4 VOL.		0814	300		6.01	21.93	0.90	-43	1.04	279	
5 VOL.		0815	300	1.3	5.93	21.99	0.90	-41	0.92	163	
6 VOL.											
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

Collected OU1-74TW01-09D @ 0820

Sampling

Depth to Water Before Sampling:

Depth sample was acquired: 9

Sample Methodology: Low Flow

Sample Date/Time: 11/21/09

Signed Sampler:

Filtered Metals Collected: Y / N

Filter Size:

Sample Observations:

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: OU1-74TW02

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW;

Date: 11/20/09

Well Depth (ft): 11

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 8.84

Water Column (ft): 2.16

Well Diameter (in): 1

Gal. Per ft: 0.041

Well volume (gal): 0.0886

Depth of Screen (ft): 11

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1545	8.84	300								
1 VOL.	1548		300		5.44	20.85	0.98	-22	1.22	241	
2 VOL.	1549		300		5.32	20.98	1.55	-25	1.10	218	
3 VOL.	1550		300		5.38	21.08	1.93	-26	1.10	184	
4 VOL.	1551		300		5.56	21.20	1.98	-37	0.78	148	
5 VOL.	1552		300	2.3	4.61	21.25	1.64	-39	0.73	142	
6 VOL.											
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

Collected OU1-74TW02-09D @ 1555

Sampling

Depth to Water Before Sampling: 8.84

Depth sample was acquired: 9

Sample Methodology: Low Flow

Sample Date/Time: 11/20/09

Signed Sampler:

Filtered Metals Collected: Y / N

Filter Size:

Sample Observations:

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

4"

Well Number: OU1-98TW08-~~09~~ MS

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW; M. SMITH / RDU

Date: 11/3/09

Well Depth (ft): 10'

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 6.21

Water Column (ft): 3.79

Well Diameter (in): 1"

Gal. Per ft: .041

Well volume (gal): .255

Depth of Screen (ft): 6'-10'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	~~1225~~	~~6.21~~	300								
1 VOL.	1243	6.21			5.72	22.09	.216	99	5.25	-5.0	
2 VOL.	1244				5.50	22.22	.203	107	3.34	-5.0	
3 VOL.	1245				5.34	22.26	.201	118	2.36	857	
4 VOL.	1246				5.10	22.14	.224	132	1.92	328	
5 VOL.	1247		~~1 gal~~ MS	~~1 gal~~ MS .7	5.04	22.11	.231	140	1.86	176	
6 VOL.											
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

DUPLICATE → OU1-98TW08-09DP COLLECTED 1252

Sampling

Depth to Water Before Sampling: 6.21

Depth sample was acquired: 6.30

Sample Methodology: Low Flow

Sample Date/Time: 11/3/09 1247

Signed Sampler: [signature]

Filtered Metals Collected: Y / N

Filter Size:

Sample Observations: OU1-98TW08-09D

Parameters: VOCs (8260B)

2"

0.19
0.16.2
-3.7
6.5

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: OU1-98TW07

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW; M. SMITH/RDU

Date: 11/3/09

Well Depth (ft): 8"

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 10.2-3.7=6.5 ft

Water Column (ft): 1.5 ft

Well Diameter (in): 1"

Gal. Per ft: .041

Well volume (gal): .0615

Depth of Screen (ft): 6"-8'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1324	6.5	300		6.26	20.21	.348	-267	.45	>999	
1 VOL.	1325				6.32	25.89	.340	-259	.68	>999	
2 VOL.	1326				6.32	25.62	.336	-217	.81	>999	
3 VOL.	1327				6.33	25.59	.332	-201	.97	>999	
4 VOL.	1328				6.31	25.52	.328	-177	1.02	>999	
5 VOL.	1329			.7	6.29	25.43	.324	-153	1.30	>999	
6 VOL.											
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

PUMP START 1320

Sampling

Depth to Water Before Sampling: 6.5

Depth sample was acquired: 6.60

Sample Methodology: Low Flow

Sample Date/Time: 11/3/09 1329

Signed Sampler: [signature]

Filtered Metals Collected: Y / N

Filter Size:

Sample Observations: OU1-98TW07-09D

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: OU1-98TW02

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW; M. SMITH/ROU

Date: 11/3/09

Well Depth (ft): 9'

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 5.89'

Water Column (ft): 4.11'

Well Diameter (in): 1"

Gal. Per ft: .041

Well volume (gal): .169

Depth of Screen (ft): 8'-9'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500	~~.5~~	0.2	1 C	3%	10 mV	10%	10%	
INT.	1357		300		6.18	26.53	.120	-401	3.62	>999	
1 VOL.	1358				5.44	26.61	.081	-318	1.47	>999	
2 VOL.	1359				5.31	26.63	.078	-321	1.20	>999	
3 VOL.	1400				5.21	26.62	.075	-316	1.04	>999	
4 VOL.	1401				5.10	26.54	.074	-313	.98	>999	
5 VOL.	1402			.7	5.00	26.55	.072	-307	.82	>999	
6 VOL.	1403			.7	4.92	26.54	.071	-300	.67	>999	
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

PUMP START 1356

Sampling

Depth to Water Before Sampling: 5.89

Depth sample was acquired: 5.90

Sample Methodology: Low Flow

Sample Date/Time: 11/3/09 1402

Signed Sampler: [signature]

Filtered Metals Collected: Y (N)

Filter Size:

Sample Observations: OU1-98TW02-0912

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: 001-98TW01

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW; M. SMITH/RDU

Date: 11/3/09

Well Depth (ft): 8'

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 8.59-2.0=6.59

Water Column (ft): 1.41

Well Diameter (in): 1

Gal. Per ft: .041

Well volume (gal): .058

Depth of Screen (ft): 7'-8'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1547	6.59	300		5.78	23.64	.149	-218	3.23	7999	
1 VOL.	1548				5.47	23.80	.135	-20	2.40	7999	
2 VOL.	1549				5.38	23.13	.132	-17	2.25	7999	
3 VOL.	1550				5.34	23.75	.128	17	2.28	7999	
4 VOL.	1551				5.32	23.70	.128	39	3.08	7999	
5 VOL.	1552			.7	5.28	23.69	.125	74	3.35	7999	
6 VOL.											
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

PUMP & START 1545

Sampling

Depth to Water Before Sampling: 6.59

Depth sample was acquired: 7.00

Sample Methodology: Low Flow

Sample Date/Time: 11/3/09 1552

Signed Sampler: [signature]

Filtered Metals Collected: Y / N

Filter Size:

Sample Observations: DU1-98TW01-09D

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: OU1-98TW03

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW; M. SMITH /RDU

Date: 11/4/09

Well Depth (ft): 7'

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 8.22-2.82=5.40

Water Column (ft): 1.6

Well Diameter (in): 1"

Gal. Per ft: .041

Well volume (gal): .0656

Depth of Screen (ft): 5'-7'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

7 8.22 -2.82 5.40

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	0802	5.40	300		6.09	21.96	.348	-474	1.93	>999	
1 VOL.	0803				6.28	22.32	.361	-463	.47	>999	
2 VOL.	0804				6.35	22.55	.365	-453	.20	>999	
3 VOL.	0805				6.42	22.93	.364	-383	4.12	120	
4 VOL.	0806				6.41	22.84	.372	-408	1.09	83.9	
5 VOL.	0807			.7	6.41	23.09	.372	-389	.94	58.7	
6 VOL.											
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

PUMP START 0800

Sampling

Depth to Water Before Sampling: 5.40

Depth sample was acquired: 5.80

Sample Methodology: Low Flow

Sample Date/Time: 11/4/09 0807

Signed Sampler: [signature]

Filtered Metals Collected: Y / N

Filter Size:

Sample Observations: OU1-98TW03-09D

Parameters: VOCs (8260B)

8.98
1.78
7.20

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET OF

LOW FLOW SAMPLING LOG

Well Number: OU1-98TW06

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW; M. SMITH/RDU

Date: 11/4/09

Well Depth (ft): 8'

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): ~~8.98 1.78 7.20~~ MS 5.20

Water Column (ft): 2.80

Well Diameter (in): 1

Gal. Per ft: .041

Well volume (gal): .1148

Depth of Screen (ft): 4'-8'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	0950	5.20	300		6.77	23.02	.499	-237	1.42	>999	
1 VOL.	0951				6.73	22.97	.499	-225	1.17	>999	
2 VOL.	0952				6.71	22.93	.491	-201	1.23	>999	
3 VOL.	0953				6.68	22.90	.488	-188	1.25	>999	
4 VOL.	0954				6.67	22.88	.484	-180	1.30	>999	
5 VOL.	0955	7.50		.7	6.64	22.87	.479	-166	1.31	>999	
6 VOL.											
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

- WELL DRIED UP SO SAMPLE COLLECTED DEEPER THAN TOP OF WATER TABLE

PUMP START ~~0945~~ MS 0949

Sampling

Depth to Water Before Sampling: 5.20

Depth sample was acquired: 7.50

Sample Methodology: Low Flow

Sample Date/Time: 11/4/09 0955

Signed Sampler: [signature]

Filtered Metals Collected: Y / N

Filter Size:

Sample Observations: OU1-98TW06-0910

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: OU1-98TW04

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW; M. SMITH/ROU

Date: 11/4/09

Well Depth (ft): 8'

Purge Low Flow Methodology: Peristaltic Pump

DTW (ft): 5.5

Water Column (ft): 2.5

Well Diameter (in): 1

Gal. Per ft: .041

Well volume (gal): .1025

Depth of Screen (ft): 4'-4'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1255	7.0	300		6.24	23.30	.511	-512	.54	740	
1 VOL.	1256				6.21	23.27	.508	-516	.32	>999	
2 VOL.	1257				6.19	23.29	.504	-516	.24	>999	
3 VOL.	1258				6.15	23.28	.499	-516	.18	>999	
4 VOL.	1259				6.10	23.30	.493	-509	.18	>999	
5 VOL.	1300			.7	6.09	23.29	.495	-510	.18	>999	
6 VOL.											
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

PUMP START 1252

Sampling

Depth to Water Before Sampling: 5.5

Depth sample was acquired: 7.0

Sample Methodology: Low Flow

Sample Date/Time: 11/4/09 1300

Signed Sampler: [signature]

Filtered Metals Collected: Y / N (N circled)

Filter Size:

Sample Observations: OU1-98TW04-0910

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: OU1-98TW05

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW; M. SMITH/RDU

Date: 11/4/09

Well Depth (ft): ~~8~~ 7 MS

Purge Low Flow Methodology: Peristaltic Pump

DTW (ft): 3.3

Water Column (ft): ~~2.7~~ 3.7 MS

Well Diameter (in): 1

Gal. Per ft: .041

Well volume (gal): .153 MS

Depth of Screen (ft): ~~6-2~~ 7-3

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1415				6.73	26.70	.391	-94	1.86	>999	
1 VOL.	1420				6.70	26.88	.391	-77	2.11	>999	
2 VOL.	1423				6.72	26.98	.391	-72	2.58	>999	
3 VOL.	1430				6.60	23.99	.410	-133	.69	>999	
4 VOL.	1431				6.50	23.93	.408	-131	1.12	>999	
5 VOL.	1432				6.45	24.01	.408	-129	1.53	463.8	
6 VOL.	1433				6.39	24.00	.407	-117	2.21	>999	
7 VOL.	1434				6.36	23.97	.405	-111	2.31	>999	
8 VOL.	1435				6.34	23.93	.407	-107	2.93	>999	
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

- WELL DIDN'T PRODUCE
HAD TO ADVANCE TO 7FT

PUMP START 1400

START 2 1430

Sampling

Depth to Water Before Sampling: 3.3

Depth sample was acquired:

Sample Methodology: Low Flow

Sample Date/Time: 11/4/09 1435

Signed Sampler: [signature]

Filtered Metals Collected: Y / (N)

Filter Size:

Sample Observations: OU1-98TW05-09D

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: OU1-98TW11

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW; M. SMITH/R DC

Date: ~~11/10/09~~ MS 11/5/09

Well Depth (ft): ~~10.5~~ MS ~~9.2~~ MS 15

DTW (ft): 9.2

Water Column (ft): 5.8

Well Diameter (in): 1

Gal. Per ft: .041

Well volume (gal): .2378

Depth of Screen (ft): 15-13

Purge Low Flow

Methodology: Peristaltic Pump

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	0752	9.2	300		5.67	23.22	.213	-52	2.83	>999	
1 VOL.	0753				5.71	23.28	.184	-87	2.06	>999	
2 VOL.	0754				5.70	23.39	.169	-191	1.88	>999	
3 VOL.	0755				5.65	23.49	.154	-208	1.82	>999	
4 VOL.	0756				5.59	23.55	.154	-192	1.77	>999	
5 VOL.	0757			.2	5.53	23.69	.153	-171	1.73	>999	
6 VOL.											
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

PUMP START 0750

Sampling

Depth to Water Before Sampling: 9.2

Depth sample was acquired: 10.0

Sample Methodology: Low Flow

Sample Date/Time: 11/5/09 0757

Signed Sampler: [signature]

Filtered Metals Collected: Y (N)

Filter Size:

Sample Observations: OU1-98TW11-0910

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: 98TW09

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW;

Date: 11/5/09

Well Depth (ft): 15'

Purge Low Flow Methodology: Peristaltic Pump

DTW (ft): 12.5

Water Column (ft): 2.5

Well Diameter (in): 1

Gal. Per ft: 0.041

Well volume (gal): 0.1025 (x 3 = 0.3075)

Depth of Screen (ft): 13'-15'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	932	N/A	250	0.005	5.25	22.54	0.184	-132	1.49	-5.0	light brown
1 VOL.	933		250	0.005	5.14	23.18	0.171	-97	1.53	>999	cloudy
2 VOL.	934		250	0.006	5.07	23.37	0.167	-84	1.58	"	"
3 VOL.	935		250	0.006	5.04	23.36	0.166	-74	1.58	"	"
4 VOL.	936		250	0.007	5.03	23.35	0.166	-72	1.60	"	"
5 VOL.	940		SAMPLE								
6 VOL.											
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

Sampling

Depth to Water Before Sampling: 12.5' bgs

Depth sample was acquired: ~13.2 ft bgs.

Sample Methodology: Low Flow

Sample Date/Time: 11/5/09 940

Signed Sampler: K Stokes

Filtered Metals Collected: Y / N

Filter Size:

Sample Observations: OU1-98TW09-09D plus MS/MSD

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: 98TW12

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW;

Date: 11/5/09

Well Depth (ft): 15'

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 12.30'

Water Column (ft): 2.7

Well Diameter (in): 1"

Gal. Per ft: 0.041

Well volume (gal): 0.1107 (x3 = 0.33 gals)

Depth of Screen (ft): 13' - 15'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1110	12.3	250	0.001	5.83	25.73	0.193	25	5.38	>999	Cloudy brown
1 VOL.	1111	N/A	↓	0.002	5.84	25.66	0.190	33	5.73	↓	Cloudy
2 VOL.	1112	↓	↓	0.003	5.84	25.67	0.190	39	5.92	↓	"
3 VOL.	1113	↓	↓	0.004	5.83	25.58	0.189	47	6.03	↓	"
4 VOL.	1114	↓	↓	0.005	5.83	25.59	0.189	52	6.11	↓	"
5 VOL.	1115	—	SAMPLE								
6 VOL.											
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

Sampling

Depth to Water Before Sampling: 12.3'

Depth sample was acquired: ~13.5 ftbgs

Sample Methodology: Low Flow

Sample Date/Time: 11/5/09 11:15

OU1-98TW12-09D

Signed Sampler: Kristy Stokes

Filtered Metals Collected: Y / N

Filter Size:

Sample Observations: —

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: 98TW10

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW;

Date: 11/5/09

Well Depth (ft): 17

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): ~16

Water Column (ft): 1.00

Well Diameter (in): 1"

Gal. Per ft: 0.041

Well volume (gal): 0.041

Depth of Screen (ft): 16-17' bgs

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1446	unknown	250	<.01	6.04	22.57	0.394	-61	1.95	>999	Cloudy
1 VOL.	1447	↓	↓	↓	6.01	22.60	0.387	-60	2.34	>999	↓
2 VOL.	1448				6.00	22.60	0.387	-59	2.56	>999	
3 VOL.	1449				5.99	22.59	0.386	-58	2.76	>999	
4 VOL.	1450				5.98	22.61	0.385	-56	2.92	>999	
5 VOL.	1455	—	SAMPLE								
6 VOL.											
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

Well screened 16'-17' bgs; not producing a lot of H_2O

Sampling

Depth to Water Before Sampling: ~14.5

Depth sample was acquired: ~16 ftbgs

Sample Methodology: Low Flow

Sample Date/Time: 11/5/09 1455

OU1-98TW10-09D

Signed Sampler: Kimberly L Stokes

Filtered Metals Collected: Y / (N)

Filter Size:

Sample Observations:

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: OU1-42TW05

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW; M. SMITH/RPU

Date: 11/6/09

Well Depth (ft): 11'

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 9.93

Water Column (ft): 1.07

Well Diameter (in): 1

Gal. Per ft: .041

Well volume (gal): .04387

Depth of Screen (ft): 9'-11'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	0827	9.93	300		6.02	25.48	.510	-49	1.61	>999	
1 VOL.	0828				6.15	25.66	.507	-59	.95	>999	
2 VOL.	0829				6.20	25.72	.506	-60	.76	>996	
3 VOL.	0830				6.23	26.16	.506	-61	.49	>999	
4 VOL.	0831				6.24	26.20	.508	-61	.40	980	
5 VOL.	0832	10.29		.3	6.27	26.47	.508	-62	.31	344	
6 VOL.	0837	SAMPLE									
7 VOL.	0842	DUP. SAMPLE									
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

PUMP START 0825

Sampling

Depth to Water Before Sampling: 9.93 BGS

Depth sample was acquired: 10.5 BGS

Sample Methodology: Low Flow

Sample Date/Time: 11/6/09 837

Signed Sampler: ~~0837~~ KS

Filtered Metals Collected: Y / N

Filter Size:

Sample Observations: DUPLICATE OU1-42TW05-GDDP/0842

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: OU1-42TW03

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW; M SMITH/RDU

Date: 11/6/09

Well Depth (ft): 11'

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 9'

Water Column (ft): 2

Well Diameter (in): 1

Gal. Per ft: .041

Well volume (gal): .0822

Depth of Screen (ft): 11'-9'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1005	9.0'	350		5.94	24.97	.204	8	3.82	>999	
1 VOL.	1006				5.89	25.39	.183	30	4.45	>999	
2 VOL.	1007				5.86	25.40	.187	37	4.61	>999	
3 VOL.	1008				5.82	25.49	.183	52	5.00	>999	
4 VOL.	1009				5.81	25.57	.179	56	5.11	>999	
5 VOL.	1010	10.2'		.6	5.80	25.62	.180	63	5.12	>999	
6 VOL.	1015				SAMPLE						
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

PUMP START 1002

Sampling

Depth to Water Before Sampling: 9'

Depth sample was acquired: 10.2'

Sample Methodology: Low Flow

Sample Date/Time: 11/6/09 1015

Signed Sampler:

Filtered Metals Collected: Y (N)

Filter Size:

Sample Observations: OU1-42TW03-09D

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: OU1-42TW04

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW; M. SMITH/ROW

Date: 11/6/09

Well Depth (ft): 11

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 7.32

Water Column (ft): 3.68

Well Diameter (in): 1

Gal. Per ft: .041

Well volume (gal): .15

Depth of Screen (ft): 9'-11'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1130	7.32	350		4.97	24.43	.227	-22	1.33	7999	
1 VOL.	1131	7.7			4.78	24.52	.229	-30	.78	7999	
2 VOL.	1132				4.80	24.64	.233	-140	.58	7999	
3 VOL.	1133				4.79	24.71	.232	-157	.70	7999	
4 VOL.	1134				4.78	24.74	.232	-165	.72	7999	
5 VOL.	1135	7.9		.7	4.61	24.82	.232	-167	.58		
6 VOL.	1140			SAMPLE							
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

PUMP START 1128

Sampling

Depth to Water Before Sampling: 7.32

Depth sample was acquired: 7.9

Sample Methodology: Low Flow

Sample Date/Time: 11/6/09 1140

Signed Sampler: [signature]

Filtered Metals Collected: Y / N

Filter Size:

Sample Observations: OU1-42TW04-090

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: OU1-42TW02

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW; M. SMITH IRDU

Date: 11/6/09

Well Depth (ft): 9'

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 7.3'

Water Column (ft): 1.7'

Well Diameter (in): 1

Gal. Per ft: .041

Well volume (gal):

Depth of Screen (ft): 9'-7'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1351				5.07	23.75	.295	-8	3.54	>999	
1 VOL.	1352				4.90	23.81	.292	-14	2.16	>999	
2 VOL.	1353				4.89	23.80	.290	-26	1.86	>999	
3 VOL.	1354				4.90	23.88	.289	-40	1.72	>999	
4 VOL.	1355				4.92	23.90	.288	-58	1.42	>999	
5 VOL.	1356				4.90	23.97	.287	-71	1.11	>999	
6 VOL.	1401			SAMPLE							
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

START PUMP 1350

Sampling

Depth to Water Before Sampling: 7.3

Depth sample was acquired: 7.5

Sample Methodology: Low Flow

Sample Date/Time: 11/6/09 1401

Signed Sampler: [signature]

Filtered Metals Collected: Y / N

Filter Size:

Sample Observations: OU1-42TW02-090

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: OU1-42TW01

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW; M. SMITH/ROU

Date: 11/6/09

Well Depth (ft): 7'

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 5.00

Water Column (ft): 2'

Well Diameter (in): 1

Gal. Per ft: .041

Well volume (gal):

Depth of Screen (ft): 7'-5'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1529				5.80	21.68	1.81	-38	3.33	>999	
1 VOL.	1530				5.87	21.64	1.75	-41	4.47	>999	
2 VOL.	1531				5.91	21.57	1.85	-42	5.36	>999	
3 VOL.	1532				5.94	21.53	1.84	-43	5.78	>999	
4 VOL.	1533				5.96	21.49	1.85	-44	6.09	>999	
5 VOL.	1534				5.97	21.43	1.84	-45	6.51	>999	
6 VOL.	1539			SAMPLE							
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

PUMP START 1525

Sampling

Depth to Water Before Sampling: 5.00

Depth sample was acquired: 6.80

Sample Methodology: Low Flow

Sample Date/Time: 11/6/09 1539

Signed Sampler: [signature]

Filtered Metals Collected: Y (N)

Filter Size:

Sample Observations: OU1-42TW01-09D

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: 51TW01

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW;

Date: 11/7/09

Well Depth (ft): 7.0

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 5.1

Water Column (ft): 1.9

Well Diameter (in): 1"

Gal. Per ft: 0.041

Well volume (gal): 0.078

Depth of Screen (ft): 5'-7' bgs

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	932	N/A	250	>0.1	6.14	22.37	0.455	-298	0.35	>999	Cloudy, no odor
1 VOL.	933				6.25	22.74	0.450	-306	0.08	>999	" "
2 VOL.	934				6.28	22.96	0.438	-308	0.03	>999	" "
3 VOL.	935				6.28	23.13	0.437	-309	0.03	>999	" "
4 VOL.	936				6.26	23.25	0.436	-304	0.03	>999	" "
5 VOL.	940		SAMPLE								
6 VOL.											
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks: 930 Began purging

OU1-51TW01-09D

Sampling

Depth to Water Before Sampling: 5.1 ft bgs

Depth sample was acquired: ~6 ft bgs

Sample Methodology: Low Flow

Sample Date/Time: 11/7/09 940

Signed Sampler: [signature]

Filtered Metals Collected: Y / (N)

Filter Size:

Sample Observations:

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET OF

LOW FLOW SAMPLING LOG

Well Number: 52TW13

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW;

Date: 11/7/09

Well Depth (ft): 13'

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 11.5'

Water Column (ft): 1.5

Well Diameter (in): 1"

Gal. Per ft: 0.041

Well volume (gal): 0.062

Depth of Screen (ft): 12' - 14' bgs

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1052	N/A	300	>0.1	5.62	25.17	0.251	59	7.20	>999	Cloudy, no odor
1 VOL.	1053				5.09	24.62	0.243	102	6.60		" "
2 VOL.	1054				4.89	24.63	0.235	130	5.19		" "
3 VOL.	1055				4.80	24.53	0.235	143	4.97		" "
4 VOL.	1056				4.65	24.40	0.235	162	4.83		" "
5 VOL.	1100	—	S	A M	P L	E	—	—	—	—	—
6 VOL.											
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

Start purging 1049

OU1-52TW13-09D

Sampling

Depth to Water Before Sampling: 11.5 ft bgs

Depth sample was acquired: ~ 12' bgs

Sample Methodology: Low Flow

Sample Date/Time: 11/7/09 1100

Signed Sampler: [signature]

Filtered Metals Collected: Y / N

Filter Size:

Sample Observations:

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: 52TW02

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW; M. SMITH/RDU

Date: 11/7/09

Well Depth (ft): 9'

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 3.02

Water Column (ft): 5.98

Well Diameter (in): 1

Gal. Per ft: .041

Well volume (gal):

Depth of Screen (ft):

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1400				6.13	21.23	.535	-132	.74	>999	DK brown/no odor
1 VOL.	1401				6.19	21.21	.535	-139	.32	>999	" "
2 VOL.	1402				6.23	21.13	.535	-143	.21	>999	" "
3 VOL.	1403				6.28	21.10	.534	-146	.07	>999	" "
4 VOL.	1404				6.30	21.05	.534	-147	.05	>999	Lt brown no odor
5 VOL.	1405				6.33	21.03	.533	-148	.00	923	" "
6 VOL.	1410			SAMPLE							
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

Sampling

Depth to Water Before Sampling: 3.02

Depth sample was acquired: 7.00

Sample Methodology: Low Flow

Sample Date/Time: 11/7/09 1410

Signed Sampler: [signature]

Filtered Metals Collected: Y / (N)

Filter Size:

Sample Observations: OU1-52TW02-090

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: 52TW03

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW;

Date: 11/7/09

Well Depth (ft): 15'

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 14.97'

Water Column (ft): 0.03

Well Diameter (in): 1"

Gal. Per ft: 0.041

Well volume (gal): 0.0012

Depth of Screen (ft): 13'-15'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	N/A										
1 VOL.											
2 VOL.											
3 VOL.											
4 VOL.											
5 VOL.											
6 VOL.											
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks: Poor producing well; could not take Horiba U-22 water quality meter readings

OU1-52TW03-09D

Sampling

Depth to Water Before Sampling: 13.5'

Depth sample was acquired: 14.98'

Sample Methodology: Low Flow

Sample Date/Time: 11/7/09 1525

Signed Sampler: [signature]

Filtered Metals Collected: Y / N

Filter Size:

Sample Observations:

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

001-52TW05

Well Number: ~~001-52TW01~~ MS	Site: MCAS Cherry Point OU1
Field Crew: K. Stokes/DFW; M.SMITH/12.00	Date: 11/8/09

Well Depth (ft): ~~16~~ MS 12'

DTW (ft): 11'

Water Column (ft): 1'

Well Diameter (in): 1

Gal. Per ft: .041

Well volume (gal): .041

Depth of Screen (ft): ~~11'-16'~~

Purge Low Flow

Methodology: Peristaltic Pump

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1040	11.00	300		6.20	27.57	.541	-145	1.73	>999	GREY/GAS
1 VOL.	1041				6.14	27.52	.397	-132	.95	>999	
2 VOL.	1042				6.05	27.57	.539	-120	1.23	>999	
3 VOL.	1043				6.06	27.48	.208	-115	1.58	>999	
4 VOL.	1044				6.02	27.46	.532	-110	1.74	>999	
5 VOL.	1045	11.8		.6	6.04	27.31	.532	-105	1.67	>999	
6 VOL.	1050			SAMPLE							
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

PUMP START 1057

Sampling

Depth to Water Before Sampling: 11.00

Depth sample was acquired: 11.80

Sample Methodology: Low Flow

Sample Date/Time: 11/8/09 1050

Signed Sampler: [signature]

Filtered Metals Collected: Y / N

Filter Size:

Sample Observations: 001-52TW05-09D

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: OU1-52TW07

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW; M.SMITH/R.DU

Date: 11/8/09

Well Depth (ft): 13

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 10.03

Water Column (ft): .97

Well Diameter (in): 1

Gal. Per ft: .041

Well volume (gal): .0398

Depth of Screen (ft): 13'-9'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1043	10.03	300		6.28	24.41	.565	-130	1.84	>999	
1 VOL.	1044				6.18	24.30	.592	-129	.70	>999	
2 VOL.	1045				6.15	24.13	.593	-128	.44	>999	
3 VOL.	1046				6.14	24.06	.596	-128	.40	>999	
4 VOL.	1047				6.14	23.96	.602	-127	.35	>999	
5 VOL.	1048	11.5		.6	6.13	23.88	.604	-126	.35	>999	GREY
6 VOL.	1053			SAMPLE							
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

PUMP START 1140

Sampling

Depth to Water Before Sampling: 10.03

Depth sample was acquired: 12.7

Sample Methodology: Low Flow

Sample Date/Time: 11/8/09 1153

Signed Sampler: [signature]

Filtered Metals Collected: Y / N

Filter Size:

Sample Observations: OU1-52TW07-09D

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: OU1-S2TW06
Site: MCAS Cherry Point OU1
Field Crew: K. Stokes/DFW; M.SMITH/RDU
Date: 11/8/09

Well Depth (ft): 14
Purge Low Flow
Methodology: Peristaltic Pump
DTW (ft): 10.77
Water Column (ft): 4.23
Well Diameter (in): 1
Gal. Per ft: .041
Well volume (gal): .173
Depth of Screen (ft): 14'-12'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1421	10.77	300		5.99	28.13	.299	-62	1.86	>999	
1 VOL.	1422				5.91	28.26	.292	-59	1.72	>999	
2 VOL.	1423				5.87	28.38	.290	-56	1.79	>999	
3 VOL.	1424				5.84	28.52	.289	-53	1.88	>999	
4 VOL.	1425				5.83	28.52	.288	-51	1.96	>999	
5 VOL.	1426	13.8		.6	5.81	28.69	.284	-47	2.21	>999	
6 VOL.	1431	SAMPLE									
7 VOL.	1436	DUPLICATE SAMPLE									
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

PUMP START 1420

DUPLICATE ID @ 1436 OU1-S2TW06-09DP

Sampling

Depth to Water Before Sampling: 10.77
Depth sample was acquired: 13.8
Sample Methodology: Low Flow
Sample Date/Time: 11/8/09 1431
Signed Sampler:
Filtered Metals Collected: Y / N
Filter Size:
Sample Observations: OU1-S2TW06-09D
Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: OU1-52TW01

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW; M. SMITH/RDU

Date: 11/8/09

Well Depth (ft): 17'

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 12.13

Water Column (ft): 4.87

Well Diameter (in): 1

Gal. Per ft: .041

Well volume (gal): .1997

Depth of Screen (ft): 17'-13'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1532	12.13	300		6.07	24.33	1.06	-75	2.17	>999	
1 VOL.	1533				5.96	24.19	1.06	-71	1.23	>999	
2 VOL.	1534				5.95	24.06	1.06	-73	.94	>999	
3 VOL.	1535				5.99	23.97	1.06	-75	.75	>999	
4 VOL.	1536				5.98	23.77	1.06	-75	.56	>999	
5 VOL.	1537	14.00		.6	5.98	23.71	1.06	-76	.49	>999	
6 VOL.	1542				SAMPLE						
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

PUMP START 1530

Sampling

Depth to Water Before Sampling: ~~17.0~~ 12.13

Depth sample was acquired: 14.00

Sample Methodology: Low Flow

Sample Date/Time: 11/8/09 1542

Signed Sampler: [signature]

Filtered Metals Collected: Y (N)

Filter Size:

Sample Observations: OU1-52TW01-09D

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: 16TW01

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW; M. SMITH/RDG

Date: 11/8/09

Well Depth (ft): 13

Purge Low Flow Methodology: Peristaltic Pump

DTW (ft): 9.32

Water Column (ft): 3.68

Well Diameter (in): 1

Gal. Per ft: .041

Well volume (gal): .151

Depth of Screen (ft): 13'-10'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1632				5.71	23.21	.223	60	2.79	>999	
1 VOL.	1633				5.59	23.18	.223	76	2.57	>999	
2 VOL.	1634				5.46	23.17	.213	84	2.46	>999	
3 VOL.	1635				5.33	23.19	.207	91	2.41	>999	
4 VOL.	1636				5.10	23.10	.198	101	1.35	>999	
5 VOL.	1637				5.08	23.02	.195	102	1.19	867	
6 VOL.	1642			SAMPLE							
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

PUMP START 1625

Sampling

Depth to Water Before Sampling: 9.32

Depth sample was acquired: 10.00

Sample Methodology: Low Flow

Sample Date/Time: 11/8/09 1642

Signed Sampler:

Filtered Metals Collected: Y / N

Filter Size:

Sample Observations: OU1-16TW01-09D

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: 16TW04

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW; M. SMITH /RPW

Date: 11/9/09

Well Depth (ft): 13

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 7.21

Water Column (ft): 5.79

Well Diameter (in): 1

Gal. Per ft: .041

Well volume (gal): .2374

Depth of Screen (ft): 13'-4'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	0815	7.21	300		5.59	21.81	.341	36	1.13	>999	
1 VOL.	0816				5.58	22.24	.322	38	.94	7999	
2 VOL.	0817				5.54	22.20	.315	36	.81	7999	
3 VOL.	0818				5.47	22.72	.304	42	.61	7999	
4 VOL.	0819				5.46	22.65	.304	41	.56	7999	
5 VOL.	0820	9.5		.5	5.41	22.96	.300	41	.48	>999	
6 VOL.	0825			SAMPLE							
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

PUMP START 0810 MS/MSD COLLECTED

Sampling

Depth to Water Before Sampling: 7.29

Depth sample was acquired: 9.5'

Sample Methodology: Low Flow

Sample Date/Time: 11/9/09 0825

Signed Sampler: [signature]

Filtered Metals Collected: Y / (N)

Filter Size:

Sample Observations: OU3-16TW04-09D

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: OU1-16TW03

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW; M. SMITH/12DU

Date: 11/9/09

Well Depth (ft): 12

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 7.88

Water Column (ft): 4.22

Well Diameter (in): 1

Gal. Per ft: .041

Well volume (gal): .173

Depth of Screen (ft): 12'-8'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	0914	7.88	300		5.20	22.00	.397	109	4.35	>999	
1 VOL.	0915				5.17	22.29	.378	112	3.55	>999	
2 VOL.	0916				5.16	22.47	.362	119	3.37	>999	
3 VOL.	0917				5.18	22.52	.357	121	3.25	>999	
4 VOL.	0918				5.16	22.52	.356	123	2.29	860	
5 VOL.	0919	9.00		.5	5.10	22.68	.362	130	2.08	>999	
6 VOL.	0924			SAMPLE							
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

PUMP START 0910

Sampling

Depth to Water Before Sampling: 7.88

Depth sample was acquired: 9.0

Sample Methodology: Low Flow

Sample Date/Time: 11/9/09 0824

Signed Sampler: [signature]

Filtered Metals Collected: Y / N

Filter Size:

Sample Observations: OU1-16TW03-09D

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: OU1-16TW02

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW; M. SMITH/RDU

Date: 11/9/09

Well Depth (ft): 13'

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 9.47

Water Column (ft): 3.53

Well Diameter (in): 1

Gal. Per ft: .041

Well volume (gal): .1447

Depth of Screen (ft): 13'-9'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1016	9.47	300		5.22	21.48	.252	44	1.84	>999	
1 VOL.	1017				5.09	21.50	.250	45	1.75	>999	
2 VOL.	1018				5.05	21.55	.249	46	1.71	>999	
3 VOL.	1019				5.05	21.61	.249	47	1.61	>999	
4 VOL.	1020				4.99	21.77	.243	56	1.44	>999	
5 VOL.	1021	12.8		.5	4.97	21.83	.244	56	1.45	>999	
6 VOL.	1026			SAMPLE							
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

PUMP START 1007

Sampling

Depth to Water Before Sampling: 9.47

Depth sample was acquired: 12.8

Sample Methodology: Low Flow

Sample Date/Time: 11/9/09 1026

Signed Sampler: [signature]

Filtered Metals Collected: Y / (N)

Filter Size:

Sample Observations: OU1-16TW02-09D

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: 52TW11

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW; M. SMITH/BOU

Date: 11/9/09

Well Depth (ft): 12.5

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 8.39

Water Column (ft): 4.11

Well Diameter (in): 1

Gal. Per ft: .041

Well volume (gal): .1685

Depth of Screen (ft): 8.5 - 12.5

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1307	8.39	300		4.91	27.54	.485	-146	2.06	>999	
1 VOL.	1308				6.11	27.54	.485	-150	1.36	>999	
2 VOL.	1309				6.12	27.55	.486	-155	.66	>999	
3 VOL.	1310				6.10	27.47	.487	-159	.48	>999	
4 VOL.	1311				6.09	27.33	.487	-160	.39	>999	
5 VOL.	1312	10.0		.6	6.09	27.22	.486	-160	.33	>999	BROWN
6 VOL.	1317	SAMPLE									
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

PUMP START 1305

Sampling

Depth to Water Before Sampling: 8.39

Depth sample was acquired: 10.0

Sample Methodology: Low Flow

Sample Date/Time: 11/9/09 1317

Signed Sampler: [signature]

Filtered Metals Collected: Y / N

Filter Size:

Sample Observations: OU1-52TW11-09D

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: 52TW 10

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW; M. SMITH/1200

Date: 11/4/09

Well Depth (ft): 11

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 6.67

Water Column (ft): 4.23

Well Diameter (in): 1

Gal. Per ft: .041

Well volume (gal): .173

Depth of Screen (ft): 7'-11'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1438	6.67	300		6.61	24.71	.355	-198	1.47	>999	
1 VOL.	1439				6.62	24.60	.361	-197	.71	>999	
2 VOL.	1440				6.59	24.38	.375	-180	.39	>999	
3 VOL.	1441				6.40	24.29	.382	-176	.32	>999	
4 VOL.	1442				6.38	24.25	.384	-175	.30	>999	
5 VOL.	1443	8.0		.5	6.38	24.25	.384	-174	.27	>999	
6 VOL.	1448			SAMPLE							
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

PUMP START 1435

Sampling

Depth to Water Before Sampling: 6.67

Depth sample was acquired: 8.0

Sample Methodology: Low Flow

Sample Date/Time: 11/9/09 1448

Signed Sampler: [illegible]

Filtered Metals Collected: Y / N

Filter Size:

Sample Observations: OU1-52TW10-09D

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: 52TW09

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW; M. SMITH/RDO

Date: 11/9/09

Well Depth (ft): 11'

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 6.70

Water Column (ft): 4.30

Well Diameter (in): 1

Gal. Per ft: .041

Well volume (gal): .176

Depth of Screen (ft): 11'-7'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1547	6.70	300		6.69	23.85	.332	-162	1.10	>999	
1 VOL.	1548				6.66	23.84	.332	-163	.77	>999	
2 VOL.	1549				6.61	23.80	.332	-163	.38	>999	
3 VOL.	1550				6.59	23.77	.332	-163	.21	>999	
4 VOL.	1551				6.56	23.76	.331	-161	.12	>999	
5 VOL.	1552	8.0		.5	6.56	23.72	.330	-161	.09	>999	
6 VOL.	1557			SAMPLE							
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

PUMP START 1545

Sampling

Depth to Water Before Sampling: 6.70

Depth sample was acquired: 8.0

Sample Methodology: Low Flow

Sample Date/Time: 11/9/09 1557

Signed Sampler:

Filtered Metals Collected: Y / (N)

Filter Size:

Sample Observations: OU1-52TW09-09D

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: 51TW03

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW; M SMITH/12DU

Date: 11/10/09

Well Depth (ft): 12'

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 8.53

Water Column (ft): 3.47

Well Diameter (in): 1

Gal. Per ft: .041

Well volume (gal): .142

Depth of Screen (ft): 12'-8'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	0821	8.53	300		5.20	22.34	.386	30	.61	>999	
1 VOL.	0822				5.18	22.42	.370	34	.22	>999	
2 VOL.	0823				5.12	22.47	.364	38	.13	>999	
3 VOL.	0824				5.07	22.56	.355	41	.07	>999	
4 VOL.	0825				4.95	22.64	.349	48	.07	>999	
5 VOL.	0826	9'		.6	4.94	22.69	.348	50	.07	810	
6 VOL.	0831			SAMPLE							SULFUR ODOR
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

PUMP START 0818

Sampling

Depth to Water Before Sampling: 8.53

Depth sample was acquired: 9'

Sample Methodology: Low Flow

Sample Date/Time: 11/10/09 0831

Signed Sampler: [signature]

Filtered Metals Collected: Y (N)

Filter Size:

Sample Observations: OU1-51TW03-09D

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER 51TW04
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: OU1-51TW04

Site: MCAS Cherry Point OU1

Field Crew: K. Stokes/DFW; M.SMITH/ROU

Date: 11/10/09

Well Depth (ft): 12'

Purge Low Flow

Methodology: Peristaltic Pump

DTW (ft): 8.96

Water Column (ft): 3.04

Well Diameter (in): 1

Gal. Per ft: .041

Well volume (gal): .125

Depth of Screen (ft): 8'-12'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	0920	8.96	300		5.15	23.66	.757	100	1.39	>999	
1 VOL.	0921				5.01	23.74	.747	120	.93	>999	
2 VOL.	0922				4.95	23.77	.746	129	.83	>999	
3 VOL.	0923				4.84	23.80	.741	151	.68	854	
4 VOL.	0924				4.79	23.78	.740	160	.62	512	
5 VOL.	0925	9.5		.6	4.77	23.72	.740	165	.60	448	
6 VOL.	0930			SAMPLE							SULFUR ODOR
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

PUMP START 0918

Sampling

Depth to Water Before Sampling: 8.96

Depth sample was acquired: 9.5

Sample Methodology: Low Flow

Sample Date/Time: 11/10/09 0930

Signed Sampler:

Filtered Metals Collected: Y / N

Filter Size:

Sample Observations: OU1-51TW04-090

Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: OU1-51TW06
Site: MCAS Cherry Point OU1
Field Crew: K. Stokes/DFW; M. SMITH/ROC
Date: 11/10/09

Well Depth (ft): 12
Purge Low Flow Methodology: Peristaltic Pump
DTW (ft): 8.61
Water Column (ft): 3.39
Well Diameter (in): 1
Gal. Per ft: .041
Well volume (gal): .139
Depth of Screen (ft): 12'-8'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1048	8.61	300		5.99	23.03	.327	-95	1.87	>999	
1 VOL.	1049				6.05	23.03	.325	-102	.62	>999	
2 VOL.	1050				6.09	23.03	.323	-104	.46	>999	
3 VOL.	1051				6.14	23.02	.319	-104	.43	>999	
4 VOL.	1052				6.17	23.00	.314	-98	.50	>999	
5 VOL.	1053	9.5		.6	6.17	22.99	.311	-91	.62	>999	
6 VOL.	1058			SAMPLE							
7 VOL.	1103			DUPLICATE	SAMPLE						
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

PUMP START 1045

DUPLICATE COLLECTED AT 1103
OU1-51TW06-09DP

Sampling

Depth to Water Before Sampling: 8.61
Depth sample was acquired: 9.5
Sample Methodology: Low Flow
Sample Date/Time: 11/10/09 1103
Signed Sampler: [signature]
Filtered Metals Collected: Y / N
Filter Size:
Sample Observations: OU1-51TW06-09D
Parameters: VOCs (8260B)

CH2MHILL

PROJECT NUMBER	WELL NUMBER
358454.AR.FI	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: OU1-SITW08
Site: MCAS Cherry Point OU1
Field Crew: K. Stokes/DFW; M. SMITH 12DU
Date: 11/10/09

Well Depth (ft): 12'
Purge Low Flow
Methodology: Peristaltic Pump
DTW (ft): 7.40
Water Column (ft): 4.60
Well Diameter (in): 1
Gal. Per ft: .041
Well volume (gal): .1886
Depth of Screen (ft): 12' - 8'

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
1"	0.041	3"	0.367
2"	0.163	4"	0.653

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.2	1 C	3%	10 mV	10%	10%	
INT.	1443	7.40	300		6.05	23.52	.329	-101	1.62	7999	
1 VOL.	1444				6.09	23.56	.317	-101	.94	>999	
2 VOL.	1445				6.10	23.59	.312	-98	1.02	>999	
3 VOL.	1446				6.12	23.59	.299	-91	1.60	>999	
4 VOL.	1447				6.12	23.59	.295	-84	1.79	7999	
5 VOL.	1448	8.5		.6	6.16	23.57	.283	-63	2.79	>999	
6 VOL.	1453			SAMPLE							
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

PUMP START 1440

Sampling

Depth to Water Before Sampling: 7.40
Depth sample was acquired: 8.5
Sample Methodology: Low Flow
Sample Date/Time: 11/10/09 1453
Signed Sampler: [signature]
Filtered Metals Collected: Y / N
Filter Size:
Sample Observations: OU1-SITW08-09D
Parameters: VOCs (8260B)

Appendix D
Exterior Soil Vapor Sampling Field Data Sheets

CH2MHILL

Soil Vapor Sampling Field Data Sheet

Mini Rae Gas Meter Readings

Total VOCs (ppm)	See below

Soil Vapor Monitoring Point Purging

Screen Volume	N/A
Purge Date	11/20/09
Purge Time	1015-1020 (52NS15) 1150-1200 (51NS09)
Purge Rate	200 mL/min
Purged Volume	2 L

Soil Vapor Sample Collection

Sample ID	OU1-52NS15-09D	OU1-52NS15-09DP	OU1-51NS09-09D
Sample Location	OU1-52NS15	OU1-52NS15	OU1-51NS09
Canister ID	L-A7206	L-A7165	L-5156
Critical Orifice or Flow Controller ID	100	96	77
Pressure Gauge ID	—	—	—
Initital Pressure (in. Hg)	-29.5	-29	-29
Sample Date	11/20/09	11/20/09	11/20/09
Start Time	1025	1025	1201
End Time	1033	1035	12 11
Final Pressure (in. Hg)	-4	-4	-3
Elapsed Time	8 mins.	10 mins	10 mins

Observations: VOCs = 227 ppm / 200 ppm
He = 900 ppm / 500 ppm

CH2MHILL

Soil Vapor Sampling Field Data Sheet

Mini Rae Gas Meter Readings

Total VOCs (ppm)	See below

Soil Vapor Monitoring Point Purging

Screen Volume	N/A
Purge Date	11/20/09
Purge Time	15:53-15:59 (74NS02)
Purge Rate	200 mL/min
Purged Volume	~2 L

Soil Vapor Sample Collection

Sample ID	OU1-74NS02-09D		
Sample Location	OU1-74NS02		
Canister ID	L-A7168		
Critical Orifice or Flow Controller ID	42		
Pressure Gauge ID	—		
Initital Pressure (in. Hg)	-29" Hg		
Sample Date	11/20/09		
Start Time	1603		
End Time	1614		
Final Pressure (in. Hg)	-3" Hg		
Elapsed Time	11 mins.		

Observations: VOCs = ~~250~~ 95 ppm
He = 0 ppm

CH2MHILL

Soil Vapor Sampling Field Data Sheet

Mini Rae Gas Meter Readings

Total VOCs (ppm)	See below

Soil Vapor Monitoring Point Purging

Screen Volume	N/A
Purge Date	11/21/09
Purge Time	0803-0813 (74NS01) 0923-0933 (14NS03) 1031-1131 (14NS04)
Purge Rate	200 mL/min
Purged Volume	2 L - 3 L

Soil Vapor Sample Collection

Sample ID	OU1-74NS01-7-8-09D	OU1-14NS03-7-8-09D	OU1-14NS04-6-7-09D
Sample Location	OU1-74NS01	OU1-14NS03	OU1-14NS04
Canister ID	L-A7209	L-5112	SL-1218
Critical Orifice or Flow Controller ID	59	74	145
Pressure Gauge ID	—	—	—
Initital Pressure (in. Hg)	-30	-30	-29
Sample Date	11/21/09	11/21/09	11/21/09
Start Time	0817	0946	1041
End Time	0828	0959	1053
Final Pressure (in. Hg)	-3.5	-3	-2.5
Elapsed Time	11 mins	13 mins	12 mins

Observations: VOCs = 40 ppm VOCs = 15 ppm = 280 ppm
He = 0 ppm He = 0 ppm = 50 ppm

CH2MHILL

Soil Vapor Sampling Field Data Sheet

Mini Rae Gas Meter Readings

Total VOCs (ppm)	See below

Soil Vapor Monitoring Point Purging

Screen Volume	N/A
Purge Date	11/21/09
Purge Time	12:53-1303 (14NS01) 1413-1423 (14NS02)
Purge Rate	200 mL/min
Purged Volume	2 - 3 L

Soil Vapor Sample Collection

Sample ID	OU1-14NS01-6-7-09D	OU1-14NS02--09D	
Sample Location	OU1-14NS01	OU1-14NS02	
Canister ID	L-A7057	L-5144	
Critical Orifice or Flow Controller ID	33	05	
Pressure Gauge ID	—	—	
Initital Pressure (in. Hg)	-29.5	-29	
Sample Date	11/21/09	11/21/09	
Start Time	1305	1428	
End Time	1317	1441	
Final Pressure (in. Hg)	-3	-3.5 "Hg	
Elapsed Time	12 mins	13 mins	

Observations: VOCs : 40 ppm : 20 ppm
He : 25 ppm : 50 ppm

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Soil Vapor Sampling Field Data Sheet

Mini Rae Gas Meter Readings

Total VOCs (ppm)	2.8

Soil Vapor Monitoring Point Purging

Screen Volume	
Purge Date	11/2/09
Purge Time	1520 - 1535
Purge Rate	200 mL/min
Purged Volume	3 L

Soil Vapor Sample Collection

Sample ID	OU1-98-NS-08-4.5-5.5-09D		
Sample Location	OU1-98-NS-08		
Canister ID	L-5188		
Critical Orifice or Flow Controller ID	39		
Pressure Gauge ID	N/A		
Initital Pressure (in. Hg)	-29		
Sample Date	11/2/09		
Start Time	1534		
End Time	1549		
Final Pressure (in. Hg)	-2		
Elapsed Time	15 mins.		

Observations:

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Soil Vapor Sampling Field Data Sheet

Mini Rae Gas Meter Readings

Total VOCs (ppm)	0.0 ppm

Soil Vapor Monitoring Point Purging

Screen Volume	
Purge Date	11/3/09
Purge Time	1230 - 1245 (98NS02) 1052 - 1102 (98NS07)
Purge Rate	200 mL/min
Purged Volume	~2L

Soil Vapor Sample Collection

Sample ID	OU1-98NS07-4.5-5.5-09D	OU1-98NS07-4.5-5.5-09DP	OU1-98NS02-6-7-09D
Sample Location	OU1-98NS07	OU1-98NS07	OU1-98NS02
Canister ID	L-8189	L-5130	L-3841
Critical Orifice or Flow Controller ID	103	153	68
Pressure Gauge ID	—	—	—
Initital Pressure (in. Hg)	-30	-30	-30
Sample Date	11/3/09	11/3/09	11/3/09
Start Time	1103	1103	1248
End Time	1113	1112	1300
Final Pressure (in. Hg)	-3	-4	-3
Elapsed Time	10 mins	9 mins	12 mins

Observations: VOC = 0 ppm VOC = 2.8 ppm

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Soil Vapor Sampling Field Data Sheet

Mini Rae Gas Meter Readings

Total VOCs (ppm)	

Soil Vapor Monitoring Point Purging

Screen Volume	
Purge Date	11/3/09
Purge Time	OU1-98NS01 1555-1605
Purge Rate	200 mL/min
Purged Volume	~3 L

Soil Vapor Sample Collection

Sample ID	OU1-98NS01-5-6-09D		
Sample Location	OU1-98NS01		
Canister ID	L-5105		
Critical Orifice or Flow Controller ID	141		
Pressure Gauge ID	—		
Initital Pressure (in. Hg)	-30		
Sample Date	11/3/09		
Start Time	1607		
End Time	1617		
Final Pressure (in. Hg)	-3		
Elapsed Time	10 mins		

Observations: VOCs = 0ppm

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Soil Vapor Sampling Field Data Sheet

Mini Rae Gas Meter Readings

Total VOCs (ppm)	

Soil Vapor Monitoring Point Purging

Screen Volume	
Purge Date	11/4/09
Purge Time	98NS03 (0823-0833) 98NS06 (1000-1010)
Purge Rate	200 mL/min
Purged Volume	~2 L

Soil Vapor Sample Collection

Sample ID	OU1-98NS03-3-4-09D	OU1-98NS06-5-6-09D	OU1-98NS04-09D
Sample Location	OU1-98NO3	OU1-98NS06	OU1-98NS04
Canister ID	L-8197	L-5182	L-5129
Critical Orifice or Flow Controller ID	113	12	24
Pressure Gauge ID	—	—	—
Initital Pressure (in. Hg)	-29.5	-30	-29
Sample Date	11/4/09	11/4/09	11/4/09
Start Time	836	1021	1316
End Time	848	1029	1325
Final Pressure (in. Hg)	-2	-4	-4
Elapsed Time	12 mins	8 mins	9 mins

Observations: VOCs: 0 ppm VOCs = 0 ppm VOCs: 0 ppm

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Soil Vapor Sampling Field Data Sheet

Mini Rae Gas Meter Readings

Total VOCs (ppm)	

Soil Vapor Monitoring Point Purging

Screen Volume	
Purge Date	11/5/09
Purge Time	OU1-98NS11 (744-754) OU1-98NS09 (924-934) OU1-98NS12 (1056-1106)
Purge Rate	200 ml/min
Purged Volume	~2-3 L

Soil Vapor Sample Collection

Sample ID	OU1-98NS11-6-7-09D	OU1-98NS09-6-7-09D	OU1-98NS12-9-10-09D
Sample Location	OU1-98NS11	OU1-98NS09	OU1-98NS12
Canister ID	SL-1215	L-5193	L-A7176
Critical Orifice or Flow Controller ID	37	76	70
Pressure Gauge ID	—	—	—
Initital Pressure (in. Hg)	-29.5	-30	-29.5
Sample Date	11/5/09	11/5/09	11/5/09
Start Time	0758	0935	1108
End Time	0808	0945	1118
Final Pressure (in. Hg)	-3	-4	-3.5
Elapsed Time	10 mins	10 mins	10 mins

Observations: VOCs = 3.2 ppm VOCs = 1.6 ppm VOCs = 4.7 ppm

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Soil Vapor Sampling Field Data Sheet

Mini Rae Gas Meter Readings

Total VOCs (ppm)	

Soil Vapor Monitoring Point Purging

Screen Volume	
Purge Date	11/5/09
Purge Time	① OU1-98NS10 (1348-1358) ② OU1-98NS10 (1405-1415) ③ OU1-98NS10 (1447-1457)
Purge Rate	200 ml/min
Purged Volume	~2-3L

→ FAILED LEAK CHECK

④ OU1-98NS10 ~~1413~~ NS (1525-1532)

Soil Vapor Sample Collection

Sample ID	OU1-98NS10-11-12-090		
Sample Location	OU1-98NS10		
Canister ID	L-5148		
Critical Orifice or Flow Controller ID	14		
Pressure Gauge ID	—		
Initital Pressure (in. Hg)	-30		
Sample Date	11/5/09		
Start Time	1535		
End Time	1547		
Final Pressure (in. Hg)	-4		
Elapsed Time	12 mins		

Observations: VOCs = 0.8 ppm

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Soil Vapor Sampling Field Data Sheet

Mini Rae Gas Meter Readings

Total VOCs (ppm)	

Soil Vapor Monitoring Point Purging

Screen Volume	
Purge Date	11/6/09
Purge Time	42NS05 (845-855) 42NS03 (1015-1025)
Purge Rate	200 mL/min
Purged Volume	2 L

Soil Vapor Sample Collection

Sample ID	OU1-42NS05-7-8-09D	OU1-42NS05-7-8-09DP	OU1-42NS03-6-7-09D
Sample Location	OU1-42NS05	OU1-42NS05	OU1-42NS03
Canister ID	L-4147	L-5186	L-5168
Critical Orifice or Flow Controller ID	125	64	120
Pressure Gauge ID	—	—	—
Initital Pressure (in. Hg)	-30	-30	-29.5
Sample Date	11/6/09	11/6/09	11/6/09
Start Time	916	916	1035
End Time	926	926	1046
Final Pressure (in. Hg)	-3	-3	-3
Elapsed Time	10 mins	10 mins	10 mins

Observations: VOCs = 0.5 ppm = 0.5 ppm 1.0 ppm

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Soil Vapor Sampling Field Data Sheet

Mini Rae Gas Meter Readings

Total VOCs (ppm)	

Soil Vapor Monitoring Point Purging

Screen Volume	
Purge Date	11/6/09
Purge Time	42TW04 (1130-1140)
Purge Rate	200mL/min
Purged Volume	~2L

Soil Vapor Sample Collection

Sample ID	OU1-42NS04-6-7-09D	OU1-42NS02-5 6-7-09D	OU1-42NS01-3-4-09D
Sample Location	OU1-42NS04	OU1-42NS02	OU1-42NS01
Canister ID	L-A7056	L-3834	UNABLE TO COLLECT
Critical Orifice or Flow Controller ID	169	240	DUE TO CLAY THROUGHOUT
Pressure Gauge ID	—	—	TO WATER TABLE
Initital Pressure (in. Hg)	-30	-29.5	↓
Sample Date	11/6/09	11/6/09	↓
Start Time	1146	1429	↓
End Time	1157	1439	↓
Final Pressure (in. Hg)	-4	-4	↓
Elapsed Time	11 mins	10 mins	↓

Observations: VOCs = 0.9 ppm VOCs = 0.8 ppm

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Soil Vapor Sampling Field Data Sheet

Mini Rae Gas Meter Readings

Total VOCs (ppm)	

Soil Vapor Monitoring Point Purging

Screen Volume	
Purge Date	11/7/09
Purge Time	OU1-51NS01 (0937-0947) 52NS13 (1052-1102)
Purge Rate	200 ml/min
Purged Volume	~2-3 L

Soil Vapor Sample Collection

Sample ID	OU1-51NS01-3-4-09D	~~OU1-13NSE2~~ ~~-09D~~ MS OU1-52NS13-	~~OU1-52NS03-~~ ~~-09D~~ MS
Sample Location	OU1-51NS01 ~~3-4-09D~~ MS	52NS13	~~52NS03~~ MS
Canister ID	L-4153	SL-1216	
Critical Orifice or Flow Controller ID	32	65	
Pressure Gauge ID	—	—	
Initital Pressure (in. Hg)	-30 "Hg	-30 "Hg	
Sample Date	11/7/09	11/7/09	
Start Time	0948 ~~-0955~~ MS	1105	
End Time	0958	1115	
Final Pressure (in. Hg)	-4	-4	
Elapsed Time	10 mins	10 mins	

Observations: OU1-51NS01 VOC = 1.2 PPM H_2 = -0 PPM / 52NS13 VOC = 25 PPM H_2 = 750 PPM

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Soil Vapor Sampling Field Data Sheet

Mini Rae Gas Meter Readings

Total VOCs (ppm)	

Soil Vapor Monitoring Point Purging

Screen Volume	
Purge Date	11/8/09
Purge Time	1045 - 1055 (OU1-52NS05) 1145 - 1155 (OU1-52NS07) 1420 - 1430 (OU1-52NS06)
Purge Rate	200 mL/min
Purged Volume	2 L

Soil Vapor Sample Collection

Sample ID	OU1-52NS05-8-9-09D	OU1-52NS07-8-9-09D	OU1-52NS06-9-10-09D
Sample Location	OU1-52NS05-	OU1-52NS07	OU1-52NS06
Canister ID	L-5150	L-8176	L-5134
Critical Orifice or Flow Controller ID	115	204	195
Pressure Gauge ID	—	—	—
Initital Pressure (in. Hg)	-30	-29	-29
Sample Date	11/8/09	11/8/09	11/8/09
Start Time	1059	1206	1433
End Time	1107	1217	1443
Final Pressure (in. Hg)	-3	-3	KS ~~-4~~ -3
Elapsed Time	8 mins	11 mins	10 mins.

Observations: VOCs: 116 ppm 358 ppm 55 ppm

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Soil Vapor Sampling Field Data Sheet

Mini Rae Gas Meter Readings

Total VOCs (ppm)	

Soil Vapor Monitoring Point Purging

Screen Volume	
Purge Date	11/8/09
Purge Time	16:38 - 16:48
Purge Rate	
Purged Volume	

Soil Vapor Sample Collection

Sample ID	OU1-16NS01-7-8-09D		
Sample Location	OU1-16NS01		
Canister ID	L-5183		
Critical Orifice or Flow Controller ID	203		
Pressure Gauge ID	—		
Initital Pressure (in. Hg)	-29.5		
Sample Date	11/8/09		
Start Time	1650		
End Time	1701		
Final Pressure (in. Hg)	-3		
Elapsed Time	11 mins		

Observations: VOCs = 245 ppm

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Soil Vapor Sampling Field Data Sheet

Mini Rae Gas Meter Readings

Total VOCs (ppm)	

Soil Vapor Monitoring Point Purging

Screen Volume	
Purge Date	11/9/09
Purge Time	OU1-16NS02 (1035-1045)
Purge Rate	200 ml/min
Purged Volume	~2-3 L

Soil Vapor Sample Collection

Sample ID	OU1-16NS02-3-4-09D	OU1-52NS11-6-7-09D	OU1-52NS11-6-7-09DP
Sample Location	OU1-16NS02	OU1-52NS11	OU1-52NS11
Canister ID	L-5170	L-A7058	SL-1228
Critical Orifice or Flow Controller ID	89	189	145
Pressure Gauge ID	—	—	—
Initital Pressure (in. Hg)	-29	-30	-28.5
Sample Date	11/9/09	11/9/09	11/9/09
Start Time	1050	1327	1327
End Time	1100	1337	1338
Final Pressure (in. Hg)	-4	-4	-3
Elapsed Time	10 mins	10 mins	11 mins

Observations: VOCs = 135 ppm VOCs = 16ppm VOCs = 16ppm

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Soil Vapor Sampling Field Data Sheet

Mini Rae Gas Meter Readings

Total VOCs (ppm)	

Soil Vapor Monitoring Point Purging

Screen Volume	
Purge Date	11/9/09
Purge Time	1437-1447 (52NS10) 1550-1605 (52NS09)
Purge Rate	200 mL/min
Purged Volume	2 L - 3 L

Soil Vapor Sample Collection

Sample ID	OU1-52NS10-4-5-09D	OU1-52NS09-5-6-09D	
Sample Location	OU1-52NS10	OU1-52NS09	
Canister ID	L-A7170	L-A7212	
Critical Orifice or Flow Controller ID	116	19	
Pressure Gauge ID	—	—	
Initital Pressure (in. Hg)	-29.5	-29	
Sample Date	11/9/09	11/9/09	
Start Time	1449	1607	
End Time	1459	1615	
Final Pressure (in. Hg)	-2.5	-3.5	
Elapsed Time	10 mins	8 mins	

Observations: VOCs = 3.9 ppm unknown (PID - dead)

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Soil Vapor Sampling Field Data Sheet

Mini Rae Gas Meter Readings

Total VOCs (ppm)	

Soil Vapor Monitoring Point Purging

Screen Volume	
Purge Date	11/10/09
Purge Time	824-835 (5INS03) 1338-1350 (5INS06)
Purge Rate	200 mL/min
Purged Volume	2-3L

Soil Vapor Sample Collection

Sample ID	OU1-5INS03-6-7-09D	OU1-5INS04-4.5-5.5-09D	OU1-5INS06-5-6-09D
Sample Location	OU1-5INS03	OU1-5INS04	OU1-5INS06
Canister ID	L-A7116	L-A7166	L-A7077
Critical Orifice or Flow Controller ID	194	137	50
Pressure Gauge ID	—	—	—
Initital Pressure (in. Hg)	-29.5	-30	-29
Sample Date	11/10/09	11/10/09	11/10/09
Start Time	0838	0938	1353
End Time	0846	0948	1402
Final Pressure (in. Hg)	-3" Hg	-3" Hg	-4" Hg
Elapsed Time	8 mins	10 mins	9 mins

Observations: VOCs: 20 ppm 21.5 23.6
Sulfur-like odor

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Soil Vapor Sampling Field Data Sheet

Mini Rae Gas Meter Readings

Total VOCs (ppm)	

Soil Vapor Monitoring Point Purging

Screen Volume	
Purge Date	11/10/09
Purge Time	1447-1457 (5INS08)
Purge Rate	200 ml/min
Purged Volume	~2-3L

Soil Vapor Sample Collection

Sample ID	OU1-5INS08-6-7-09D		
Sample Location	OU1-5INS08		
Canister ID	L-5196		
Critical Orifice or Flow Controller ID	66		
Pressure Gauge ID	—		
Initital Pressure (in. Hg)	-29.0 " Hg		
Sample Date	11/10/09		
Start Time	1502		
End Time	1512		
Final Pressure (in. Hg)	-3 " Hg		
Elapsed Time	10 mins		

Observations: VOCs = 19.5 ppm

Appendix E
Subslab Soil Vapor Sampling Field Data Sheets

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Indoor Vapor Intrusion Assessment
Sub-slab Vapor Field Sampling Log - Summa Canister Method

Project Info

Project Name: MCAS Cherry Point Project # : 358484

By: K Stokes / D Seed Date: 11/18/09

Structure

Identification: Bldg 133

Address:

Slab Information:

- ☐ Concrete slab on grade (directly on top of soil)
- ☐ Other (describe)
- ☒ Concrete slab on gravel underlayment — Elevated ~2 feet

Condition of slab: Epoxy paint over slab

Type of Sub Slab Soil:

Is water present in the soil:

Sub-slab Probe Installation, Leak Checking, Probe Purging, & Sampling Log

	Sample location (show in diagram)	1	2	3	4
	Sample Identification (field ID)	52SG01	52SG02	52SG03	52SG04
Probe Installation	Depth of slab (inches)	12"	6"	6"	6"
	Depth of hole drilled (inches below slab surface)	13"	7"	7"	7"
	Depth of installed probe (inches below slab surface)	11"	6"	6"	6"
Manifold Leak check	Leak check (sampling manifold) - Pass/No Pass	PASS	PASS	PASS	PASS
Probe Purge	Purge rate, cc/min.	200 mL/min	200 mL/min	200 mL/min	200 mL/min
	Purge Start (time of day)	08 21	09 17	10 45	09 50
	Purge vacuum, " Hg	0	0	0	0
	Purge completed (time of day)	08 26	09 22	10 50	09 55
Helium Leak Check (optional)	Leak check (Helium) - %	0	600 ppm	525 ppm	500 ppm
Field Analysis (optional)	Gem 2000 (O2 / CO2 / CH4) - %	N/A	—	—	—
	PID - ppmv	5.0	4.4	7.0	50.0
Canister Sampling	Canister & flow controller ID (if used)	6392/K151	02644/K347	2951/K349	92042/K157
	Initial Canister Pressure (" Hg)	-29.5	-32	-32	-32
	Sampling rate, cc/min	4.16 mL/min	4.16 mL/min	4.16 mL/min	4.16 mL/min
	Sampling period started (time of day)	13 46	13 37	14 24	14 14
	Sampling vacuum, " Hg	—	—	—	—
	Sampling period ended (time of day)	12 36	12 39	12 45	13 24
	Final Canister Pressure (" Hg)	-7	-7.5	-8	-8

Observations and Comments:

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Indoor Vapor Intrusion Assessment
Sub-slab Vapor Field Sampling Log - Summa Canister Method

Project Info

Project Name: MCAS Cherry Point Project # : 358484
By: K Stokes / D Seed Date: 11/18/09

Structure

Identification: Bldg 133
Address:
Slab Information:
- ☐ Concrete slab on grade (directly on top of soil)
- ☐ Other (describe)
- ☒ Concrete slab on gravel underlayment Elevated ~2 ft
- Condition of slab: epoxy paint on slab
- Type of Sub Slab Soil:
- Is water present in the soil:

Sub-slab Probe Installation, Leak Checking, Probe Purging, & Sampling Log

	Sample location (show in diagram)	1	2	3	4
	Sample Identification (field ID)	52SG05	52PM01*	OU1-52SG05-09DP	
Probe Installation	Depth of slab (inches)	6"	6"	6"	
	Depth of hole drilled (inches below slab surface)	7"	7"	7"	
	Depth of installed probe (inches below slab surface)	6"	4"	6"	
Manifold Leak check	Leak check (sampling manifold) - Pass/No Pass	PASS	PASS	N/A	
Probe Purge	Purge rate, cc/min.	200 mL/min	200 mL/min	↓	
	Purge Start (time of day)	08 50	11 13	↓	
	Purge vacuum, " Hg	0	0	↓	
	Purge completed (time of day)	08 55	11 18	↓	
Helium Leak Check (optional)	Leak check (Helium) - %	100 ppm	No flow	↓	
Field Analysis (optional)	Gem 2000 (O2 / CO2 / CH4) - %	N/A	N/A	N/A	
	PID - ppmv	1.0	6.0	N/A	
Canister Sampling	Canister & flow controller ID (if used)	1332/K256	N/A	1140/K212	
	Initial Canister Pressure (" Hg)	-30" Hg	↓	-32	
	Sampling rate, cc/min	4.16 mL/min	↓	4.16	
	Sampling period started (time of day)	1406	↓	1406	
	Sampling vacuum, " Hg	—	—	—	
	Sampling period ended (time of day)	0710	↓	1309	
	Final Canister Pressure (" Hg)	-4	↓	-8	

Observations and Comments: * Probe tip clogged; utilized 52SG02 for pressure probe after sampling was completed.

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Indoor Vapor Intrusion Assessment
Sub-slab Vapor Field Sampling Log - Summa Canister Method

Project Info

Project Name: MCAS Cherry Point OU1 VI Investigation **Project #:** 358484
By: K Stokes / D Seed **Date:** 11/17/09

Structure

Identification: Bldg 137
Address:
Slab Information:
- ☐ Concrete slab on grade (directly on top of soil)
- ☐ Other (describe)
- ☒ Concrete slab on gravel underlayment

Condition of slab: Good, epoxy paint on concrete
Type of Sub Slab Soil: unknown
Is water present in the soil: No

Sub-slab Probe Installation, Leak Checking, Probe Purging, & Sampling Log

	Sample location (show in diagram)	1	2	3	4
	Sample Identification (field ID)	OU1-51SG01	~~OU1-51SG02~~ OU1-PM01	OU1-51SG03	~~OU1-51PM01~~ OU1-51SG02
Probe Installation	Depth of slab (inches)	10"	10"	8'	10"
	Depth of hole drilled (inches below slab surface)	11"	11"	9"	11"
	Depth of installed probe (inches below slab surface)	9"	9"	7"	9"
Manifold Leak check	Leak check (sampling manifold) - Pass/No Pass	PASS	PASS	PASS	PASS
Probe Purge	Purge rate, cc/min.	200mL/min	200 mL/min	200 mL/min	200 mL/min
	Purge Start (time of day)	1420	1455	1535	1610
	Purge vacuum, " Hg	0	0	0	0
	Purge completed (time of day)	1425	1500	1540	1615
Helium Leak Check (optional)	Leak check (Helium) - %	0 ppm	0 ppm	0 ppm	0 ppm
Field Analysis (optional)	Gem 2000 (O2 / CO2 / CH4) - %	— 0 —	N/A	—	—
	PID - ppmv	13.2 ppm	20 ppm	38 ppm	17 ppm
Canister Sampling	Canister & flow controller ID (if used)	6574/K100	N/A	12329/K177	CS ~~N/A~~ 93055/K316
	Initial Canister Pressure (" Hg)	-32	↓	-32	↓ -32
	Sampling rate, cc/min	4.16 mL/min	↓	4.16 mL/min	↓ 4.16
	Sampling period started (time of day)	1459	↓	1507	↓ 1515
	Sampling vacuum, " Hg	—	↓	—	↓ —
	Sampling period ended (time of day)	1540	↓	1532	↓ 1515
	Final Canister Pressure (" Hg)	-8	↓	-7.5	↓ -6.5

Observations and Comments: VOCs = 13.2 ppm = 20 ppm = 38 ppm

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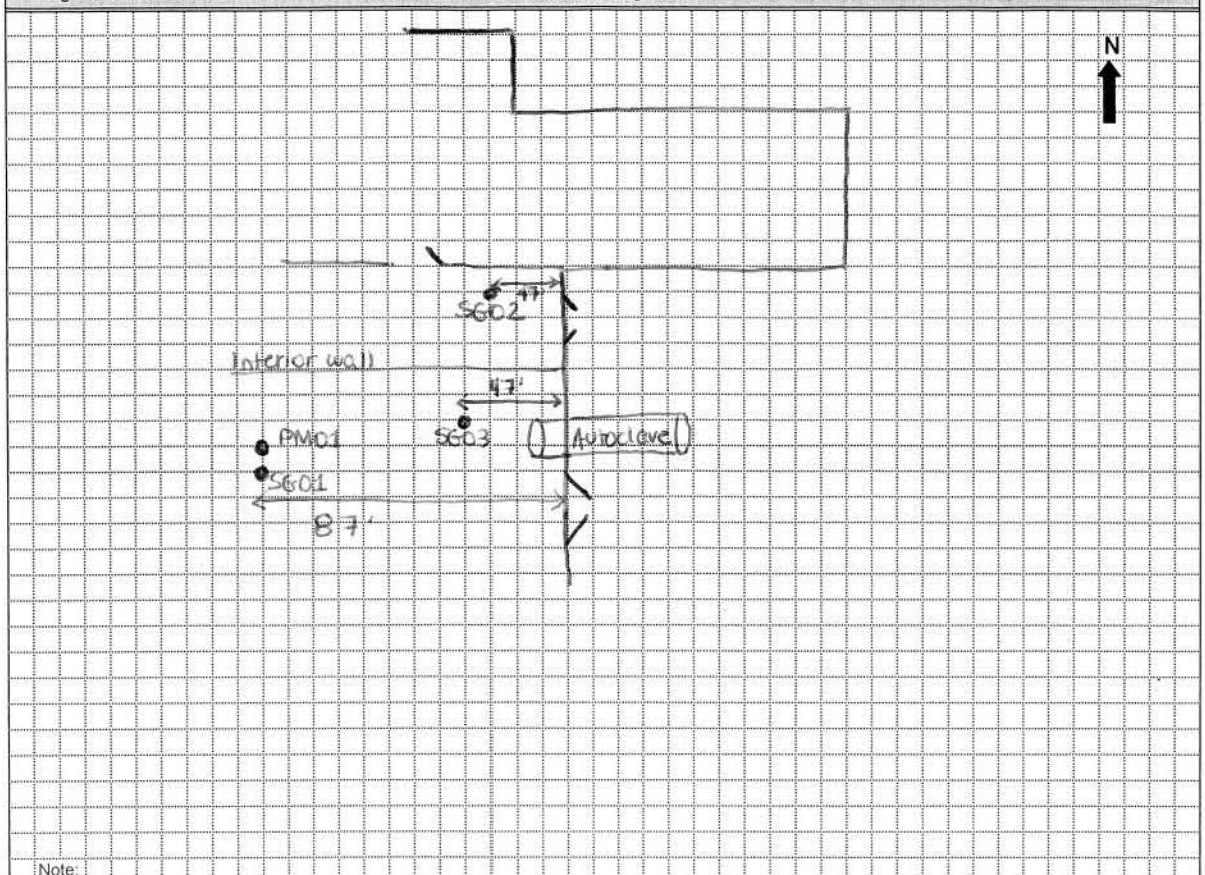
Indoor Vapor Intrusion Assessment
Sub-slab Vapor Sampling Field Log

Diagram - Outline of Structure Foundation & Location of Sub-slab Sampling Probes



Note:

Show the location of each soil probe and indicate distances from the foundation edge and other significant features.

Note location of sumps, drains, cleanouts, cracks, etc.

Other observations and comments:

Appendix F
Building Survey Forms

Preliminary Building Survey for Vapor Intrusion Investigation

Date: 10 JUNE 08

Preparer: T. WENK

Facility: MCAS CHERRY PT

Address:

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Contact Person:

Phone Number:

e-mail address:

Building Description

Building or Room Identifier: 80

Primary Activity within Building (select one):

- [ ] Manufacturing
- [ ] Storage
- [ ] Other
- [ ] Chemical processing
- [ ] Chemical Storage
- [x] Administrative
- [ ] Instrumentation/Control

Notes:

Approximate floor space

Number of floors 2

Multi-room building [x] or Single room [ ]

Ceiling height 10 - 14 ft

Aboveground Construction
- [x] Wood
- [ ] Concrete
- [ ] Brick
- [ ] Cinderblock
- [ ] Other

Floor plan attached? [ ] Yes [ ] No

Notes: Vented crawlspace (24")
scheduled for demolition within a few years

Evaluation of Potential Conduits from Soil

Floor/foundation description (check all that apply)

- [x] Wood
- [ ] Concrete
- [x] Elevated above grade?
- [ ] Below grade?
- [ ] Other _____

Expansion joints present (if concrete floor)?	[ ] Yes	[ ] No	[x] N/A
Are expansion joints sealed?	[ ] Yes	[ ] No	[x] N/A
Are sumps or floor drains present?	[ ] Yes	[ ] No	[x] N/A
Are basements or subsurface vaults present?	[ ] Yes	[ ] No	[x] N/A
Are there subsurface drainage problems?	[ ] Yes	[ ] No	[x] N/A

Notes: _____

Evaluation of Potential Pathways/Driving Forces

Are there locations with elevated positive or negative pressure (look for doors not opening/closing properly, perceptible airflow, audible fan noise)

Entire bldg has HVAC (pos pressure)

Is there one air conditioning zone or multiple zones (if in a multi-room building)?

- [ ] Single zone
- [x] Multi-zone
- [ ] Other _____

(building management may know; another tip-off is the presence of multiple thermostats = multiple zones)

Sources of outdoor air

- [x] Mechanical (air handling unit)
- [x] Doors

80

☐ Windows

Are windows/doors left open routinely? ☐ Yes ☒ No

Notes: _____

Evaluation of Potential Existing Chemical Sources Indoors

List principal solvent or VOC-containing products used (obtain MSDSs if available)

Are any of the target analytes used in this building/room?

☐ Yes ☒ No

Are pesticides used indoors for pest control? ☐ Yes ☒ No

Names of pesticide products used? _____

Has there been a pesticide application within the past 6 months? ☐ Yes ☐ No

Is smoking permitted in the building? ☐ Yes ☐ No

Description of Vapor Mitigation Systems

Has a radon or vapor mitigation system been installed in this building/room? ☐ Yes ☐ No

Date of installation? _____

Type of system?
- ☐ Passive venting
- ☐ Active subslab depressurization
- ☐ Crack/crevice sealing
- ☐ Dilution ventilation control
- ☐ N/A

Notes: _____

Additional Notes

Ceiling tiles

Preliminary Building Survey for Vapor Intrusion Investigation

CH2MHILL

Date: 11/16/09

Preparer: Kim Stokes

Facility: Bldg 133

Address: A Street
MCAS Cherry Point

Contact Person: Will Potter

Phone Number: 252-466-5376

e-mail address:

Building Description

Building or Room Identifier: multiple areas

Primary Activity within Building (select one):

- [X] Manufacturing
- [ ] Storage
- [ ] Other
- [ ] Chemical processing
- [ ] Chemical Storage
- [X] Administrative
- [ ] Instrumentation/Control

Notes: Refabrication of various aircraft parts

Approximate floor space 600 ft x 400 ft (240,000 ft^2)

Number of floors 1 floor with center of building containing a mezzanine

Multi-room building [X] or Single room [ ]

Ceiling height > 50 ft.

Aboveground Construction
- [ ] Wood
- [X] Concrete
- [X] Brick
- [X] Cinderblock
- [ ] Other

Floor plan attached? [ ] Yes [X] No

Notes:

Evaluation of Potential Conduits from Soil

Floor/foundation description (check all that apply)

- [ ] Wood
- [x] Concrete
- [x] Elevated above grade?
- [ ] Below grade?
- [ ] Other Slab elevated ~ 1 foot above grade

Expansion joints present (if concrete floor)?	[x] Yes	[ ] No	[ ] N/A
Are expansion joints sealed?	[x] Yes	[ ] No	[ ] N/A
Are sumps or floor drains present?	[x] Yes	[ ] No	[ ] N/A
Are basements or subsurface vaults present?	[ ] Yes	[ ] No	[x] N/A
Are there subsurface drainage problems?	[ ] Yes	[ ] No	[x] N/A

Notes: Epoxy sealant covers most of floor throughout building; tile in bathrooms; vinyl tile in break room on north side.

Evaluation of Potential Pathways/Driving Forces

Are there locations with elevated positive or negative pressure (look for doors not opening/closing properly, perceptible airflow, audible fan noise)

Large air handling units throughout building; exhausts in certain areas for work performed.

Is there one air conditioning zone or multiple zones (if in a multi-room building)?

- [ ] Single zone
- [x] Multi-zone
- [ ] Other _____

(building management may know; another tip-off is the presence of multiple thermostats = multiple zones)

Sources of outdoor air

- [x] Mechanical (air handling unit)
- [x] Doors
- [ ] Windows
- Bay doors [x]

Are windows/doors left open routinely? ☐ Yes ☒ No

Notes: Most doors stay closed; bay door open electronically when an electric cart motion activates it.

Evaluation of Potential Existing Chemical Sources Indoors

List principal solvent or VOC-containing products used (obtain MSDSs if available)

N/A

Are any of the target analytes used in this building/room?

☐ Yes ☒ No

placed samples in open areas - hallways, etc. without storage of chemicals.

Are pesticides used indoors for pest control? ☐ Yes ☒ No

Names of pesticide products used?

Has there been a pesticide application within the past 6 months? ☐ Yes ☒ No

Is smoking permitted in the building? ☐ Yes ☒ No

Description of Vapor Mitigation Systems

Has a radon or vapor mitigation system been installed in this building/room? ☐ Yes ☒ No

Date of installation? N/A

Type of system?

☐ Passive venting
☐ Active subslab depressurization
☐ Crack/crevice sealing
☐ Dilution ventilation control
☐ N/A

Notes:

Additional Notes

Additional Notes

Preliminary Building Survey for Vapor Intrusion Investigation

Date: 9 JUNE 08

Preparer: T. WIENK

Facility: MCAS CHERRY PT

Address:

CH2MHILL

Contact Person:

Phone Number:

e-mail address:

Building Description

Building or Room Identifier: BLDG 133

Primary Activity within Building (select one):

- [x] Manufacturing
- [x] Storage
- [ ] Other
- [ ] Chemical processing
- [x] Chemical Storage
- [ ] Administrative
- [ ] Instrumentation/Control

Notes: open bay doors

Approximate floor space

Number of floors 1 (mezzanine)

Multi-room building [x] or Single room [ ]

Ceiling height

Aboveground Construction
- [x] Wood
- [x] Concrete
- [x] Brick
- [x] Cinderblock
- [ ] Other

Floor plan attached? [ ] Yes [x] No

Notes:

Evaluation of Potential Conduits from Soil

Floor/foundation description (check all that apply)

- [ ] Wood
- [x] Concrete
- [x] Elevated above grade?
- [ ] Below grade?
- [ ] Other _____

	Yes	No	N/A
Expansion joints present (if concrete floor)?	[x]	[ ]	[ ]
Are expansion joints sealed?	[x]	[ ]	[ ]
Are sumps or floor drains present?	[x]	[ ]	[ ]
Are basements or subsurface vaults present?	[ ]	[ ]	[x]
Are there subsurface drainage problems?	[ ]	[x]	[ ]

Notes: Floor sealed with epoxy paint

Evaluation of Potential Pathways/Driving Forces

Are there locations with elevated positive or negative pressure (look for doors not opening/closing properly, perceptible airflow, audible fan noise)

Fans throughout, bay doors left open

Is there one air conditioning zone or multiple zones (if in a multi-room building)?

- [ ] Single zone
- [x] Multi-zone
- [ ] Other _____

(building management may know; another tip-off is the presence of multiple thermostats = multiple zones)

Sources of outdoor air

- [x] Mechanical (air handling unit)
- [x] Doors

Preliminary Building Survey for Vapor Intrusion Investigation

☐ Windows

Are windows/doors left open routinely? ☑ Yes ☐ No

Notes: Sump metal from over top of old sump (used for baking paints) a has large enclosed fume hood

Evaluation of Potential Existing Chemical Sources Indoors

List principal solvent or VOC-containing products used (obtain MSDSs if available)

Acetone
Paint

Are any of the target analytes used in this building/room?

☐ Yes ☑ No

Are pesticides used indoors for pest control? ☐ Yes ☑ No

Names of pesticide products used?

Has there been a pesticide application within the past 6 months? ☐ Yes ☑ No

Is smoking permitted in the building? ☐ Yes ☑ No

Description of Vapor Mitigation Systems

Has a radon or vapor mitigation system been installed in this building/room? ☐ Yes ☑ No

Date of installation?

Type of system?

☐ Passive venting
☐ Active subslab depressurization
☐ Crack/crevice sealing
☐ Dilution ventilation control
☐ N/A

Notes:

Additional Notes

Preliminary Building Survey for Vapor Intrusion Investigation

CH2MHILL

Date: 11/16/09

Preparer: K Stokes/D Seed

Facility: Bldg 137 NE corner of Bldg

Address: Walk in Booth Area (SG02)

Bldg 137 Autoclave - break room

(SG01, SG03, PM01)

Contact Person: Will Potter

Phone Number: 252-466-5376

e-mail address:

Building Description

Building or Room Identifier: Walk In Booth Area; Autoclave/ Break Room

Primary Activity within Building (select one):

- [X] Manufacturing
- [ ] Storage
- [ ] Other
- [ ] Chemical processing
- [ ] Chemical Storage
- [ ] Administrative
- [ ] Instrumentation/Control

Notes: SG02 located through double doors ~~approimately~~ approximately @ 20 ft down and 5 ft over to right. in Blasting/Corrosion Readiness Training Area. SG01, SG03, PM01 located in break room area west of Autoclave.

Approximate floor space Walk in Booth Area (100 ft x 20 ft) Autoclave (200 ft x 30 ft)

Number of floors 1

Multi-room building [X] or Single room [ ]

Ceiling height Walk in Booth Area (30 ft) Autoclave (30 ft)

Aboveground Construction
- [X] Wood
- [ ] Concrete
- [X] Brick
- [X] Cinderblock
- [ ] Other

Floor plan attached? [X] Yes [ ] No

Notes:

Evaluation of Potential Conduits from Soil

Floor/foundation description (check all that apply)

- [ ] Wood
- [x] Concrete
- [x] Elevated above grade?
- [ ] Below grade?
- [ ] Other Slab seems to be elevated ~ 1 foot above grade on east side

Expansion joints present (if concrete floor)?	[x] Yes	[ ] No	[ ] N/A	
Are expansion joints sealed?	[x] Yes	[ ] No	[ ] N/A	Epoxy paint
Are sumps or floor drains present?	[x] Yes	[ ] No	[ ] N/A	Sinks
Are basements or subsurface vaults present?	[ ] Yes	[ ] No	[x] N/A	
Are there subsurface drainage problems?	[ ] Yes	[ ] No	[x] N/A	

Notes: Floor has epoxy sealant in all areas.

Evaluation of Potential Pathways/Driving Forces

Are there locations with elevated positive or negative pressure (look for doors not opening/closing properly, perceptible airflow, audible fan noise)

Building has large air handling units through; rooms are temperature controlled and exhausted to exterior due to activity (blasting/autoclave)

Is there one air conditioning zone or multiple zones (if in a multi-room building)?

- [ ] Single zone
- [x] Multi-zone
- [ ] Other

(building management may know; another tip-off is the presence of multiple thermostats = multiple zones)

Sources of outdoor air

- [x] Mechanical (air handling unit)
- [x] Doors
- [ ] Windows

Are windows/doors left open routinely? [X] Yes [X] No

Notes: (No) - Autoclave area
(Yes) - double door is routinely propped open during blasting classes.

Evaluation of Potential Existing Chemical Sources Indoors

List principal solvent or VOC-containing products used (obtain MSDSs if available)

See addtn'l notes section

Are any of the target analytes used in this building/room?

[X] Yes [ ] No

possible solvents stored in both areas

Are pesticides used indoors for pest control? [ ] Yes [X] No

Names of pesticide products used? N/A

Has there been a pesticide application within the past 6 months? [ ] Yes [X] No

Is smoking permitted in the building? [ ] Yes [X] No

Description of Vapor Mitigation Systems

Has a radon or vapor mitigation system been installed in this building/room? [ ] Yes [X] No

Date of installation? N/A

Type of system?
- [ ] Passive venting
- [ ] Active subslab depressurization
- [ ] Crack/crevice sealing
- [ ] Dilution ventilation control
- [ ] N/A

Notes:

Additional Notes

SG02 Cleaning shops - strippers /solvents
Blasting - plastic media / blasting glass beads
Bubble wrap/foam - wrapping parts
Brick walls, concrete floors, 30' x 100'
Sump on NW wall for air return, steam

SG01 Break room, epoxy floor
SG03 Sump in south wall for industrial waste
PM01 (Alodine, Corrosion remover, corrosion preventative, corrosion solvent).

Additional Notes

Preliminary Building Survey for Vapor Intrusion Investigation

Date: 9 JUNE 08

Preparer: T. WENK

Facility: ~~[illegible]~~ MCAS CHERRY PT

Address:

Contact Person:

Phone Number:

e-mail address:

Building Description

Building or Room Identifier: BLDG 137

Primary Activity within Building (select one):

- [x] Manufacturing
- [x] Storage
- [ ] Other
- [ ] Chemical processing
- [x] Chemical Storage
- [X] Administrative
- [ ] Instrumentation/Control

Notes:

Approximate floor space

Number of floors 1 ; certain areas with 2 floors or mezzanine

Multi-room building [X] or Single room [ ]

Ceiling height

Aboveground Construction

- [X] Wood
- [ ] Concrete
- [x] Brick
- [x] Cinderblock
- [ ] Other

Floor plan attached? [ ] Yes [x] No

Notes:

Evaluation of Potential Conduits from Soil

Floor/foundation description (check all that apply)

- [ ] Wood
- [x] Concrete
- [x] Elevated above grade?
- [ ] Below grade?
- [ ] Other _____

Expansion joints present (if concrete floor)?	[x] Yes	[ ] No	[ ] N/A
Are expansion joints sealed?	[x] Yes	[ ] No	[ ] N/A
Are sumps or floor drains present?	[x] Yes	[ ] No	[ ] N/A
Are basements or subsurface vaults present?	[ ] Yes	[x] No	[ ] N/A
Are there subsurface drainage problems?	[ ] Yes	[x] No	[ ] N/A

Notes: Floor has epoxy sealant

Evaluation of Potential Pathways/Driving Forces

Are there locations with elevated positive or negative pressure (look for doors not opening/closing properly, perceptible airflow, audible fan noise)

offices within maintenance area are air conditioned (pos. pressure) from outside units

Is there one air conditioning zone or multiple zones (if in a multi-room building)?

- [ ] Single zone
- [x] Multi-zone
- [ ] Other _____

(building management may know; another tip-off is the presence of multiple thermostats = multiple zones)

Sources of outdoor air

- [x] Mechanical (air handling unit)
- [x] Doors

[x] Windows

Are windows/doors left open routinely? [x] Yes [ ] No

Notes: Hangar doors routinely open
traffic in and out

Evaluation of Potential Existing Chemical Sources Indoors

List principal solvent or VOC-containing products used (obtain MSDSs if available)

Acetone — Alcohol
Adhesives
Spray paints

Are any of the target analytes used in this building/room?

[ ] Yes [x] No

Are pesticides used indoors for pest control? [ ] Yes [x] No

Names of pesticide products used?

Has there been a pesticide application within the past 6 months? [ ] Yes [x] No

Is smoking permitted in the building? [ ] Yes [x] No

Description of Vapor Mitigation Systems

Has a radon or vapor mitigation system been installed in this building/room? [ ] Yes [X] No

Date of installation?

Type of system?
[ ] Passive venting
[ ] Active subslab depressurization
[ ] Crack/crevice sealing
[ ] Dilution ventilation control
[ ] N/A

Notes:

131

Additional Notes

Numerous fans throughout maintenance area

Floor grates and drains

Preliminary Building Survey for Vapor Intrusion Investigation

Date: 9 - JUNE 08

Preparer: T. WENK

Facility: MCAS CHERRY PT

Address:

CH2MHILL

Contact Person:

Phone Number:

e-mail address:

Building Description

Building or Room Identifier: 3402

Primary Activity within Building (select one):

- [ ] Manufacturing
- [x] Storage
- [x] Other
- [ ] Chemical processing
- [ ] Chemical Storage
- [x] Administrative
- [ ] Instrumentation/Control

Notes: Engine test stand and control room

Approximate floor space

Number of floors 1

Multi-room building [x] or Single room [ ]

Ceiling height 12' control room

Aboveground Construction

- [ ] Wood
- [x] Concrete
- [ ] Brick
- [x] Cinderblock
- [ ] Other

Floor plan attached? [ ] Yes [ ] No

Notes:

Evaluation of Potential Conduits from Soil

Floor/foundation description (check all that apply)

- [ ] Wood
- [x] Concrete
- [x] Elevated above grade?
- [ ] Below grade?
- [ ] Other _____

Expansion joints present (if concrete floor)?	[x] Yes	[ ] No	[ ] N/A
Are expansion joints sealed?	[x] Yes	[ ] No	[ ] N/A
Are sumps or floor drains present?	[x] Yes	[ ] No	[ ] N/A
Are basements or subsurface vaults present?	[ ] Yes	[x] No	[ ] N/A
Are there subsurface drainage problems?	[ ] Yes	[x] No	[ ] N/A

Notes: Floor drains to POWS

Evaluation of Potential Pathways/Driving Forces

Are there locations with elevated positive or negative pressure (look for doors not opening/closing properly, perceptible airflow, audible fan noise)

air conditioning (window unit) in control room; test stand open to atm

storage room bay doors open.

Is there one air conditioning zone or multiple zones (if in a multi-room building)?

- [x] Single zone
- [ ] Multi-zone
- [ ] Other _____

(building management may know; another tip-off is the presence of multiple thermostats = multiple zones)

Sources of outdoor air

- [x] Mechanical (air handling unit)
- [x] Doors

Preliminary Building Survey for Vapor Intrusion Investigation

☐ Windows

Are windows/doors left open routinely? ☒ Yes ☐ No

Notes: _____

Evaluation of Potential Existing Chemical Sources Indoors

List principal solvent or VOC-containing products used (obtain MSDSs if available)

_____ _____

_____ _____

_____ _____

Are any of the target analytes used in this building/room?

☐ Yes ☐ No

_____ _____

_____ _____

Are pesticides used indoors for pest control? ☐ Yes ☒ No

Names of pesticide products used? _____

_____

Has there been a pesticide application within the past 6 months? ☐ Yes ☒ No

Is smoking permitted in the building? ☐ Yes ☒ No

Description of Vapor Mitigation Systems

Has a radon or vapor mitigation system been installed in this building/room? ☐ Yes ☒ No

Date of installation? _____

Type of system?

☐ Passive venting ☐ Active subslab depressurization

☐ Crack/crevice sealing ☐ Dilution ventilation control

☐ N/A

Notes: _____

Additional Notes

Preliminary Building Survey for Vapor Intrusion Investigation

CH2MHILL

Date: 9 June 08

Preparer: T. Wenla

Facility: MCAS Cherry Pt

Address:

Contact Person:

Phone Number:

e-mail address:

Building Description

Building or Room Identifier: 4224

Primary Activity within Building (select one):

- [ ] Manufacturing
- [x] Storage
- [ ] Other
- [ ] Chemical processing
- [x] Chemical Storage
- [x] Administrative
- [ ] Instrumentation/Control

Notes: Composite shop on 2nd floor

Approximate floor space

Number of floors 2

Multi-room building [x] or Single room [ ]

Ceiling height 12'

Aboveground Construction
- [ ] Wood
- [x] Concrete
- [ ] Brick
- [x] Cinderblock
- [ ] Other

Floor plan attached? [ ] Yes [ ] No

Notes: 1/3 bldg admin & composite shop (2 floors)
1/3 bldg repair shop (doors closed)
1/3 hangar (doors open ~~year~~ except during cold & rain)

Evaluation of Potential Conduits from Soil

Floor/foundation description (check all that apply)

- [ ] Wood
- [x] Concrete
- [x] Elevated above grade?
- [ ] Below grade?
- [ ] Other _____

Expansion joints present (if concrete floor)?	[x] Yes	[ ] No	[ ] N/A
Are expansion joints sealed?	[x] Yes	[ ] No	[ ] N/A
Are sumps or floor drains present?	[x] Yes	[ ] No	[ ] N/A
Are basements or subsurface vaults present?	[x] Yes	[ ] No	[x] N/A
Are there subsurface drainage problems?	[ ] Yes	[x] No	[ ] N/A

Notes: large autoclave in sump area (~4 ft deep)

Evaluation of Potential Pathways/Driving Forces

Are there locations with elevated positive or negative pressure (look for doors not opening/closing properly, perceptible airflow, audible fan noise)

positive pressure in admin and composit shop; fans and ac inside repair hangar; large hangar doors kept closed

Is there one air conditioning zone or multiple zones (if in a multi-room building)?

- [ ] Single zone
- [x] Multi-zone
- [ ] Other _____

(building management may know; another tip-off is the presence of multiple thermostats = multiple zones)

Sources of outdoor air

- [x] Mechanical (air handling unit)
- [x] Doors

4c=9

☐ Windows

Are windows/doors left open routinely? ☐ Yes ☒ No

Notes: _____

Evaluation of Potential Existing Chemical Sources Indoors

List principal solvent or VOC-containing products used (obtain MSDSs if available)

_____ _____
_____ _____
_____ _____

Are any of the target analytes used in this building/room?

☐ Yes ☒ No

_____ _____
_____ _____

Are pesticides used indoors for pest control? ☐ Yes ☒ No

Names of pesticide products used? _____
_____

Has there been a pesticide application within the past 6 months? ☐ Yes ☒ No

Is smoking permitted in the building? ☐ Yes ☒ No

Description of Vapor Mitigation Systems

Has a radon or vapor mitigation system been installed in this building/room? ☐ Yes ☒ No

Date of installation? _____

Type of system?
☐ Passive venting
☐ Active subslab depressurization
☐ Crack/crevice sealing
☐ Dilution ventilation control
☐ N/A

Notes: _____

Additional Notes

Preliminary Building Survey for Vapor Intrusion Investigation

Date: 9 JUNE 08

Preparer: T. WENK

CH2MHILL

Facility: MCAS CHERRY PT

Address:

Contact Person:

Phone Number:

e-mail address:

Building Description

Building or Room Identifier: 4497

Primary Activity within Building (select one):

- [ ] Manufacturing
- [ ] Storage
- [x] Other
- [ ] Chemical processing
- [ ] Chemical Storage
- [ ] Administrative
- [x] Instrumentation/Control

Notes: TEST STAND ; Control room + maintenance rooms (2)

Approximate floor space

Number of floors 1

Multi-room building [x] or Single room [ ]

Ceiling height 12' control room

Aboveground Construction

- [ ] Wood
- [ ] Concrete
- [ ] Brick
- [ ] Cinderblock
- [x] Other metal

Floor plan attached? [ ] Yes [ ] No

Notes:

Evaluation of Potential Conduits from Soil

Floor/foundation description (check all that apply)

- [ ] Wood
- [x] Concrete
- [x] Elevated above grade?
- [ ] Below grade?
- [ ] Other _____

	Yes	No	N/A
Expansion joints present (if concrete floor)?	[x]	[ ]	[ ]
Are expansion joints sealed?	[x]	[ ]	[ ]
Are sumps or floor drains present?	[x] Yes?	[x]	[ ]
Are basements or subsurface vaults present?	[ ]	[ ]	[x]
Are there subsurface drainage problems?	[ ]	[ ]	[ ]

Notes: Unable to see all of floor; may have floor drains

Evaluation of Potential Pathways/Driving Forces

Are there locations with elevated positive or negative pressure (look for doors not opening/closing properly, perceptible airflow, audible fan noise)

Admin/control area has HVAC

Test stand open to atm.

Is there one air conditioning zone or multiple zones (if in a multi-room building)?

- [ ] Single zone
- [x] Multi-zone
- [ ] Other _____

(building management may know; another tip-off is the presence of multiple thermostats = multiple zones)

Sources of outdoor air

- [x] Mechanical (air handling unit)
- [ ] Doors

449T

☐ Windows

Are windows/doors left open routinely? ☐ Yes ☒ No

Notes: primarily unoccupied

Evaluation of Potential Existing Chemical Sources Indoors

List principal solvent or VOC-containing products used (obtain MSDSs if available)

Are any of the target analytes used in this building/room?

☐ Yes ☒ No

Are pesticides used indoors for pest control? ☐ Yes ☒ No

Names of pesticide products used?

Has there been a pesticide application within the past 6 months? ☐ Yes ☒ No

Is smoking permitted in the building? ☐ Yes ☒ No

Description of Vapor Mitigation Systems

Has a radon or vapor mitigation system been installed in this building/room? ☐ Yes ☒ No

Date of installation?

Type of system?

☐ Passive venting ☐ Active subslab depressurization

☐ Crack/crevice sealing ☐ Dilution ventilation control

☐ N/A

Notes:

Additional Notes

Preliminary Building Survey for Vapor Intrusion Investigation

Date: 9 June 08

Preparer: T. Weave

Facility: MCAS CHERRY PT

Address:

Contact Person:

Phone Number:

e-mail address:

Building Description

Building or Room Identifier: 4533

Primary Activity within Building (select one):

- [ ] Manufacturing
- [x] Storage
- [x] Other
- [ ] Chemical processing
- [ ] Chemical Storage
- [x] Administrative
- [ ] Instrumentation/Control

Notes: Small admin with 2 3 rooms (1/3 bldg)
Storage for 2/3 bldg

Approximate floor space

Number of floors 1

Multi-room building [x] or Single room [ ]

Ceiling height 10 ft

Aboveground Construction
- [ ] Wood
- [ ] Concrete
- [x] Brick
- [x] Cinderblock
- [ ] Other

Floor plan attached? [ ] Yes [x] No

Notes:

Evaluation of Potential Conduits from Soil

Floor/foundation description (check all that apply)

- [ ] Wood
- [x] Concrete
- [x] Elevated above grade?
- [ ] Below grade?
- [ ] Other _____

Expansion joints present (if concrete floor)?	[x] Yes	[ ] No	[ ] N/A
Are expansion joints sealed?	[x] Yes	[ ] No	[ ] N/A
Are sumps or floor drains present?	[x] Yes	[ ] No	[ ] N/A
Are basements or subsurface vaults present?	[ ] Yes	[x] No	[ ] N/A
Are there subsurface drainage problems?	[ ] Yes	[x] No	[ ] N/A

Notes: Floor drains
Floors in warehouse have epoxy sealers
Floor in admin area covered with linoleum

Evaluation of Potential Pathways/Driving Forces

Are there locations with elevated positive or negative pressure (look for doors not opening/closing properly, perceptible airflow, audible fan noise)

Window AC units; Fans blowing throughout admin
No AC in warehouse area; bay doors left open; large fans blowing

Is there one air conditioning zone or multiple zones (if in a multi-room building)?

- [x] Single zone
- [ ] Multi-zone
- [ ] Other _____

(building management may know; another tip-off is the presence of multiple thermostats = multiple zones)

Sources of outdoor air

- [ ] Mechanical (air handling unit)
- [x] Doors

4533

☐ Windows

Are windows/doors left open routinely? ☒ Yes ☒ No (admin)

Notes: Open exchange of air between admin area and warehouse (doors not sealed at frame)

Evaluation of Potential Existing Chemical Sources Indoors

List principal solvent or VOC-containing products used (obtain MSDSs if available)

Are any of the target analytes used in this building/room?

☐ Yes ☒ No

Are pesticides used indoors for pest control? ☐ Yes ☒ No

Names of pesticide products used?

Has there been a pesticide application within the past 6 months? ☐ Yes ☒ No

Is smoking permitted in the building? ☐ Yes ☒ No

Description of Vapor Mitigation Systems

Has a radon or vapor mitigation system been installed in this building/room? ☐ Yes ☐ No

Date of installation?

Type of system? ☐ Passive venting ☐ Active subslab depressurization

☐ Crack/crevice sealing ☐ Dilution ventilation control

☐ N/A

Notes:

Additional Notes

Appendix G
IDW Waste Manifest

ENVIRONMENTAL AFFAIRS DEPARTMENT
United States Marine Corps Air Station
Cherry Point, North Carolina

5090/07480
LN
October 30, 2009

To: Industrial Wastewater Treatment Plant (IWTP) Operator
From: Environmental Engineer
Subject: WASTE TREATMENT AND DISPOSAL

Reference Tracking Number: 103009A

1. Environmental clearance is hereby given for CH2M Hill and Probe Technology to dispose of approximately 200 gallons of development/purge and equipment decon water from OU1 VI groundwater well sampling operations during the period November 2-20, 2009.

2. The terms for acceptance of the waste remain at the discretion of the IWTP operator.

3. This waste is only minimally contaminated with VOC's and poses no threat to IWTP operation, maintenance or effluent quality compliance.

4. If there are any questions, please call me at extension 4789 or Jeff Christopher at 4421.

Glenn Hartzog

Glenn Hartzog

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
NC1170027261	1	540-424-3124	12102009-01

5. Generator's Name and Mailing Address

MCAS CHERRY POINT
PSC BOX 8005
CHERRY POINT, NC 28533

Generator's Phone: 252 466-4421

Generator's Site Address (if different than mailing address)

BUILDING 4223, ACCESS ROAD
CHERRY POINT, NC 28533

6. Transporter 1 Company Name: ENVIRITE OF PA, INC.
U.S. EPA ID Number: PAD010154045

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address

ENVIRITE OF PENNSYLVANIA
730 VOGELSONG RD.
YORK, PA 17404

Facility's Phone: 717-846-1900

U.S. EPA ID Number: PAD010154045

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	NON-HAZARDOUS, NON-RCRA, NON-DOT REGULATED MATERIAL (SOIL BORINGS)	002	DM	EST. 1200	P	NONE
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

1) 22023
Certificates of Disposal are Required, Send to PEI

#11 IS ESTIMATE

14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Generator's/Offeror's Printed/Typed Name | Signature | Month | Day | Year

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: JAMES E. MILLER, JR | Signature | Month 12 | Day 16 | Year 09

Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) | Month | Day | Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name | Signature | Month | Day | Year

GENERATOR | INT'L | TRANSPORTER | DESIGNATED FACILITY

169-BLC-O 6 10498 (Rev. 8/06)

COPY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	NC1170027261	1	540-424-3124	12102009-01

5. Generator's Name and Mailing Address
MCAS CHERRY POINT
PSC BOX 8006
CHERRY POINT, NC 28533
Generator's Phone: 252 466-4421

Generator's Site Address (if different than mailing address)
BUILDING 4223, ACCESS ROAD
CHERRY POINT, NC 28533

6. Transporter 1 Company Name — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number
ENVIRITE OF PENNSYLVANIA
730 VOGELSONG RD.
YORK, PA 17404
Facility's Phone: 717-846-1900
PAD010154045

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
	1. NON-HAZARDOUS, NON-RCRA, NON-DOT REGULATED MATERIAL (SOIL BORINGS)					NONE
	2.					
	3.					
	4.					

13. Special Handling Instructions and Additional Information
1) 22023
Certificates of Disposal are Required, Send to PEI

14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.
Generator's/Offeror's Printed/Typed Name — Signature — Month Day Year

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name — Signature — Month Day Year
Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

ENVIRITE OF PENNSYLVANIA, INC.
Technology For The Environment

BILL OF LADING

CARRIER
Envirite of Pennsylvania, Inc.
730 Vogelsong Road
York, PA 17404
(717) 846-1900
(717) 854-6757 Fax

Central Dispatch Number
(800) 501-5659

EPA ID: PAD010154045

ICC: MC 311577

Bol No.: Nº 60210 Y
Load No.: 29774
Stream No.: 22023
Date: 12/16/09

TO CONSIGNEE: ENVIRITE OF PA, INC
STREET: 730 VOGELSONG RD
DESTINATION: YORK, PA. 17404

FROM SHIPPER: COMMONWEALTH GENERAL METALS CHERRY HILL
STREET:
ORIGIN: CHERRY HILL STATE: NJ. ZIP: 08533

No Shipping Units	HM	Kind of Packages, Description of Articles (IF HAZARDOUS MATERIALS - PROPER SHIPPING NAME)	HAZARD CLASS	I.D. Number	PACKING GROUP	WEIGHT (subject to correction)
2 DM		MANIFEST #12102009-01	–	–	–	EST. 12000
1.						
2.						
3.						

IF PRODUCT TEMPERATURE IS OVER 110°F, CALL DISPATCH

DRIVER

TRUCK # 8016

TRAILER # 3001Y

BOX # SPOTTED

BOX # REMOVED

Miles

Pump Used Y (N)

Liner Used Y (N)

Finish	P/U Date 12-16-09	Del. Date	Gross Wt.
Start	P/U Time	Del. Time	Tare Wt.
TOTAL	In 11:00 Out 8:30	In Out	Net Wt.

Special Instruction & Explain Delay at Shippers

Special Instruction & Explain Delay at Consignee

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.
I have inspected the trailer and certify it acceptable for loading and verify that the times and explanation listed above are correct.

I have inspected the trailer and certify it completely empty and verify that the times and explanation listed above are correct.

Shipper Signature X

Loading Date 12-16-09

Driver Signature X

Consignee Signature X

Unloading Date

Driver Signature X

CARRIER - **ENVIRITE OF PENNSYLVANIA, INC.** - YORK, PA 17404

CARRIER - **ENVIRITE OF PENNSYLVANIA, INC.** - YORK, PA 17404

WHITE - Consignee CANARY - Corporate PINK - Transporter GOLDENROD - Shipper

Appendix H
Data Quality Evaluation

Data Quality Evaluation

1 Data Quality Assessment

This data quality evaluation assesses the effect of the overall analytical process on the "availability" of the analytical data. "Availability" refers to whether results are analytically sound and therefore are available for use by the project team.

The three major categories of data evaluation are laboratory performance, field collection performance (i.e. blank contamination), and matrix interference. Evaluation of laboratory performance is a check for the laboratory's compliance with the method requirements. Additionally, an independent, third-party validator conducts a review of the laboratory data to assess whether the analytical methods were within required control limits. Evaluation of field collection performance, such as blank contamination and field duplicates, involves the review of field quality control (QC) samples and the determination of their effect on the sample results. Evaluation of potential matrix interferences involved the review of several areas of results, including surrogate spike recoveries and duplicate sample results.

The data evaluation and validation is a multi-tiered approach. The process begins with an internal laboratory review, continues with an independent review by a third-party validator, and ends with an overall review by the CH2M HILL project chemistry team. While only the data validator is allowed to apply qualifiers to the data, the process provides a medium for essential communication between the laboratory, validator, and project team, and allows for data quality to be thoroughly evaluated.

1.1 Laboratory Internal Quality Control Review

Prior to releasing the analytical data, the laboratory reviewed both the sample and QC data to verify sample identity, instrument calibration, quantitation limits, dilution factors, numerical computations, accuracy of transcriptions, and chemical interpretations. To define a laboratory QC exceedance and when a laboratory QC exceedance occurs, the laboratory referred to its in-house SOPs and the limits agreed to in the MCAS Cherry Point *Vapor Intrusion Investigation Operable Unit (OU) 1 UFP-SAP* (CH2M HILL, 2009). The SOPs were based on Department of Defense requirements, the requested analytical method, and accumulated laboratory experience. If a laboratory QC exceedance occurred, the situation was reviewed by the appropriate personnel to determine whether it was acceptable or it would require corrective action by the laboratory.

In addition, the QC data were tabulated and the results reviewed to determine whether they were within the contract-required limits for accuracy and precision. Any non-conforming data was discussed in the data package cover letter and case narrative.

1.2 Third Party Data Validation

An independent data validator reviewed all data packages using the validation criteria outlined in the UFP-SAP (CH2M HILL, 2009). Analytical methods and laboratory standard operating procedures (SOPs) presented in the sampling and analysis plan (SAP) were used

to evaluate compliance against quality assurance (QA)/QC criteria. If adherence to QA/QC criteria yielded deficiencies, data was considered for qualification. The data qualifiers were those presented in *National Functional Guidelines for Organic Data Review (October 1999)*. These guidelines weren't used for data validation; however, the specific qualifiers listed therein may have been applied to data should non-conformances against the QA/QC criteria be identified.

The data validation process was focused on the effects of the laboratory's performance and the sample matrices' effects on the analytical results. Areas of review consisted of holding time compliance, surrogate recovery accuracy, field, trip, equipment, and method blank contamination, initial and continuing calibration accuracy and precision, laboratory control sample (LCS) accuracy, internal standard response and retention time accuracy, instrument tune criteria accuracy, matrix spike and matrix spike duplicate (MS/MSD) recovery and duplicate sample precision (laboratory and field duplicates). Additionally, the analytical spectrum and raw data output were reviewed and 10% of the laboratory results were recalculated from the raw data to verify final laboratory identification and quantitation.

When multiple analyses were performed, the analytical run with the lowest quantitation limits was selected by the validator if the QC criteria were met for that analysis. If a sample was analyzed more than once as a result of concentrations exceeding the calibration range, the data validator selected results from the appropriate dilution.

1.3 General Data Qualifiers and Usability

In general, the data validator examines each data point and determines any effects that QC exceedances may have had. The J-qualification, UJ-qualification, and U-qualification of results are common occurrences and have no adverse effect on the availability of that result to the project team for making decisions. J-qualified results are available, at the reported result, for use as detects as long as they are considered "estimated" by the project team. Human health risk assessment guidance suggests that these qualifiers "indicate uncertainty in the reported concentration of the chemical, but not in its assigned identity. Therefore, these data can be used just as positive data with no qualifiers or codes." In addition, one should use "J-qualified concentrations the same way as positive data that do not have this qualifier" (Risk Assessment Guidance for Superfund: Volume I - Human Health Evaluation Manual. (Part A) EPA/540/1-89/002. Office of Emergency and Remedial Response, U.S. Environmental Protection Agency, Washington, D.C. 1989). U-qualified and UJ-qualified results are available, at the reported quantitation limit, for use as non-detects as long as they are considered "non-detect," "not detected at significantly greater than that in an associated blank" or "non-detect, estimated quantitation limit," as appropriate.

In certain cases, a result is rejected and deemed to be unusable. "Unusable" in this instance is defined as a result that is not analytically sound and is not considered available for use by the project team. In some cases, the project team may still decide to use a rejected result. An example of this occurrence would be if a result is rejected because it is biased extremely high, yet it is still below the project action limits. A conservative decision may be made to consider this result a non-exceedance, even if its concentration was rejected. For that reason, it is important to examine why a result was rejected. For the most part, however, rejected results are not usable, and the R-qualifier is the only qualifier that has an adverse effect on the availability of data. There were no rejected data points in this data set.

1.4 Project-Specific Data Qualifiers and Usability

The following sections examine the data validation qualifiers used on the OU1 groundwater, near-slab vapor, and sub-slab vapor samples.

1.4.1 Primary Data Validation Qualifiers

The following data validation qualifiers were applied to one or more analytical results:

- **U** - Not detected. Sample was analyzed for this parameter, but it was not detected at a concentration greater than the reported quantitation limit.
- **UJ** – Not detected, quantitation limit is estimated. Sample was analyzed for this parameter, but it was not detected above the reported quantitation limit. The quantitation limit for this parameter is estimated due to a QC issue.
- **J** - Concentration estimated. The parameter was positively identified and the associated numerical value is the approximate concentration of the parameter in the sample.
- **[No qualifier present] -** Detected. Qualification was not warranted.

1.4.2 Secondary Data Validation Qualifiers

The following secondary data validation qualifiers were applied to one or more analytical results resulting in the following combinations:

DV Qualifier	DV Qualification Code	Data Point Count	Percent	Available as Reported	Available as Qualified	Explanation
U	CLEAR	1364	90.03%	X		Constituent was analyzed for but not detected. Further qualification was not necessary. The result is usable as a nondetect at the reported quantitation limit.
CLEAR	CLEAR	135	8.91%	X		Constituent was analyzed for and detected. Further qualification was not necessary. The result is usable at the concentration reported.
UJ	BSL	9	0.594%		X	Constituent was analyzed for but not detected. The quantitation limit is estimated due to a low spike recovery in the LCS. The QA/QC exceedance (potential low bias) was not severe enough to warrant rejection. The result is usable as a nondetect at the reported quantitation limit. Thus, there is no impact on the availability of data for use by the project team.

DV Qualifier	DV Qualification Code	Data Point Count	Percent	Available as Reported	Available as Qualified	Explanation
J	CCH	2	0.132%		X	Constituent was analyzed for and detected. Concentration is estimated due to a high continuing calibration verification recovery. The QA/QC exceedance (potential high bias) was not severe enough to warrant rejection. The result is usable as a detect as qualified. Thus, there is no impact on the availability of data for use by the project team.
J	SSH	2	0.132%		X	Constituent was analyzed for and detected. Concentration is estimated due to a high spiked surrogate recovery. The QA/QC exceedance (potential high bias) was not severe enough to warrant rejection. The result is usable as a detect as qualified. Thus, there is no impact on the availability of data for use by the project team.
UJ	CCH	2	0.132%		X	Constituent was analyzed for but not detected. The quantitation limit is estimated due to a high continuing calibration verification recovery. The QA/QC exceedance (potential high bias) was not severe enough to warrant rejection. The result is usable as a nondetect at the reported quantitation limit. Thus, there is no impact on the availability of data for use by the project team.
J	BSL	1	0.07%		X	Constituent was analyzed for and detected. Concentration is estimated due to a low spike recovery in the LCS. The QA/QC exceedance (potential low bias) was not severe enough to warrant rejection. The result is usable as a detect as qualified. Thus, there is no impact on the availability of data for use by the project team.
	TOTAL:	1515	100.0%	100.0% Complete data set		

2 Data Quality Evaluation

The purpose of this data quality evaluation is to summarize the findings of the data validation effort and any effects it found concerning the availability of the data for the vapor intrusion investigation at OU 1. All samples were analyzed by Test America Laboratories in Knoxville, TN. Sub-slab vapor and near-slab vapor samples were analyzed by EPA method TO-15. All groundwater samples were analyzed by EPA method SW-846 8260B. The data packages were reviewed by an independent data validator, Environmental Data Services in Williamsburg, VA, using the analytical method and USEPA National Functional Guidelines.

The laboratory utilized qualifiers to represent "non-detect", "estimated", "non-detect, estimated quantitation limit" and "detected." Any other extraneous laboratory qualifiers were superseded by data validation qualifiers. The data validator utilized U-qualifiers to represent "non-detect". Detected results are represented by "clear" in the tables below. There were no additional qualifications applied by the validator for this data. The J- and UJ-qualifiers indicate that some results are estimated. These qualifiers indicate that data are available for use by the project team.

2.1 Sub-slab Vapor Data

This section evaluates the analytical results of the sub-slab vapor samples collected on November 19, 2009. One hundred and forty-six distinct data points were generated. There were no rejected results. The volatile organic compounds (VOCs) data set is 100% percent complete (all results are available for use as reported). All VOCs were either U-qualified as non-detect or detected (represented by "Clear" in the table below). The validation process resulted in the following qualifiers for results in the VOCs fraction:

DV Qualifier	DV Qualification Code	Data Point Count	Percent
U	CLEAR	107	73.29%
CLEAR	CLEAR	39	26.71%
		146	100.0%

2.2 Near-slab Vapor Data

This section evaluates the analytical results of the near-slab vapor samples collected on November 2-10 and 20-21, 2009.

Six hundred and thirty-four distinct data points were generated. There were no rejected results. The VOCs data set is 100% percent complete (all results are available for use as reported/qualified). The validation process resulted in the following qualifiers for results in the VOCs fraction:

DV Qualifier	DV Qualification Code	Data Point Count	Percent
U	CLEAR	535	84.38%
CLEAR	CLEAR	83	13.09%
UJ	BSL	9	1.42%
J	CCH	2	0.32%
J	SSH	2	0.32%
UJ	CCH	2	0.32%
J	BSL	1	0.16%
		634	100.0%

2.2.1 Blank Spike Recovery

A total of nine results were UJ-qualified as "nondetect, estimated quantitation limit" because of low LCS recoveries, denoted by the qualification code "BSL". The UJ-qualification of nondetects does not affect the availability of results; they are available for use as nondetects at the reported quantitation limit.

One result was J-qualified as "estimated" due to low LCS recoveries, denoted by the qualification code "BSL". The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

2.2.2 Calibration

A total of two results were UJ-qualified as "nondetect, estimated quantitation limit" because of high continuing calibration recoveries, denoted by the qualification code "CCH". The UJ-qualification of nondetects does not affect the availability of results; they are available for use as nondetects at the reported quantitation limit.

A total of two results were J-qualified as "estimated" due to high continuing calibration recoveries, denoted by the qualification code "CCH". The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

2.2.3 Surrogate Recovery

A total of two results were J-qualified as "estimated" due to high surrogate spike recoveries, denoted by the qualification code "SSH". The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

2.3 Groundwater Data

This evaluation assesses the analytical results of the groundwater samples collected on November 2-10 and 20-21, 2009.

Seven hundred and thirty-five distinct data points were generated. There were no rejected results. The VOCs data set is 100% percent complete (all results are available for use). All VOCs were either U-qualified as non-detect or detected (represented by "Clear" in the table below). The validation process resulted in the following qualifiers for results in the VOCs fraction:

DV Qualifier	DV Qualification Code	Data Point Count	Percent
CLEAR	CLEAR	13	1.77%
U	CLEAR	722	98.23%
		735	100.0%

3 Overall Assessment

All data collected during the OU 1 vapor intrusion investigation are found to be of exceptional quality. No data was rejected due to QA/QC deficiencies and all data is available for use by the project team.

Appendix I
Weather Station Data Collection Results

MCAS Cherry Point OU1 11/19/09

Date	Time	Temp Out	Hi Temp	Low Temp	Out Hum	Dew Pt.	Wind Speed	Wind Dir	Wind Run	Hi Speed	Hi Dir	Wind Chill	Heat Index	THW Index	THSW Index	Bar	Rain	Rain Rate	Solar Rad.
11/19/09	8:00a	64.7	64.7	64.7	95	63.2	3.0	NE	0.75	6.0	ENE	64.7	65.8	65.8	---	30.112	0.00	0.00	---
11/19/09	8:15a	64.9	64.9	64.7	95	63.4	1.0	NE	0.25	5.0	NE	64.9	66.1	66.1	---	30.112	0.00	0.00	---
11/19/09	8:30a	65.1	65.1	64.9	95	63.6	2.0	NE	0.50	5.0	NNE	65.1	66.3	66.3	---	30.109	0.00	0.00	---
11/19/09	8:45a	65.4	65.4	65.1	95	63.9	1.0	NE	0.25	4.0	NNE	65.4	66.7	66.7	---	30.115	0.00	0.00	---
11/19/09	9:00a	65.7	65.7	65.4	95	64.2	0.0	ENE	0.00	2.0	NNE	65.7	67.0	67.0	---	30.114	0.00	0.00	---
11/19/09	9:15a	66.0	66.0	65.7	95	64.5	1.0	NE	0.25	4.0	NE	66.0	67.4	67.4	---	30.110	0.00	0.00	---
11/19/09	9:30a	66.7	66.7	66.0	95	65.2	2.0	NE	0.50	4.0	NE	66.7	68.2	68.2	---	30.110	0.00	0.00	---
11/19/09	9:45a	67.1	67.1	66.7	94	65.3	2.0	NE	0.50	4.0	NE	67.1	68.7	68.7	---	30.109	0.00	0.00	---
11/19/09	10:00a	67.2	67.2	67.1	93	65.1	2.0	ENE	0.50	6.0	ENE	67.2	68.8	68.8	---	30.106	0.00	0.00	---
11/19/09	10:15a	67.5	67.5	67.2	93	65.4	3.0	NE	0.75	6.0	NE	67.5	69.2	69.2	---	30.105	0.00	0.00	---
11/19/09	10:30a	68.2	68.2	67.5	92	65.8	2.0	NE	0.50	5.0	NE	68.2	70.0	70.0	---	30.094	0.00	0.00	---
11/19/09	10:45a	70.0	70.0	68.3	90	66.9	1.0	NE	0.25	5.0	N	70.0	72.0	72.0	---	30.094	0.00	0.00	---
11/19/09	11:00a	71.3	71.3	70.0	87	67.2	0.0	NE	0.00	4.0	S	71.3	73.3	73.3	---	30.085	0.00	0.00	---
11/19/09	11:15a	72.5	72.6	71.4	85	67.7	0.0	NNE	0.00	4.0	N	72.5	74.4	74.4	---	30.083	0.00	0.00	---
11/19/09	11:30a	72.8	72.8	72.6	84	67.7	1.0	S	0.25	5.0	N	72.8	74.8	74.8	---	30.078	0.00	0.00	---
11/19/09	11:45a	72.5	73.0	72.5	82	66.7	2.0	NE	0.50	6.0	NE	72.5	74.2	74.2	---	30.074	0.00	0.00	---
11/19/09	12:00p	72.1	72.5	72.1	83	66.6	2.0	ENE	0.50	7.0	NE	72.1	73.8	73.8	---	30.068	0.00	0.00	---
11/19/09	12:15p	73.1	73.1	72.1	82	67.3	1.0	NE	0.25	6.0	NE	73.1	75.0	75.0	---	30.056	0.00	0.00	---
11/19/09	12:30p	74.2	74.2	73.1	78	66.9	1.0	NE	0.25	5.0	S	74.2	76.2	76.2	---	30.054	0.00	0.00	---
11/19/09	12:45p	75.2	75.2	74.2	76	67.1	1.0	S	0.25	8.0	SSE	75.2	77.4	77.4	---	30.047	0.00	0.00	---
11/19/09	1:00p	76.3	76.3	75.2	75	67.8	1.0	WSW	0.25	5.0	SSE	76.3	78.7	78.7	---	30.040	0.00	0.00	---
11/19/09	1:15p	77.2	77.2	76.3	72	67.5	1.0	WSW	0.25	6.0	SSE	77.2	79.4	79.4	---	30.035	0.00	0.00	---
11/19/09	1:30p	77.5	77.5	77.2	69	66.5	2.0	SSW	0.50	8.0	SSE	77.5	79.3	79.3	---	30.032	0.00	0.00	---
11/19/09	1:45p	77.5	77.6	77.3	69	66.5	3.0	WSW	0.75	10.0	WSW	77.5	79.3	79.3	---	30.032	0.00	0.00	---
11/19/09	2:00p	77.6	77.6	77.5	69	66.6	1.0	SW	0.25	8.0	SSE	77.6	79.4	79.4	---	30.028	0.00	0.00	---
11/19/09	2:15p	77.7	78.0	77.7	69	66.7	1.0	SW	0.25	6.0	SSE	77.7	79.5	79.5	---	30.027	0.00	0.00	---
11/19/09	2:30p	77.0	77.7	77.0	71	66.9	1.0	SW	0.25	5.0	SSE	77.0	79.0	79.0	---	30.027	0.00	0.00	---
11/19/09	2:45p	76.8	76.9	76.8	72	67.1	0.0	SW	0.00	5.0	E	76.8	78.9	78.9	---	30.024	0.00	0.00	---
11/19/09	3:00p	75.5	76.8	75.5	74	66.6	2.0	WSW	0.50	7.0	SSE	75.5	77.6	77.6	---	30.026	0.00	0.00	---
11/19/09	3:15p	75.3	75.5	75.1	74	66.4	3.0	WSW	0.75	7.0	WSW	75.3	77.4	77.4	---	30.026	0.00	0.00	---
11/19/09	3:30p	76.6	76.6	75.2	70	66.1	4.0	WSW	1.00	8.0	SW	76.6	78.5	78.5	---	30.028	0.00	0.00	---
11/19/09	3:45p	75.7	76.6	75.7	72	66.0	4.0	WSW	1.00	8.0	SW	75.7	77.7	77.7	---	30.035	0.00	0.00	---
11/19/09	4:00p	75.2	75.7	75.2	75	66.7	2.0	WSW	0.50	7.0	SSE	75.2	77.4	77.4	---	30.037	0.00	0.00	---
11/19/09	4:15p	74.8	75.2	74.8	76	66.7	1.0	WSW	0.25	4.0	WSW	74.8	76.9	76.9	---	30.038	0.00	0.00	---
11/19/09	4:30p	73.7	74.8	73.7	79	66.8	1.0	WSW	0.25	4.0	SE	73.7	75.6	75.6	---	30.036	0.00	0.00	---
11/19/09	4:45p	72.3	73.7	72.3	81	66.1	2.0	WSW	0.50	4.0	WSW	72.3	73.9	73.9	---	30.041	0.00	0.00	---
11/19/09	5:00p	72.0	72.3	72.0	83	66.6	0.0	SW	0.00	3.0	SW	72.0	73.6	73.6	---	30.040	0.00	0.00	---
11/19/09	5:15p	71.9	72.0	71.9	84	66.8	0.0	SSW	0.00	1.0	SSW	71.9	73.6	73.6	---	30.041	0.00	0.00	---
11/19/09	5:30p	71.6	71.9	71.6	84	66.5	0.0	SSE	0.00	2.0	WSW	71.6	73.3	73.3	---	30.041	0.00	0.00	---
11/19/09	5:45p	71.0	71.6	71.0	82	65.2	1.0	ENE	0.25	4.0	ENE	71.0	72.5	72.5	---	30.047	0.00	0.00	---
11/19/09	6:00p	69.2	71.0	69.2	85	64.5	2.0	ENE	0.50	4.0	ENE	69.2	70.9	70.9	---	30.046	0.00	0.00	---
11/19/09	6:15p	68.6	69.2	68.6	87	64.6	1.0	NE	0.25	3.0	ENE	68.6	70.4	70.4	---	30.053	0.00	0.00	---
11/19/09	6:30p	68.1	68.6	68.1	87	64.1	1.0	NE	0.25	3.0	ENE	68.1	69.7	69.7	---	30.053	0.00	0.00	---
11/19/09	6:45p	67.9	68.1	67.8	88	64.2	1.0	NE	0.25	3.0	NE	67.9	69.5	69.5	---	30.058	0.00	0.00	---
11/19/09	7:00p	67.3	67.8	67.3	88	63.6	1.0	NE	0.25	4.0	NE	67.3	68.8	68.8	---	30.059	0.00	0.00	---
11/19/09	7:15p	67.0	67.3	67.0	89	63.6	0.0	NE	0.00	2.0	NE	67.0	68.5	68.5	---	30.059	0.00	0.00	---
11/19/09	7:30p	66.8	67.0	66.8	89	63.5	0.0	NE	0.00	2.0	NE	66.8	68.2	68.2	---	30.056	0.00	0.00	---
11/19/09	7:45p	66.5	66.8	66.5	90	63.5	1.0	NE	0.25	2.0	NE	66.5	67.9	67.9	---	30.055	0.00	0.00	---
11/19/09	8:00p	66.2	66.5	66.2	90	63.2	1.0	NE	0.25	4.0	NE	66.2	67.5	67.5	---	30.050	0.00	0.00	---
11/19/09	8:15p	65.8	66.2	65.8	91	63.1	0.0	NE	0.00	2.0	NE	65.8	67.1	67.1	---	30.052	0.00	0.00	---
11/19/09	8:30p	65.4	65.8	65.4	91	62.7	0.0	SW	0.00	1.0	SW	65.4	66.6	66.6	---	30.055	0.00	0.00	---
11/19/09	8:45p	65.2	65.4	65.2	92	62.8	0.0	SW	0.00	2.0	SW	65.2	66.3	66.3	---	30.051	0.00	0.00	---

MCAS Cherry Point OU1 11/19/09

Date	Time	Temp Out	Hi Temp	Low Temp	Out Hum	Dew Pt.	Wind Speed	Wind Dir	Wind Run	Hi Speed	Hi Dir	Wind Chill	Heat Index	THW Index	THSW Index	Bar	Rain	Rain Rate	Solar Rad.
11/19/09	9:00p	65.1	65.2	65.1	93	63.0	0.0	SE	0.00	2.0	S	65.1	66.2	66.2	---	30.051	0.00	0.00	---
11/19/09	9:15p	65.3	65.3	65.1	93	63.2	0.0	SE	0.00	1.0	SSE	65.3	66.5	66.5	---	30.052	0.00	0.00	---
11/19/09	9:30p	65.3	65.3	65.2	93	63.2	0.0	SE	0.00	1.0	SE	65.3	66.5	66.5	---	30.048	0.00	0.00	---
11/19/09	9:45p	65.2	65.3	65.2	93	63.1	0.0	---	0.00	0.0	---	65.2	66.4	66.4	---	30.045	0.00	0.00	---
11/19/09	10:00p	65.1	65.2	65.1	93	63.0	0.0	SE	0.00	1.0	SE	65.1	66.2	66.2	---	30.044	0.00	0.00	---
11/19/09	10:15p	65.0	65.1	64.9	93	62.9	0.0	---	0.00	0.0	---	65.0	66.1	66.1	---	30.039	0.00	0.00	---
11/19/09	10:30p	64.8	65.0	64.8	93	62.7	0.0	---	0.00	0.0	---	64.8	65.9	65.9	---	30.035	0.00	0.00	---
11/19/09	10:45p	64.8	64.8	64.7	93	62.7	0.0	---	0.00	0.0	---	64.8	65.9	65.9	---	30.035	0.00	0.00	---
11/19/09	11:00p	64.7	64.8	64.7	93	62.6	0.0	ENE	0.00	2.0	ENE	64.7	65.8	65.8	---	30.032	0.00	0.00	---
11/19/09	11:15p	64.5	64.7	64.5	93	62.4	0.0	---	0.00	0.0	---	64.5	65.5	65.5	---	30.032	0.00	0.00	---
11/19/09	11:30p	64.3	64.5	64.3	93	62.2	0.0	SE	0.00	1.0	SE	64.3	65.3	65.3	---	30.028	0.00	0.00	---
11/19/09	11:45p	64.2	64.3	64.2	93	62.1	0.0	---	0.00	0.0	---	64.2	65.2	65.2	---	30.026	0.00	0.00	---
11/20/09	12:00a	64.3	64.3	64.2	93	62.2	0.0	---	0.00	0.0	---	64.3	65.3	65.3	---	30.018	0.00	0.00	---

MCAS Cherry Point OU1 11/19/09

Date	Time	Solar Energy	Hi Solar Rad.	UV Index	UV Dose	Hi UV	Heat D-D	Cool D-D	In Temp	In Hum	In Dew	In Heat	In EMC	In Air Density	ET	Wind Samp	Wind Tx	ISS Recept
11/19/09	8:00a	---	---	---	---	---	0.003	0.000	74.5	64	61.5	75.7	11.65	.0734	0.000	189	8	64.9
11/19/09	8:15a	---	---	---	---	---	0.001	0.000	74.0	63	60.6	75.0	11.47	.0735	0.000	285	8	97.9
11/19/09	8:30a	---	---	---	---	---	0.000	0.001	73.1	64	60.2	73.8	11.65	.0737	0.000	299	8	100.0
11/19/09	8:45a	---	---	---	---	---	0.000	0.004	72.6	64	59.7	73.1	11.65	.0738	0.000	299	8	100.0
11/19/09	9:00a	---	---	---	---	---	0.000	0.007	72.4	65	60.0	72.9	11.85	.0738	0.000	300	8	100.0
11/19/09	9:15a	---	---	---	---	---	0.000	0.010	72.3	65	59.9	72.7	11.85	.0738	0.000	300	8	100.0
11/19/09	9:30a	---	---	---	---	---	0.000	0.018	72.3	65	59.9	72.7	11.85	.0738	0.000	298	8	100.0
11/19/09	9:45a	---	---	---	---	---	0.000	0.022	72.3	65	59.9	72.7	11.85	.0738	0.000	299	8	100.0
11/19/09	10:00a	---	---	---	---	---	0.000	0.023	72.3	65	59.9	72.7	11.85	.0738	0.000	300	8	100.0
11/19/09	10:15a	---	---	---	---	---	0.000	0.026	72.4	65	60.0	72.9	11.85	.0737	0.000	296	8	100.0
11/19/09	10:30a	---	---	---	---	---	0.000	0.033	72.4	65	60.0	72.9	11.85	.0737	0.000	299	8	100.0
11/19/09	10:45a	---	---	---	---	---	0.000	0.052	72.6	65	60.2	73.1	11.85	.0737	0.000	296	8	100.0
11/19/09	11:00a	---	---	---	---	---	0.000	0.066	72.1	65	59.7	72.4	11.85	.0738	0.000	298	8	100.0
11/19/09	11:15a	---	---	---	---	---	0.000	0.078	72.1	65	59.7	72.4	11.85	.0737	0.000	298	8	100.0
11/19/09	11:30a	---	---	---	---	---	0.000	0.081	71.9	65	59.5	72.2	11.85	.0738	0.000	300	8	100.0
11/19/09	11:45a	---	---	---	---	---	0.000	0.078	71.8	65	59.4	72.0	11.85	.0738	0.000	298	8	100.0
11/19/09	12:00p	---	---	---	---	---	0.000	0.074	71.9	65	59.5	72.2	11.85	.0737	0.000	300	8	100.0
11/19/09	12:15p	---	---	---	---	---	0.000	0.084	71.8	65	59.4	72.0	11.85	.0737	0.000	300	8	100.0
11/19/09	12:30p	---	---	---	---	---	0.000	0.096	71.9	65	59.5	72.2	11.85	.0737	0.000	299	8	100.0
11/19/09	12:45p	---	---	---	---	---	0.000	0.106	71.9	65	59.5	72.2	11.85	.0737	0.000	296	8	100.0
11/19/09	1:00p	---	---	---	---	---	0.000	0.118	71.9	65	59.5	72.2	11.85	.0737	0.000	296	8	100.0
11/19/09	1:15p	---	---	---	---	---	0.000	0.127	71.8	65	59.4	72.0	11.85	.0737	0.000	295	8	100.0
11/19/09	1:30p	---	---	---	---	---	0.000	0.130	71.8	65	59.4	72.0	11.85	.0737	0.000	296	8	100.0
11/19/09	1:45p	---	---	---	---	---	0.000	0.130	71.8	64	59.0	71.9	11.65	.0737	0.000	299	8	100.0
11/19/09	2:00p	---	---	---	---	---	0.000	0.131	71.6	64	58.8	71.7	11.65	.0737	0.000	296	8	100.0
11/19/09	2:15p	---	---	---	---	---	0.000	0.132	71.6	64	58.8	71.7	11.65	.0737	0.000	300	8	100.0
11/19/09	2:30p	---	---	---	---	---	0.000	0.125	71.6	64	58.8	71.7	11.65	.0737	0.000	298	8	100.0
11/19/09	2:45p	---	---	---	---	---	0.000	0.123	71.6	64	58.8	71.7	11.65	.0737	0.000	298	8	100.0
11/19/09	3:00p	---	---	---	---	---	0.000	0.109	71.4	64	58.6	71.4	11.65	.0738	0.000	298	8	100.0
11/19/09	3:15p	---	---	---	---	---	0.000	0.107	71.4	64	58.6	71.4	11.65	.0738	0.000	295	8	100.0
11/19/09	3:30p	---	---	---	---	---	0.000	0.121	71.2	63	58.0	71.0	11.53	.0738	0.000	299	8	100.0
11/19/09	3:45p	---	---	---	---	---	0.000	0.111	71.2	63	58.0	71.0	11.53	.0738	0.000	300	8	100.0
11/19/09	4:00p	---	---	---	---	---	0.000	0.106	71.2	63	58.0	71.0	11.53	.0738	0.000	295	8	100.0
11/19/09	4:15p	---	---	---	---	---	0.000	0.102	71.1	63	57.9	70.9	11.53	.0739	0.000	297	8	100.0
11/19/09	4:30p	---	---	---	---	---	0.000	0.091	71.2	63	58.0	71.0	11.53	.0738	0.000	299	8	100.0
11/19/09	4:45p	---	---	---	---	---	0.000	0.076	71.1	63	57.9	70.9	11.53	.0739	0.000	299	8	100.0
11/19/09	5:00p	---	---	---	---	---	0.000	0.073	71.2	62	57.5	70.9	11.33	.0739	0.000	300	8	100.0
11/19/09	5:15p	---	---	---	---	---	0.000	0.072	71.1	62	57.4	70.8	11.33	.0739	0.000	300	8	100.0
11/19/09	5:30p	---	---	---	---	---	0.000	0.069	71.2	62	57.5	70.9	11.33	.0739	0.000	300	8	100.0
11/19/09	5:45p	---	---	---	---	---	0.000	0.063	71.1	62	57.4	70.8	11.33	.0739	0.000	299	8	100.0
11/19/09	6:00p	---	---	---	---	---	0.000	0.044	71.2	62	57.5	70.9	11.33	.0739	0.000	297	8	100.0
11/19/09	6:15p	---	---	---	---	---	0.000	0.037	71.4	62	57.7	71.2	11.32	.0739	0.000	300	8	100.0
11/19/09	6:30p	---	---	---	---	---	0.000	0.032	71.1	62	57.4	70.8	11.33	.0739	0.000	300	8	100.0
11/19/09	6:45p	---	---	---	---	---	0.000	0.030	71.2	62	57.5	70.9	11.33	.0739	0.000	298	8	100.0
11/19/09	7:00p	---	---	---	---	---	0.000	0.024	71.4	62	57.7	71.2	11.32	.0739	0.000	300	8	100.0
11/19/09	7:15p	---	---	---	---	---	0.000	0.021	71.4	62	57.7	71.2	11.32	.0739	0.000	298	8	100.0
11/19/09	7:30p	---	---	---	---	---	0.000	0.019	71.6	62	57.9	71.5	11.32	.0738	0.000	299	8	100.0
11/19/09	7:45p	---	---	---	---	---	0.000	0.016	71.6	62	57.9	71.5	11.32	.0738	0.000	299	8	100.0
11/19/09	8:00p	---	---	---	---	---	0.000	0.012	71.8	62	58.1	71.8	11.31	.0738	0.000	294	8	100.0
11/19/09	8:15p	---	---	---	---	---	0.000	0.008	71.8	62	58.1	71.8	11.31	.0738	0.000	293	8	100.0
11/19/09	8:30p	---	---	---	---	---	0.000	0.004	71.8	62	58.1	71.8	11.31	.0738	0.000	291	8	100.0
11/19/09	8:45p	---	---	---	---	---	0.000	0.002	71.8	62	58.1	71.8	11.31	.0738	0.000	293	8	100.0

MCAS Cherry Point OU1 11/19/09

Date	Time	Solar Energy	Hi Solar Rad.	UV Index	UV Dose	Hi UV	Heat D-D	Cool D-D	In Temp	In Hum	In Dew	In Heat	In EMC	In Air Density	ET	Wind Samp	Wind Tx	ISS Recept
11/19/09	9:00p	---	---	---	---	---	0.000	0.001	71.9	62	58.2	71.9	11.31	.0738	0.000	294	8	100.0
11/19/09	9:15p	---	---	---	---	---	0.000	0.003	71.9	62	58.2	71.9	11.31	.0738	0.000	291	8	100.0
11/19/09	9:30p	---	---	---	---	---	0.000	0.003	71.9	62	58.2	71.9	11.31	.0738	0.000	293	8	100.0
11/19/09	9:45p	---	---	---	---	---	0.000	0.002	71.9	62	58.2	71.9	11.31	.0737	0.000	291	8	100.0
11/19/09	10:00p	---	---	---	---	---	0.000	0.001	72.1	62	58.4	72.2	11.31	.0737	0.000	290	8	99.7
11/19/09	10:15p	---	---	---	---	---	0.000	0.000	72.1	62	58.4	72.2	11.31	.0737	0.000	291	8	100.0
11/19/09	10:30p	---	---	---	---	---	0.002	0.000	72.1	62	58.4	72.2	11.31	.0737	0.000	291	8	100.0
11/19/09	10:45p	---	---	---	---	---	0.002	0.000	72.1	62	58.4	72.2	11.31	.0737	0.000	291	8	100.0
11/19/09	11:00p	---	---	---	---	---	0.003	0.000	72.1	62	58.4	72.2	11.31	.0737	0.000	287	8	98.6
11/19/09	11:15p	---	---	---	---	---	0.005	0.000	72.1	62	58.4	72.2	11.31	.0737	0.000	293	8	100.0
11/19/09	11:30p	---	---	---	---	---	0.007	0.000	72.1	62	58.4	72.2	11.31	.0737	0.000	294	8	100.0
11/19/09	11:45p	---	---	---	---	---	0.008	0.000	72.1	63	58.8	72.3	11.51	.0736	0.000	290	8	99.7
11/20/09	12:00a	---	---	---	---	---	0.007	0.000	72.1	63	58.8	72.3	11.51	.0736	0.000	283	8	97.3

MCAS Cherry Point OU1 11/19/09

Date	Time	Arc. Int.
11/19/09	8:00a	15
11/19/09	8:15a	15
11/19/09	8:30a	15
11/19/09	8:45a	15
11/19/09	9:00a	15
11/19/09	9:15a	15
11/19/09	9:30a	15
11/19/09	9:45a	15
11/19/09	10:00a	15
11/19/09	10:15a	15
11/19/09	10:30a	15
11/19/09	10:45a	15
11/19/09	11:00a	15
11/19/09	11:15a	15
11/19/09	11:30a	15
11/19/09	11:45a	15
11/19/09	12:00p	15
11/19/09	12:15p	15
11/19/09	12:30p	15
11/19/09	12:45p	15
11/19/09	1:00p	15
11/19/09	1:15p	15
11/19/09	1:30p	15
11/19/09	1:45p	15
11/19/09	2:00p	15
11/19/09	2:15p	15
11/19/09	2:30p	15
11/19/09	2:45p	15
11/19/09	3:00p	15
11/19/09	3:15p	15
11/19/09	3:30p	15
11/19/09	3:45p	15
11/19/09	4:00p	15
11/19/09	4:15p	15
11/19/09	4:30p	15
11/19/09	4:45p	15
11/19/09	5:00p	15
11/19/09	5:15p	15
11/19/09	5:30p	15
11/19/09	5:45p	15
11/19/09	6:00p	15
11/19/09	6:15p	15
11/19/09	6:30p	15
11/19/09	6:45p	15
11/19/09	7:00p	15
11/19/09	7:15p	15
11/19/09	7:30p	15
11/19/09	7:45p	15
11/19/09	8:00p	15
11/19/09	8:15p	15
11/19/09	8:30p	15
11/19/09	8:45p	15

MCAS Cherry Point OU1 11/19/09

Date	Time	Arc. Int.
11/19/09	9:00p	15
11/19/09	9:15p	15
11/19/09	9:30p	15
11/19/09	9:45p	15
11/19/09	10:00p	15
11/19/09	10:15p	15
11/19/09	10:30p	15
11/19/09	10:45p	15
11/19/09	11:00p	15
11/19/09	11:15p	15
11/19/09	11:30p	15
11/19/09	11:45p	15
11/20/09	12:00a	15

MCAS Cherry Point OU1 11/20/09

Date	Time	Temp Out	Hi Temp	Low Temp	Out Hum	Dew Pt.	Wind Speed	Wind Dir	Wind Run	Hi Speed	Hi Dir	Wind Chill	Heat Index	THW Index	THSW Index	Bar	Rain	Rain Rate	Solar Rad.
11/20/09	12:15a	64.1	64.4	64.1	93	62.0	0.0	---	0.00	0.0	---	64.1	65.0	65.0	---	30.016	0.00	0.00	---
11/20/09	12:30a	64.0	64.1	64.0	93	61.9	0.0	---	0.00	0.0	---	64.0	64.9	64.9	---	30.014	0.00	0.00	---
11/20/09	12:45a	63.9	64.0	63.8	93	61.8	0.0	---	0.00	0.0	---	63.9	64.8	64.8	---	30.011	0.00	0.00	---
11/20/09	1:00a	63.5	63.9	63.5	93	61.4	0.0	---	0.00	0.0	---	63.5	64.3	64.3	---	30.009	0.00	0.00	---
11/20/09	1:15a	63.1	63.5	63.1	93	61.0	0.0	---	0.00	0.0	---	63.1	63.9	63.9	---	30.003	0.00	0.00	---
11/20/09	1:30a	63.0	63.1	62.9	93	60.9	0.0	---	0.00	0.0	---	63.0	63.8	63.8	---	30.002	0.00	0.00	---
11/20/09	1:45a	62.7	63.0	62.6	93	60.6	0.0	---	0.00	0.0	---	62.7	63.4	63.4	---	30.004	0.00	0.00	---
11/20/09	2:00a	62.8	62.8	62.7	94	61.0	0.0	---	0.00	0.0	---	62.8	63.6	63.6	---	30.009	0.00	0.00	---
11/20/09	2:15a	63.1	63.1	62.8	94	61.3	0.0	---	0.00	0.0	---	63.1	63.9	63.9	---	30.003	0.00	0.00	---
11/20/09	2:30a	63.4	63.4	63.1	94	61.6	0.0	---	0.00	0.0	---	63.4	64.3	64.3	---	30.004	0.00	0.00	---
11/20/09	2:45a	63.5	63.6	63.4	94	61.7	0.0	ENE	0.00	1.0	ENE	63.5	64.4	64.4	---	30.001	0.00	0.00	---
11/20/09	3:00a	63.7	63.7	63.5	94	61.9	0.0	---	0.00	0.0	---	63.7	64.6	64.6	---	29.999	0.00	0.00	---
11/20/09	3:15a	63.9	63.9	63.7	94	62.1	0.0	---	0.00	0.0	---	63.9	64.8	64.8	---	29.996	0.00	0.00	---
11/20/09	3:30a	63.9	64.0	63.9	94	62.1	0.0	---	0.00	0.0	---	63.9	64.8	64.8	---	29.997	0.00	0.00	---
11/20/09	3:45a	64.0	64.0	63.9	94	62.2	0.0	---	0.00	0.0	---	64.0	65.0	65.0	---	29.995	0.00	0.00	---
11/20/09	4:00a	64.1	64.1	63.9	94	62.3	0.0	ESE	0.00	1.0	ESE	64.1	65.1	65.1	---	29.996	0.00	0.00	---
11/20/09	4:15a	64.3	64.3	64.1	94	62.5	0.0	E	0.00	1.0	E	64.3	65.3	65.3	---	29.996	0.00	0.00	---
11/20/09	4:30a	64.4	64.4	64.3	94	62.6	0.0	ENE	0.00	1.0	ENE	64.4	65.4	65.4	---	29.998	0.00	0.00	---
11/20/09	4:45a	64.3	64.4	64.3	94	62.5	0.0	ENE	0.00	2.0	ENE	64.3	65.3	65.3	---	30.002	0.04	0.61	---
11/20/09	5:00a	64.5	64.5	64.3	94	62.7	1.0	WSW	0.25	4.0	W	64.5	65.6	65.6	---	30.003	0.09	4.43	---
11/20/09	5:15a	65.0	65.0	64.5	95	63.5	0.0	N	0.00	2.0	N	65.0	66.2	66.2	---	30.007	0.01	0.07	---
11/20/09	5:30a	64.9	65.0	64.9	95	63.4	0.0	NNE	0.00	2.0	NNW	64.9	66.1	66.1	---	30.014	0.00	0.00	---
11/20/09	5:45a	64.8	64.9	64.8	95	63.3	0.0	NNW	0.00	4.0	NNW	64.8	66.0	66.0	---	30.021	0.03	0.73	---
11/20/09	6:00a	64.8	64.8	64.7	95	63.3	0.0	NNE	0.00	5.0	NW	64.8	66.0	66.0	---	30.027	0.03	0.52	---
11/20/09	6:15a	64.8	64.8	64.8	95	63.3	1.0	N	0.25	4.0	NNW	64.8	66.0	66.0	---	30.032	0.01	0.16	---
11/20/09	6:30a	64.9	64.9	64.8	96	63.7	0.0	NE	0.00	4.0	NW	64.9	66.1	66.1	---	30.035	0.00	0.00	---
11/20/09	6:45a	64.8	64.9	64.8	95	63.3	2.0	NE	0.50	6.0	NE	64.8	66.0	66.0	---	30.040	0.00	0.00	---
11/20/09	7:00a	64.8	64.9	64.8	95	63.3	1.0	NE	0.25	5.0	NNE	64.8	66.0	66.0	---	30.042	0.00	0.00	---
11/20/09	7:15a	64.7	64.8	64.7	95	63.2	2.0	NE	0.50	7.0	E	64.7	65.8	65.8	---	30.045	0.00	0.00	---
11/20/09	7:30a	64.5	64.7	64.5	96	63.3	2.0	NE	0.50	8.0	ENE	64.5	65.6	65.6	---	30.040	0.00	0.00	---
11/20/09	7:45a	64.1	64.5	64.1	95	62.6	2.0	NE	0.50	9.0	NNE	64.1	65.1	65.1	---	30.037	0.00	0.00	---
11/20/09	8:00a	63.6	64.1	63.6	96	62.4	3.0	NE	0.75	11.0	NE	63.6	64.5	64.5	---	30.039	0.00	0.00	---
11/20/09	8:15a	63.3	63.6	63.3	95	61.8	2.0	NE	0.50	7.0	NNW	63.3	64.2	64.2	---	30.043	0.00	0.00	---
11/20/09	8:30a	63.1	63.3	63.0	96	61.9	1.0	NNE	0.25	9.0	NNW	63.1	64.0	64.0	---	30.049	0.00	0.00	---
11/20/09	8:45a	63.0	63.1	63.0	96	61.8	1.0	NE	0.25	6.0	ENE	63.0	63.8	63.8	---	30.056	0.00	0.00	---
11/20/09	9:00a	62.8	63.0	62.8	96	61.6	2.0	NE	0.50	7.0	NE	62.8	63.6	63.6	---	30.058	0.00	0.00	---
11/20/09	9:15a	62.7	62.8	62.6	95	61.2	2.0	NE	0.50	6.0	NE	62.7	63.5	63.5	---	30.057	0.00	0.00	---
11/20/09	9:30a	62.5	62.7	62.5	95	61.0	2.0	NE	0.50	7.0	NE	62.5	63.3	63.3	---	30.055	0.00	0.00	---
11/20/09	9:45a	62.3	62.5	62.3	95	60.8	2.0	NE	0.50	10.0	NE	62.3	63.0	63.0	---	30.058	0.00	0.00	---
11/20/09	10:00a	62.6	62.7	62.3	95	61.1	3.0	ENE	0.75	8.0	NE	62.6	63.4	63.4	---	30.052	0.00	0.00	---
11/20/09	10:15a	63.1	63.1	62.7	94	61.3	3.0	ENE	0.75	11.0	NE	63.1	63.9	63.9	---	30.053	0.00	0.00	---
11/20/09	10:30a	62.9	63.1	62.9	93	60.8	3.0	NE	0.75	7.0	ENE	62.9	63.6	63.6	---	30.058	0.00	0.00	---
11/20/09	10:45a	62.7	62.9	62.7	93	60.6	3.0	NE	0.75	8.0	NE	62.7	63.4	63.4	---	30.054	0.00	0.00	---
11/20/09	11:00a	63.0	63.0	62.7	93	60.9	2.0	NE	0.50	8.0	ENE	63.0	63.8	63.8	---	30.053	0.00	0.00	---
11/20/09	11:15a	63.0	63.1	63.0	92	60.6	3.0	ENE	0.75	10.0	NE	63.0	63.7	63.7	---	30.056	0.00	0.00	---
11/20/09	11:30a	63.1	63.1	63.0	92	60.7	3.0	NE	0.75	10.0	NE	63.1	63.9	63.9	---	30.052	0.00	0.00	---
11/20/09	11:45a	62.9	63.1	62.9	91	60.2	3.0	NE	0.75	8.0	NNE	62.9	63.6	63.6	---	30.053	0.00	0.00	---
11/20/09	12:00p	63.3	63.3	62.9	91	60.6	2.0	NE	0.50	7.0	NE	63.3	64.1	64.1	---	30.049	0.00	0.00	---
11/20/09	12:15p	63.8	63.8	63.3	91	61.1	3.0	ENE	0.75	10.0	ENE	63.8	64.6	64.6	---	30.040	0.00	0.00	---
11/20/09	12:30p	64.1	64.2	63.8	90	61.1	3.0	NE	0.75	9.0	NE	64.1	64.9	64.9	---	30.028	0.00	0.00	---
11/20/09	12:45p	63.9	64.1	63.9	90	60.9	3.0	ENE	0.75	10.0	NE	63.9	64.7	64.7	---	30.032	0.00	0.00	---
11/20/09	1:00p	63.5	63.9	63.5	91	60.8	3.0	NE	0.75	10.0	NE	63.5	64.3	64.3	---	30.034	0.00	0.00	---

MCAS Cherry Point OU1 11/20/09

Date	Time	Temp Out	Hi Temp	Low Temp	Out Hum	Dew Pt.	Wind Speed	Wind Dir	Wind Run	Hi Speed	Hi Dir	Wind Chill	Heat Index	THW Index	THSW Index	Bar	Rain	Rain Rate	Solar Rad.
11/20/09	1:15p	63.3	63.5	63.3	92	60.9	4.0	NE	1.00	10.0	NE	63.3	64.1	64.1	---	30.031	0.00	0.00	---
11/20/09	1:30p	63.2	63.3	63.2	93	61.1	3.0	ENE	0.75	8.0	NE	63.2	64.0	64.0	---	30.027	0.00	0.00	---
11/20/09	1:45p	63.1	63.3	63.1	93	61.0	3.0	ENE	0.75	10.0	NE	63.1	63.9	63.9	---	30.029	0.00	0.00	---
11/20/09	2:00p	62.6	63.1	62.6	93	60.5	5.0	ENE	1.25	12.0	NE	62.6	63.3	63.3	---	30.025	0.00	0.00	---
11/20/09	2:15p	62.1	62.6	62.1	93	60.1	7.0	ENE	1.75	14.0	NE	61.8	62.7	62.4	---	30.028	0.00	0.00	---
11/20/09	2:30p	62.0	62.1	61.9	92	59.6	6.0	ENE	1.50	12.0	NE	62.0	62.6	62.6	---	30.028	0.00	0.00	---
11/20/09	2:45p	61.7	62.0	61.6	91	59.0	7.0	ENE	1.75	14.0	ENE	61.3	62.2	61.8	---	30.027	0.00	0.00	---
11/20/09	3:00p	61.6	61.7	61.6	90	58.6	4.0	ENE	1.00	11.0	E	61.6	62.1	62.1	---	30.037	0.00	0.00	---
11/20/09	3:15p	61.3	61.6	61.3	90	58.3	4.0	ENE	1.00	12.0	ENE	61.3	61.7	61.7	---	30.047	0.00	0.00	---
11/20/09	3:30p	61.3	61.3	61.3	89	58.0	3.0	ENE	0.75	11.0	NE	61.3	61.7	61.7	---	30.059	0.00	0.00	---
11/20/09	3:45p	61.4	61.4	61.2	87	57.5	5.0	ENE	1.25	13.0	ENE	61.4	61.7	61.7	---	30.063	0.00	0.00	---
11/20/09	4:00p	61.6	61.6	61.4	86	57.4	4.0	ENE	1.00	11.0	ENE	61.6	61.9	61.9	---	30.057	0.00	0.00	---
11/20/09	4:15p	61.8	61.8	61.6	86	57.6	2.0	ENE	0.50	7.0	ENE	61.8	62.1	62.1	---	30.051	0.00	0.00	---
11/20/09	4:30p	61.5	61.8	61.5	86	57.3	5.0	ENE	1.25	13.0	ENE	61.5	61.8	61.8	---	30.043	0.00	0.00	---
11/20/09	4:45p	61.2	61.5	61.2	86	57.0	4.0	ENE	1.00	11.0	NE	61.2	61.5	61.5	---	30.046	0.00	0.00	---
11/20/09	5:00p	60.9	61.2	60.9	85	56.4	3.0	ENE	0.75	8.0	NE	60.9	61.1	61.1	---	30.046	0.00	0.00	---
11/20/09	5:15p	60.8	61.0	60.8	85	56.3	2.0	ENE	0.50	7.0	ENE	60.8	61.0	61.0	---	30.046	0.00	0.00	---
11/20/09	5:30p	60.7	60.8	60.7	85	56.2	4.0	ENE	1.00	8.0	ENE	60.7	60.9	60.9	---	30.041	0.00	0.00	---
11/20/09	5:45p	60.6	60.7	60.6	84	55.7	5.0	ENE	1.25	12.0	ENE	60.6	60.7	60.7	---	30.045	0.00	0.00	---
11/20/09	6:00p	60.6	60.6	60.5	83	55.4	4.0	ENE	1.00	10.0	ENE	60.6	60.7	60.7	---	30.052	0.00	0.00	---
11/20/09	6:15p	60.6	60.6	60.5	83	55.4	4.0	ENE	1.00	7.0	ENE	60.6	60.7	60.7	---	30.063	0.00	0.00	---
11/20/09	6:30p	60.4	60.6	60.4	80	54.2	4.0	ENE	1.00	10.0	ENE	60.4	60.3	60.3	---	30.065	0.00	0.00	---
11/20/09	6:45p	60.3	60.4	60.3	77	53.1	6.0	ENE	1.50	13.0	ENE	60.0	60.0	59.7	---	30.074	0.00	0.00	---
11/20/09	7:00p	60.2	60.3	60.2	77	53.0	4.0	ENE	1.00	10.0	ENE	60.2	59.9	59.9	---	30.079	0.00	0.00	---
11/20/09	7:15p	60.1	60.2	60.1	77	52.9	3.0	ENE	0.75	8.0	ENE	60.1	59.8	59.8	---	30.083	0.00	0.00	---
11/20/09	7:30p	59.9	60.1	59.9	76	52.3	5.0	ENE	1.25	11.0	NE	59.9	59.6	59.6	---	30.083	0.00	0.00	---
11/20/09	7:45p	59.8	59.9	59.8	76	52.2	4.0	ENE	1.00	8.0	ENE	59.8	59.4	59.4	---	30.084	0.00	0.00	---
11/20/09	8:00p	59.6	59.8	59.6	76	52.0	4.0	ENE	1.00	10.0	ENE	59.6	59.2	59.2	---	30.079	0.00	0.00	---
11/20/09	8:15p	59.5	59.6	59.5	77	52.3	4.0	ENE	1.00	8.0	ENE	59.5	59.2	59.2	---	30.086	0.00	0.00	---
11/20/09	8:30p	59.3	59.5	59.3	78	52.4	4.0	ENE	1.00	10.0	ENE	59.3	59.0	59.0	---	30.080	0.00	0.00	---
11/20/09	8:45p	59.0	59.3	58.9	74	50.7	6.0	ENE	1.50	11.0	ENE	58.4	58.5	57.9	---	30.085	0.00	0.00	---
11/20/09	9:00p	58.8	59.0	58.8	73	50.2	5.0	ENE	1.25	12.0	NE	58.6	58.2	58.0	---	30.086	0.00	0.00	---
11/20/09	9:15p	58.8	58.8	58.7	75	50.9	5.0	ENE	1.25	11.0	ENE	58.6	58.3	58.1	---	30.087	0.00	0.00	---
11/20/09	9:30p	58.5	58.8	58.5	75	50.6	4.0	ENE	1.00	11.0	ENE	58.5	58.0	58.0	---	30.088	0.00	0.00	---
11/20/09	9:45p	58.0	58.5	58.0	74	49.8	5.0	ENE	1.25	12.0	ENE	57.6	57.4	57.0	---	30.083	0.00	0.00	---
11/20/09	10:00p	57.7	58.0	57.7	73	49.1	5.0	ENE	1.25	11.0	NE	57.2	57.1	56.6	---	30.087	0.00	0.00	---
11/20/09	10:15p	57.8	57.8	57.7	74	49.6	4.0	ENE	1.00	10.0	ENE	57.8	57.2	57.2	---	30.092	0.00	0.00	---
11/20/09	10:30p	57.8	57.8	57.8	73	49.2	6.0	ENE	1.50	12.0	ENE	57.0	57.2	56.4	---	30.092	0.00	0.00	---
11/20/09	10:45p	57.8	57.8	57.7	74	49.6	4.0	ENE	1.00	11.0	ENE	57.8	57.2	57.2	---	30.089	0.00	0.00	---
11/20/09	11:00p	57.7	57.8	57.6	74	49.5	5.0	ENE	1.25	11.0	ENE	57.2	57.1	56.6	---	30.091	0.00	0.00	---
11/20/09	11:15p	57.4	57.7	57.4	74	49.2	7.0	ENE	1.75	14.0	ENE	56.1	56.8	55.5	---	30.092	0.00	0.00	---
11/20/09	11:30p	57.3	57.5	57.3	74	49.1	6.0	ENE	1.50	11.0	ENE	56.4	56.7	55.8	---	30.092	0.00	0.00	---
11/20/09	11:45p	57.1	57.3	57.1	74	48.9	5.0	ENE	1.25	11.0	ENE	56.5	56.5	55.9	---	30.092	0.00	0.00	---
11/21/09	12:00a	57.1	57.2	57.1	74	48.9	4.0	ENE	1.00	11.0	ENE	57.1	56.5	56.5	---	30.080	0.00	0.00	---

MCAS Cherry Point OU1 11/20/09

Date	Time	Solar Energy	Hi Solar Rad.	UV Index	UV Dose	Hi UV	Heat D-D	Cool D-D	In Temp	In Hum	In Dew	In Heat	In EMC	In Air Density	ET	Wind Samp	Wind Tx	ISS Recept
11/20/09	12:15a	---	---	---	---	---	0.009	0.000	72.1	63	58.8	72.3	11.51	.0736	0.000	284	8	97.6
11/20/09	12:30a	---	---	---	---	---	0.010	0.000	72.1	63	58.8	72.3	11.51	.0736	0.000	288	8	99.0
11/20/09	12:45a	---	---	---	---	---	0.011	0.000	72.1	63	58.8	72.3	11.51	.0736	0.000	290	8	99.7
11/20/09	1:00a	---	---	---	---	---	0.016	0.000	71.9	63	58.6	72.0	11.51	.0736	0.000	287	8	98.6
11/20/09	1:15a	---	---	---	---	---	0.020	0.000	71.9	63	58.6	72.0	11.51	.0736	0.000	294	8	100.0
11/20/09	1:30a	---	---	---	---	---	0.021	0.000	71.9	63	58.6	72.0	11.51	.0736	0.000	292	8	100.0
11/20/09	1:45a	---	---	---	---	---	0.024	0.000	71.9	63	58.6	72.0	11.51	.0736	0.000	291	8	100.0
11/20/09	2:00a	---	---	---	---	---	0.023	0.000	71.9	63	58.6	72.0	11.51	.0736	0.000	291	8	100.0
11/20/09	2:15a	---	---	---	---	---	0.020	0.000	71.9	63	58.6	72.0	11.51	.0736	0.000	289	8	99.3
11/20/09	2:30a	---	---	---	---	---	0.017	0.000	71.8	63	58.5	71.9	11.51	.0736	0.000	291	8	100.0
11/20/09	2:45a	---	---	---	---	---	0.016	0.000	71.8	63	58.5	71.9	11.51	.0736	0.000	294	8	100.0
11/20/09	3:00a	---	---	---	---	---	0.014	0.000	71.8	63	58.5	71.9	11.51	.0736	0.000	289	8	99.3
11/20/09	3:15a	---	---	---	---	---	0.011	0.000	71.8	63	58.5	71.9	11.51	.0736	0.000	292	8	100.0
11/20/09	3:30a	---	---	---	---	---	0.011	0.000	71.8	63	58.5	71.9	11.51	.0736	0.000	289	8	99.3
11/20/09	3:45a	---	---	---	---	---	0.010	0.000	71.8	63	58.5	71.9	11.51	.0736	0.000	292	8	100.0
11/20/09	4:00a	---	---	---	---	---	0.009	0.000	71.8	63	58.5	71.9	11.51	.0736	0.000	289	8	99.3
11/20/09	4:15a	---	---	---	---	---	0.007	0.000	71.8	63	58.5	71.9	11.51	.0736	0.000	289	8	99.3
11/20/09	4:30a	---	---	---	---	---	0.006	0.000	71.8	63	58.5	71.9	11.51	.0736	0.000	287	8	98.6
11/20/09	4:45a	---	---	---	---	---	0.007	0.000	71.8	63	58.5	71.9	11.51	.0736	0.000	296	8	100.0
11/20/09	5:00a	---	---	---	---	---	0.005	0.000	71.8	63	58.5	71.9	11.51	.0736	0.000	298	8	100.0
11/20/09	5:15a	---	---	---	---	---	0.000	0.000	71.8	63	58.5	71.9	11.51	.0737	0.000	298	8	100.0
11/20/09	5:30a	---	---	---	---	---	0.001	0.000	71.8	63	58.5	71.9	11.51	.0737	0.000	295	8	100.0
11/20/09	5:45a	---	---	---	---	---	0.002	0.000	71.8	63	58.5	71.9	11.51	.0737	0.000	297	8	100.0
11/20/09	6:00a	---	---	---	---	---	0.002	0.000	71.8	63	58.5	71.9	11.51	.0737	0.000	300	8	100.0
11/20/09	6:15a	---	---	---	---	---	0.002	0.000	71.8	63	58.5	71.9	11.51	.0737	0.000	300	8	100.0
11/20/09	6:30a	---	---	---	---	---	0.001	0.000	71.8	63	58.5	71.9	11.51	.0737	0.000	299	8	100.0
11/20/09	6:45a	---	---	---	---	---	0.002	0.000	71.8	64	59.0	71.9	11.65	.0737	0.000	297	8	100.0
11/20/09	7:00a	---	---	---	---	---	0.002	0.000	71.8	64	59.0	71.9	11.65	.0737	0.000	297	8	100.0
11/20/09	7:15a	---	---	---	---	---	0.003	0.000	71.8	64	59.0	71.9	11.65	.0737	0.000	300	8	100.0
11/20/09	7:30a	---	---	---	---	---	0.005	0.000	71.8	64	59.0	71.9	11.65	.0737	0.000	299	8	100.0
11/20/09	7:45a	---	---	---	---	---	0.009	0.000	71.8	64	59.0	71.9	11.65	.0737	0.000	298	8	100.0
11/20/09	8:00a	---	---	---	---	---	0.015	0.000	71.8	64	59.0	71.9	11.65	.0737	0.000	299	8	100.0
11/20/09	8:15a	---	---	---	---	---	0.018	0.000	71.8	64	59.0	71.9	11.65	.0737	0.000	298	8	100.0
11/20/09	8:30a	---	---	---	---	---	0.020	0.000	71.8	64	59.0	71.9	11.65	.0737	0.000	300	8	100.0
11/20/09	8:45a	---	---	---	---	---	0.021	0.000	71.4	64	58.6	71.4	11.65	.0738	0.000	300	8	100.0
11/20/09	9:00a	---	---	---	---	---	0.023	0.000	71.4	64	58.6	71.4	11.65	.0738	0.000	296	8	100.0
11/20/09	9:15a	---	---	---	---	---	0.024	0.000	71.4	64	58.6	71.4	11.65	.0738	0.000	300	8	100.0
11/20/09	9:30a	---	---	---	---	---	0.026	0.000	71.2	64	58.4	71.1	11.65	.0739	0.000	298	8	100.0
11/20/09	9:45a	---	---	---	---	---	0.028	0.000	71.2	64	58.4	71.1	11.65	.0739	0.000	299	8	100.0
11/20/09	10:00a	---	---	---	---	---	0.025	0.000	71.1	64	58.3	71.0	11.65	.0739	0.000	300	8	100.0
11/20/09	10:15a	---	---	---	---	---	0.020	0.000	71.2	64	58.4	71.1	11.65	.0739	0.000	299	8	100.0
11/20/09	10:30a	---	---	---	---	---	0.022	0.000	71.1	64	58.3	71.0	11.65	.0739	0.000	299	8	100.0
11/20/09	10:45a	---	---	---	---	---	0.024	0.000	70.9	64	58.1	70.7	11.65	.0739	0.000	297	8	100.0
11/20/09	11:00a	---	---	---	---	---	0.021	0.000	71.1	64	58.3	71.0	11.65	.0739	0.000	300	8	100.0
11/20/09	11:15a	---	---	---	---	---	0.021	0.000	71.2	64	58.4	71.1	11.65	.0739	0.000	300	8	100.0
11/20/09	11:30a	---	---	---	---	---	0.020	0.000	71.4	64	58.6	71.4	11.65	.0738	0.000	300	8	100.0
11/20/09	11:45a	---	---	---	---	---	0.022	0.000	71.6	64	58.8	71.7	11.65	.0738	0.000	296	8	100.0
11/20/09	12:00p	---	---	---	---	---	0.018	0.000	71.6	64	58.8	71.7	11.65	.0738	0.000	285	8	97.9
11/20/09	12:15p	---	---	---	---	---	0.013	0.000	71.8	64	59.0	71.9	11.65	.0737	0.000	299	8	100.0
11/20/09	12:30p	---	---	---	---	---	0.009	0.000	71.9	64	59.1	72.1	11.65	.0737	0.000	292	8	100.0
11/20/09	12:45p	---	---	---	---	---	0.011	0.000	71.6	64	58.8	71.7	11.65	.0737	0.000	296	8	100.0
11/20/09	1:00p	---	---	---	---	---	0.016	0.000	71.8	64	59.0	71.9	11.65	.0737	0.000	296	8	100.0

MCAS Cherry Point OU1 11/20/09

Date	Time	Solar Energy	Hi Solar Rad.	UV Index	UV Dose	Hi UV	Heat D-D	Cool D-D	In Temp	In Hum	In Dew	In Heat	In EMC	In Air Density	ET	Wind Samp	Wind Tx	ISS Recept
11/20/09	1:15p	---	---	---	---	---	0.018	0.000	71.9	64	59.1	72.1	11.65	.0737	0.000	297	8	100.0
11/20/09	1:30p	---	---	---	---	---	0.019	0.000	71.6	64	58.8	71.7	11.65	.0737	0.000	297	8	100.0
11/20/09	1:45p	---	---	---	---	---	0.020	0.000	71.8	64	59.0	71.9	11.65	.0737	0.000	299	8	100.0
11/20/09	2:00p	---	---	---	---	---	0.025	0.000	71.9	64	59.1	72.1	11.65	.0737	0.000	297	8	100.0
11/20/09	2:15p	---	---	---	---	---	0.030	0.000	71.6	64	58.8	71.7	11.65	.0737	0.000	298	8	100.0
11/20/09	2:30p	---	---	---	---	---	0.031	0.000	71.8	64	59.0	71.9	11.65	.0737	0.000	295	8	100.0
11/20/09	2:45p	---	---	---	---	---	0.034	0.000	71.8	64	59.0	71.9	11.65	.0737	0.000	294	8	100.0
11/20/09	3:00p	---	---	---	---	---	0.035	0.000	71.6	64	58.8	71.7	11.65	.0737	0.000	295	8	100.0
11/20/09	3:15p	---	---	---	---	---	0.039	0.000	71.6	64	58.8	71.7	11.65	.0738	0.000	296	8	100.0
11/20/09	3:30p	---	---	---	---	---	0.039	0.000	71.4	64	58.6	71.4	11.65	.0738	0.000	299	8	100.0
11/20/09	3:45p	---	---	---	---	---	0.037	0.000	71.6	64	58.8	71.7	11.65	.0738	0.000	296	8	100.0
11/20/09	4:00p	---	---	---	---	---	0.035	0.000	71.8	64	59.0	71.9	11.65	.0738	0.000	299	8	100.0
11/20/09	4:15p	---	---	---	---	---	0.033	0.000	71.4	64	58.6	71.4	11.65	.0738	0.000	293	8	100.0
11/20/09	4:30p	---	---	---	---	---	0.036	0.000	71.6	64	58.8	71.7	11.65	.0738	0.000	296	8	100.0
11/20/09	4:45p	---	---	---	---	---	0.040	0.000	71.6	63	58.3	71.6	11.52	.0738	0.000	296	8	100.0
11/20/09	5:00p	---	---	---	---	---	0.043	0.000	71.6	63	58.3	71.6	11.52	.0738	0.000	290	8	99.7
11/20/09	5:15p	---	---	---	---	---	0.044	0.000	71.6	63	58.3	71.6	11.52	.0738	0.000	294	8	100.0
11/20/09	5:30p	---	---	---	---	---	0.045	0.000	71.6	63	58.3	71.6	11.52	.0738	0.000	288	8	99.0
11/20/09	5:45p	---	---	---	---	---	0.046	0.000	71.6	63	58.3	71.6	11.52	.0738	0.000	299	8	100.0
11/20/09	6:00p	---	---	---	---	---	0.046	0.000	71.6	63	58.3	71.6	11.52	.0738	0.000	295	8	100.0
11/20/09	6:15p	---	---	---	---	---	0.046	0.000	71.6	63	58.3	71.6	11.52	.0738	0.000	292	8	100.0
11/20/09	6:30p	---	---	---	---	---	0.048	0.000	71.4	63	58.1	71.3	11.52	.0739	0.000	288	8	99.0
11/20/09	6:45p	---	---	---	---	---	0.049	0.000	71.4	64	58.6	71.4	11.65	.0739	0.000	292	8	100.0
11/20/09	7:00p	---	---	---	---	---	0.050	0.000	71.2	64	58.4	71.1	11.65	.0739	0.000	287	8	98.6
11/20/09	7:15p	---	---	---	---	---	0.051	0.000	71.2	64	58.4	71.1	11.65	.0739	0.000	295	8	100.0
11/20/09	7:30p	---	---	---	---	---	0.053	0.000	71.1	64	58.3	71.0	11.65	.0739	0.000	290	8	99.7
11/20/09	7:45p	---	---	---	---	---	0.054	0.000	71.1	64	58.3	71.0	11.65	.0740	0.000	287	8	98.6
11/20/09	8:00p	---	---	---	---	---	0.056	0.000	71.1	63	57.9	70.9	11.53	.0740	0.000	290	8	99.7
11/20/09	8:15p	---	---	---	---	---	0.057	0.000	70.9	63	57.7	70.6	11.53	.0740	0.000	295	8	100.0
11/20/09	8:30p	---	---	---	---	---	0.059	0.000	70.7	63	57.5	70.4	11.54	.0740	0.000	295	8	100.0
11/20/09	8:45p	---	---	---	---	---	0.063	0.000	70.7	63	57.5	70.4	11.54	.0740	0.000	292	8	100.0
11/20/09	9:00p	---	---	---	---	---	0.065	0.000	70.6	63	57.4	70.2	11.54	.0741	0.000	293	8	100.0
11/20/09	9:15p	---	---	---	---	---	0.065	0.000	70.6	63	57.4	70.2	11.54	.0741	0.000	296	8	100.0
11/20/09	9:30p	---	---	---	---	---	0.068	0.000	70.4	63	57.2	70.0	11.54	.0741	0.000	297	8	100.0
11/20/09	9:45p	---	---	---	---	---	0.073	0.000	70.2	63	57.0	69.7	11.55	.0741	0.000	297	8	100.0
11/20/09	10:00p	---	---	---	---	---	0.076	0.000	70.2	63	57.0	69.7	11.55	.0741	0.000	299	8	100.0
11/20/09	10:15p	---	---	---	---	---	0.075	0.000	70.1	63	56.9	69.6	11.55	.0742	0.000	299	8	100.0
11/20/09	10:30p	---	---	---	---	---	0.075	0.000	69.9	63	56.7	69.4	11.55	.0742	0.000	297	8	100.0
11/20/09	10:45p	---	---	---	---	---	0.075	0.000	69.9	63	56.7	69.4	11.55	.0742	0.000	295	8	100.0
11/20/09	11:00p	---	---	---	---	---	0.076	0.000	69.7	63	56.5	69.3	11.56	.0742	0.000	298	8	100.0
11/20/09	11:15p	---	---	---	---	---	0.079	0.000	69.6	63	56.4	69.2	11.56	.0743	0.000	297	8	100.0
11/20/09	11:30p	---	---	---	---	---	0.080	0.000	69.6	63	56.4	69.2	11.56	.0743	0.000	298	8	100.0
11/20/09	11:45p	---	---	---	---	---	0.082	0.000	69.4	63	56.3	69.0	11.56	.0743	0.000	299	8	100.0
11/21/09	12:00a	---	---	---	---	---	0.082	0.000	69.2	63	56.1	68.9	11.57	.0743	0.000	297	8	100.0

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Date	Time	Arc. Int.
11/20/09	12:15a	15
11/20/09	12:30a	15
11/20/09	12:45a	15
11/20/09	1:00a	15
11/20/09	1:15a	15
11/20/09	1:30a	15
11/20/09	1:45a	15
11/20/09	2:00a	15
11/20/09	2:15a	15
11/20/09	2:30a	15
11/20/09	2:45a	15
11/20/09	3:00a	15
11/20/09	3:15a	15
11/20/09	3:30a	15
11/20/09	3:45a	15
11/20/09	4:00a	15
11/20/09	4:15a	15
11/20/09	4:30a	15
11/20/09	4:45a	15
11/20/09	5:00a	15
11/20/09	5:15a	15
11/20/09	5:30a	15
11/20/09	5:45a	15
11/20/09	6:00a	15
11/20/09	6:15a	15
11/20/09	6:30a	15
11/20/09	6:45a	15
11/20/09	7:00a	15
11/20/09	7:15a	15
11/20/09	7:30a	15
11/20/09	7:45a	15
11/20/09	8:00a	15
11/20/09	8:15a	15
11/20/09	8:30a	15
11/20/09	8:45a	15
11/20/09	9:00a	15
11/20/09	9:15a	15
11/20/09	9:30a	15
11/20/09	9:45a	15
11/20/09	10:00a	15
11/20/09	10:15a	15
11/20/09	10:30a	15
11/20/09	10:45a	15
11/20/09	11:00a	15
11/20/09	11:15a	15
11/20/09	11:30a	15
11/20/09	11:45a	15
11/20/09	12:00p	15
11/20/09	12:15p	15
11/20/09	12:30p	15
11/20/09	12:45p	15
11/20/09	1:00p	15

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Date	Time	Arc. Int.
11/20/09	1:15p	15
11/20/09	1:30p	15
11/20/09	1:45p	15
11/20/09	2:00p	15
11/20/09	2:15p	15
11/20/09	2:30p	15
11/20/09	2:45p	15
11/20/09	3:00p	15
11/20/09	3:15p	15
11/20/09	3:30p	15
11/20/09	3:45p	15
11/20/09	4:00p	15
11/20/09	4:15p	15
11/20/09	4:30p	15
11/20/09	4:45p	15
11/20/09	5:00p	15
11/20/09	5:15p	15
11/20/09	5:30p	15
11/20/09	5:45p	15
11/20/09	6:00p	15
11/20/09	6:15p	15
11/20/09	6:30p	15
11/20/09	6:45p	15
11/20/09	7:00p	15
11/20/09	7:15p	15
11/20/09	7:30p	15
11/20/09	7:45p	15
11/20/09	8:00p	15
11/20/09	8:15p	15
11/20/09	8:30p	15
11/20/09	8:45p	15
11/20/09	9:00p	15
11/20/09	9:15p	15
11/20/09	9:30p	15
11/20/09	9:45p	15
11/20/09	10:00p	15
11/20/09	10:15p	15
11/20/09	10:30p	15
11/20/09	10:45p	15
11/20/09	11:00p	15
11/20/09	11:15p	15
11/20/09	11:30p	15
11/20/09	11:45p	15
11/21/09	12:00a	15

MCAS Cherry Point OU1 11/21/09

Date	Time	Temp Out	Hi Temp	Low Temp	Out Hum	Dew Pt.	Wind Speed	Wind Dir	Wind Run	Hi Speed	Hi Dir	Wind Chill	Heat Index	THW Index	THSW Index	Bar	Rain	Rain Rate	Solar Rad.
11/21/09	12:15a	56.8	57.1	56.8	75	49.0	5.0	ENE	1.25	12.0	ENE	56.2	56.3	55.7	---	30.079	0.00	0.00	---
11/21/09	12:30a	56.5	56.8	56.5	75	48.7	6.0	ENE	1.50	13.0	ENE	55.4	56.0	54.9	---	30.076	0.00	0.00	---
11/21/09	12:45a	55.9	56.5	55.9	76	48.4	4.0	NE	1.00	10.0	ENE	55.7	55.4	55.2	---	30.074	0.00	0.00	---
11/21/09	1:00a	55.5	55.9	55.5	77	48.4	3.0	ENE	0.75	7.0	ENE	55.5	55.1	55.1	---	30.072	0.00	0.00	---
11/21/09	1:15a	55.2	55.6	55.2	78	48.5	3.0	ENE	0.75	6.0	NE	55.2	54.8	54.8	---	30.077	0.00	0.00	---
11/21/09	1:30a	54.8	55.2	54.8	80	48.7	3.0	ENE	0.75	8.0	ENE	54.8	54.5	54.5	---	30.064	0.00	0.00	---
11/21/09	1:45a	54.6	54.9	54.6	81	48.9	3.0	ENE	0.75	7.0	ENE	54.6	54.3	54.3	---	30.072	0.00	0.00	---
11/21/09	2:00a	54.4	54.6	54.4	81	48.7	3.0	ENE	0.75	7.0	NE	54.4	54.1	54.1	---	30.068	0.00	0.00	---
11/21/09	2:15a	54.2	54.4	54.2	82	48.8	4.0	ENE	1.00	10.0	NE	53.7	54.0	53.5	---	30.063	0.00	0.00	---
11/21/09	2:30a	54.0	54.2	54.0	82	48.6	4.0	ENE	1.00	11.0	ENE	53.5	53.8	53.3	---	30.058	0.00	0.00	---
11/21/09	2:45a	54.0	54.1	54.0	82	48.6	5.0	ENE	1.25	11.0	ENE	52.9	53.8	52.7	---	30.063	0.00	0.00	---
11/21/09	3:00a	54.1	54.1	54.0	82	48.7	4.0	ENE	1.00	8.0	NNE	53.6	53.9	53.4	---	30.065	0.00	0.00	---
11/21/09	3:15a	54.2	54.2	54.1	82	48.8	4.0	ENE	1.00	11.0	ENE	53.7	54.0	53.5	---	30.062	0.00	0.00	---
11/21/09	3:30a	54.2	54.3	54.2	80	48.2	6.0	ENE	1.50	12.0	ENE	52.6	53.9	52.3	---	30.052	0.00	0.00	---
11/21/09	3:45a	54.1	54.2	54.1	81	48.4	5.0	ENE	1.25	13.0	ENE	53.0	53.8	52.7	---	30.050	0.00	0.00	---
11/21/09	4:00a	54.1	54.1	54.1	80	48.1	6.0	ENE	1.50	14.0	ENE	52.5	53.8	52.2	---	30.043	0.00	0.00	---
11/21/09	4:15a	54.0	54.1	53.9	80	48.0	6.0	ENE	1.50	12.0	NE	52.4	53.7	52.1	---	30.046	0.00	0.00	---
11/21/09	4:30a	54.2	54.2	54.0	80	48.2	6.0	ENE	1.50	13.0	E	52.6	53.9	52.3	---	30.057	0.00	0.00	---
11/21/09	4:45a	54.2	54.3	54.2	81	48.5	6.0	ENE	1.50	12.0	NE	52.6	53.9	52.3	---	30.059	0.00	0.00	---
11/21/09	5:00a	54.3	54.3	54.2	81	48.6	4.0	ENE	1.00	10.0	NE	53.8	54.0	53.5	---	30.065	0.00	0.00	---
11/21/09	5:15a	54.4	54.4	54.3	80	48.4	5.0	ENE	1.25	11.0	ENE	53.4	54.1	53.1	---	30.067	0.00	0.00	---
11/21/09	5:30a	54.2	54.4	54.2	80	48.2	5.0	ENE	1.25	10.0	NE	53.1	53.9	52.8	---	30.065	0.00	0.00	---
11/21/09	5:45a	54.1	54.2	54.1	80	48.1	6.0	ENE	1.50	12.0	NE	52.5	53.8	52.2	---	30.063	0.00	0.00	---
11/21/09	6:00a	54.0	54.2	54.0	80	48.0	5.0	ENE	1.25	8.0	NE	52.9	53.7	52.6	---	30.074	0.00	0.00	---
11/21/09	6:15a	53.7	54.0	53.7	81	48.0	4.0	ENE	1.00	7.0	NNE	53.1	53.4	52.8	---	30.075	0.00	0.00	---
11/21/09	6:30a	53.5	53.8	53.5	81	47.8	3.0	ENE	0.75	8.0	ENE	53.5	53.2	53.2	---	30.077	0.00	0.00	---
11/21/09	6:45a	53.5	53.5	53.5	82	48.1	5.0	ENE	1.25	11.0	ENE	52.3	53.3	52.1	---	30.077	0.00	0.00	---
11/21/09	7:00a	53.6	53.6	53.5	82	48.2	2.0	ENE	0.50	6.0	NE	53.6	53.4	53.4	---	30.081	0.00	0.00	---
11/21/09	7:15a	53.7	53.7	53.6	82	48.3	3.0	ENE	0.75	10.0	E	53.7	53.5	53.5	---	30.083	0.00	0.00	---
11/21/09	7:30a	53.7	53.7	53.6	82	48.3	3.0	ENE	0.75	10.0	ENE	53.7	53.5	53.5	---	30.086	0.00	0.00	---
11/21/09	7:45a	53.7	53.8	53.7	83	48.7	3.0	ENE	0.75	10.0	ENE	53.7	53.5	53.5	---	30.085	0.00	0.00	---
11/21/09	8:00a	53.7	53.7	53.6	84	49.0	4.0	ENE	1.00	12.0	ENE	53.1	53.6	53.0	---	30.082	0.00	0.00	---
11/21/09	8:15a	54.6	54.6	53.7	82	49.2	5.0	NE	1.25	13.0	NE	53.6	54.4	53.4	---	30.079	0.00	0.00	---
11/21/09	8:30a	55.5	55.5	54.7	80	49.4	4.0	ENE	1.00	12.0	ENE	55.2	55.2	54.9	---	30.093	0.00	0.00	---
11/21/09	8:45a	56.1	56.1	55.5	79	49.7	3.0	ENE	0.75	8.0	ENE	56.1	55.7	55.7	---	30.101	0.00	0.00	---
11/21/09	9:00a	56.4	56.6	56.1	77	49.3	5.0	ENE	1.25	13.0	ENE	55.7	55.9	55.2	---	30.102	0.00	0.00	---
11/21/09	9:15a	55.9	56.4	55.9	77	48.8	6.0	ENE	1.50	16.0	NNE	54.7	55.4	54.2	---	30.110	0.00	0.00	---
11/21/09	9:30a	56.4	56.4	55.8	77	49.3	5.0	ENE	1.25	15.0	ENE	55.7	55.9	55.2	---	30.101	0.00	0.00	---
11/21/09	9:45a	57.8	57.8	56.4	74	49.6	7.0	ENE	1.75	15.0	NE	56.6	57.2	56.0	---	30.098	0.00	0.00	---
11/21/09	10:00a	58.7	58.7	57.8	73	50.1	6.0	ENE	1.50	17.0	ENE	58.0	58.1	57.4	---	30.109	0.00	0.00	---
11/21/09	10:15a	59.1	59.1	58.7	71	49.7	7.0	ENE	1.75	14.0	ENE	58.1	58.4	57.4	---	30.112	0.00	0.00	---
11/21/09	10:30a	59.4	59.6	59.2	67	48.4	7.0	ENE	1.75	15.0	ENE	58.5	58.6	57.7	---	30.114	0.00	0.00	---
11/21/09	10:45a	59.5	59.5	59.3	67	48.5	8.0	ENE	2.00	14.0	NE	57.9	58.7	57.1	---	30.107	0.00	0.00	---
11/21/09	11:00a	60.5	60.5	59.5	66	49.1	8.0	ENE	2.00	15.0	E	59.1	59.7	58.3	---	30.106	0.00	0.00	---
11/21/09	11:15a	61.6	61.7	60.5	65	49.7	9.0	ENE	2.25	17.0	ENE	59.6	60.9	58.9	---	30.101	0.00	0.00	---
11/21/09	11:30a	61.0	61.7	61.0	64	48.7	8.0	ENE	2.00	16.0	NE	59.7	60.1	58.8	---	30.092	0.00	0.00	---
11/21/09	11:45a	60.9	60.9	60.8	64	48.6	7.0	ENE	1.75	17.0	ENE	60.3	60.0	59.4	---	30.087	0.00	0.00	---
11/21/09	12:00p	61.8	61.9	60.9	61	48.2	8.0	ENE	2.00	18.0	ENE	60.7	60.7	59.6	---	30.083	0.00	0.00	---
11/21/09	12:15p	61.8	62.0	61.7	61	48.2	8.0	ENE	2.00	15.0	ENE	60.7	60.7	59.6	---	30.082	0.00	0.00	---
11/21/09	12:30p	61.5	61.8	61.4	62	48.4	8.0	ENE	2.00	15.0	E	60.3	60.5	59.3	---	30.077	0.00	0.00	---
11/21/09	12:45p	62.0	62.1	61.5	60	48.0	6.0	ENE	1.50	16.0	NE	62.0	60.8	60.8	---	30.074	0.00	0.00	---
11/21/09	1:00p	61.9	62.0	61.7	63	49.2	6.0	ENE	1.50	15.0	ENE	61.9	61.0	61.0	---	30.068	0.00	0.00	---

MCAS Cherry Point OU1 11/21/09

Date	Time	Temp Out	Hi Temp	Low Temp	Out Hum	Dew Pt.	Wind Speed	Wind Dir	Wind Run	Hi Speed	Hi Dir	Wind Chill	Heat Index	THW Index	THSW Index	Bar	Rain	Rain Rate	Solar Rad.
11/21/09	1:15p	62.9	62.9	62.0	60	48.8	6.0	ENE	1.50	17.0	ENE	62.9	61.8	61.8	---	30.068	0.00	0.00	---
11/21/09	1:30p	63.2	63.2	62.3	60	49.1	8.0	ENE	2.00	17.0	ENE	62.3	62.1	61.2	---	30.060	0.00	0.00	---
11/21/09	1:45p	62.8	63.6	62.8	58	47.8	6.0	ENE	1.50	19.0	ENE	62.8	61.6	61.6	---	30.061	0.00	0.00	---
11/21/09	2:00p	61.8	62.8	61.8	60	47.8	5.0	ENE	1.25	13.0	ENE	61.8	60.6	60.6	---	30.063	0.00	0.00	---
11/21/09	2:15p	61.1	61.8	61.1	61	47.5	5.0	ENE	1.25	13.0	NNE	61.1	60.0	60.0	---	30.064	0.00	0.00	---
11/21/09	2:30p	60.6	61.1	60.5	62	47.5	8.0	ENE	2.00	18.0	ENE	59.2	59.5	58.1	---	30.066	0.00	0.00	---
11/21/09	2:45p	60.6	60.6	60.5	62	47.5	6.0	ENE	1.50	14.0	ENE	60.3	59.5	59.2	---	30.068	0.00	0.00	---
11/21/09	3:00p	60.4	60.6	60.4	62	47.3	4.0	ENE	1.00	13.0	NE	60.4	59.3	59.3	---	30.072	0.00	0.00	---
11/21/09	3:15p	60.1	60.4	60.1	63	47.5	5.0	ENE	1.25	12.0	ENE	60.1	59.0	59.0	---	30.074	0.00	0.00	---
11/21/09	3:30p	59.7	60.1	59.7	64	47.5	6.0	ENE	1.50	14.0	ENE	59.2	58.7	58.2	---	30.072	0.00	0.00	---
11/21/09	3:45p	59.3	59.7	59.3	65	47.5	5.0	ENE	1.25	12.0	ENE	59.2	58.3	58.2	---	30.074	0.00	0.00	---
11/21/09	4:00p	58.8	59.3	58.8	64	46.6	7.0	ENE	1.75	17.0	ENE	57.8	57.7	56.7	---	30.072	0.00	0.00	---
11/21/09	4:15p	58.4	58.9	58.4	65	46.7	7.0	ENE	1.75	12.0	NE	57.3	57.4	56.3	---	30.069	0.00	0.00	---
11/21/09	4:30p	58.2	58.5	58.2	65	46.5	5.0	ENE	1.25	13.0	ENE	57.8	57.2	56.8	---	30.070	0.00	0.00	---
11/21/09	4:45p	57.9	58.2	57.9	67	47.0	5.0	ENE	1.25	11.0	NE	57.5	57.0	56.6	---	30.078	0.00	0.00	---
11/21/09	5:00p	57.6	57.9	57.6	67	46.7	4.0	ENE	1.00	10.0	ENE	57.6	56.7	56.7	---	30.080	0.00	0.00	---
11/21/09	5:15p	57.1	57.6	57.1	68	46.6	5.0	ENE	1.25	12.0	ENE	56.5	56.2	55.6	---	30.095	0.00	0.00	---
11/21/09	5:30p	56.7	57.1	56.7	69	46.6	5.0	ENE	1.25	12.0	NE	56.1	55.9	55.3	---	30.096	0.00	0.00	---
11/21/09	5:45p	56.4	56.8	56.4	69	46.4	5.0	ENE	1.25	11.0	NE	55.7	55.6	54.9	---	30.097	0.00	0.00	---
11/21/09	6:00p	56.0	56.4	56.0	68	45.6	6.0	ENE	1.50	12.0	ENE	54.8	55.1	53.9	---	30.108	0.00	0.00	---
11/21/09	6:15p	55.7	56.0	55.7	67	44.9	6.0	ENE	1.50	11.0	ENE	54.4	54.8	53.5	---	30.105	0.00	0.00	---
11/21/09	6:30p	55.4	55.7	55.4	68	45.0	5.0	ENE	1.25	10.0	NE	54.6	54.5	53.7	---	30.104	0.00	0.00	---
11/21/09	6:45p	55.1	55.4	55.1	69	45.1	5.0	ENE	1.25	10.0	ENE	54.2	54.3	53.4	---	30.106	0.00	0.00	---
11/21/09	7:00p	55.0	55.1	54.9	70	45.4	5.0	ENE	1.25	10.0	NE	54.1	54.2	53.3	---	30.106	0.00	0.00	---
11/21/09	7:15p	54.8	55.0	54.8	70	45.2	5.0	ENE	1.25	11.0	ENE	53.9	54.0	53.1	---	30.114	0.00	0.00	---
11/21/09	7:30p	54.4	54.8	54.4	71	45.2	5.0	ENE	1.25	11.0	ENE	53.4	53.7	52.7	---	30.118	0.00	0.00	---
11/21/09	7:45p	54.2	54.4	54.2	72	45.4	5.0	ENE	1.25	12.0	ENE	53.1	53.6	52.5	---	30.123	0.00	0.00	---
11/21/09	8:00p	53.8	54.2	53.8	73	45.3	5.0	ENE	1.25	10.0	ENE	52.7	53.2	52.1	---	30.124	0.00	0.00	---
11/21/09	8:15p	53.6	53.8	53.6	73	45.2	5.0	ENE	1.25	12.0	ENE	52.4	53.0	51.8	---	30.120	0.00	0.00	---
11/21/09	8:30p	53.6	53.6	53.5	73	45.2	5.0	ENE	1.25	10.0	ENE	52.4	53.0	51.8	---	30.134	0.00	0.00	---
11/21/09	8:45p	53.5	53.6	53.5	73	45.1	3.0	ENE	0.75	7.0	NE	53.5	52.9	52.9	---	30.134	0.00	0.00	---
11/21/09	9:00p	53.1	53.5	53.1	74	45.0	5.0	ENE	1.25	10.0	NE	51.8	52.6	51.3	---	30.129	0.00	0.00	---
11/21/09	9:15p	52.7	53.1	52.7	74	44.6	4.0	ENE	1.00	11.0	ENE	52.0	52.2	51.5	---	30.135	0.00	0.00	---
11/21/09	9:30p	52.4	52.7	52.4	75	44.7	4.0	ENE	1.00	7.0	NE	51.6	52.0	51.2	---	30.132	0.00	0.00	---
11/21/09	9:45p	52.1	52.4	52.1	75	44.4	5.0	NE	1.25	10.0	ENE	50.7	51.7	50.3	---	30.124	0.00	0.00	---
11/21/09	10:00p	52.2	52.2	52.1	75	44.5	5.0	ENE	1.25	12.0	ENE	50.8	51.8	50.4	---	30.121	0.00	0.00	---
11/21/09	10:15p	52.2	52.2	52.1	74	44.2	5.0	ENE	1.25	10.0	NE	50.8	51.7	50.3	---	30.125	0.00	0.00	---
11/21/09	10:30p	52.2	52.2	52.1	74	44.2	5.0	NE	1.25	11.0	ENE	50.8	51.7	50.3	---	30.122	0.00	0.00	---
11/21/09	10:45p	52.0	52.2	52.0	73	43.6	6.0	ENE	1.50	12.0	ENE	50.0	51.5	49.5	---	30.118	0.00	0.00	---
11/21/09	11:00p	51.8	52.0	51.8	73	43.4	4.0	ENE	1.00	7.0	NE	51.0	51.3	50.5	---	30.124	0.00	0.00	---
11/21/09	11:15p	51.4	51.8	51.4	74	43.4	4.0	ENE	1.00	8.0	NE	50.5	51.0	50.1	---	30.119	0.00	0.00	---
11/21/09	11:30p	51.3	51.4	51.3	74	43.3	5.0	ENE	1.25	8.0	ENE	49.8	50.9	49.4	---	30.114	0.00	0.00	---
11/21/09	11:45p	51.1	51.3	51.1	75	43.4	5.0	ENE	1.25	11.0	ENE	49.5	50.8	49.2	---	30.105	0.00	0.00	---
11/22/09	12:00a	51.2	51.2	51.1	75	43.5	5.0	ENE	1.25	12.0	E	49.6	50.9	49.3	---	30.112	0.00	0.00	---

MCAS Cherry Point OU1 11/21/09

Date	Time	Solar Energy	Hi Solar Rad.	UV Index	UV Dose	Hi UV	Heat D-D	Cool D-D	In Temp	In Hum	In Dew	In Heat	In EMC	In Air Density	ET	Wind Samp	Wind Tx	ISS Recept
11/21/09	12:15a	---	---	---	---	---	0.085	0.000	69.0	63	55.9	68.7	11.57	.0743	0.000	298	8	100.0
11/21/09	12:30a	---	---	---	---	---	0.089	0.000	69.0	63	55.9	68.7	11.57	.0743	0.000	297	8	100.0
11/21/09	12:45a	---	---	---	---	---	0.095	0.000	68.9	63	55.8	68.6	11.57	.0743	0.000	300	8	100.0
11/21/09	1:00a	---	---	---	---	---	0.099	0.000	68.7	63	55.6	68.5	11.58	.0744	0.000	297	8	100.0
11/21/09	1:15a	---	---	---	---	---	0.102	0.000	68.5	63	55.4	68.4	11.58	.0744	0.000	300	8	100.0
11/21/09	1:30a	---	---	---	---	---	0.106	0.000	68.5	63	55.4	68.4	11.58	.0744	0.000	298	8	100.0
11/21/09	1:45a	---	---	---	---	---	0.108	0.000	68.4	63	55.3	68.3	11.58	.0744	0.000	294	8	100.0
11/21/09	2:00a	---	---	---	---	---	0.110	0.000	68.2	63	55.1	68.1	11.59	.0745	0.000	294	8	100.0
11/21/09	2:15a	---	---	---	---	---	0.112	0.000	68.0	63	54.9	68.0	11.59	.0745	0.000	296	8	100.0
11/21/09	2:30a	---	---	---	---	---	0.115	0.000	67.9	63	54.8	67.9	11.59	.0745	0.000	299	8	100.0
11/21/09	2:45a	---	---	---	---	---	0.115	0.000	67.9	63	54.8	67.9	11.59	.0745	0.000	295	8	100.0
11/21/09	3:00a	---	---	---	---	---	0.114	0.000	67.7	63	54.6	67.6	11.60	.0745	0.000	298	8	100.0
11/21/09	3:15a	---	---	---	---	---	0.112	0.000	67.5	63	54.5	67.4	11.60	.0746	0.000	300	8	100.0
11/21/09	3:30a	---	---	---	---	---	0.112	0.000	67.4	63	54.4	67.3	11.60	.0746	0.000	299	8	100.0
11/21/09	3:45a	---	---	---	---	---	0.114	0.000	67.4	63	54.4	67.3	11.60	.0745	0.000	297	8	100.0
11/21/09	4:00a	---	---	---	---	---	0.114	0.000	67.2	63	54.2	67.0	11.61	.0746	0.000	297	8	100.0
11/21/09	4:15a	---	---	---	---	---	0.115	0.000	67.0	63	54.0	66.8	11.61	.0746	0.000	295	8	100.0
11/21/09	4:30a	---	---	---	---	---	0.112	0.000	66.9	63	53.9	66.7	11.61	.0747	0.000	299	8	100.0
11/21/09	4:45a	---	---	---	---	---	0.112	0.000	66.7	63	53.7	66.4	11.62	.0747	0.000	296	8	100.0
11/21/09	5:00a	---	---	---	---	---	0.111	0.000	66.7	63	53.7	66.4	11.62	.0747	0.000	297	8	100.0
11/21/09	5:15a	---	---	---	---	---	0.110	0.000	66.6	63	53.6	66.3	11.62	.0747	0.000	295	8	100.0
11/21/09	5:30a	---	---	---	---	---	0.112	0.000	66.4	63	53.4	66.1	11.62	.0748	0.000	297	8	100.0
11/21/09	5:45a	---	---	---	---	---	0.114	0.000	66.4	63	53.4	66.1	11.62	.0748	0.000	298	8	100.0
11/21/09	6:00a	---	---	---	---	---	0.115	0.000	66.2	63	53.2	65.8	11.63	.0748	0.000	295	8	100.0
11/21/09	6:15a	---	---	---	---	---	0.118	0.000	66.1	63	53.1	65.7	11.63	.0748	0.000	296	8	100.0
11/21/09	6:30a	---	---	---	---	---	0.120	0.000	65.9	63	52.9	65.5	11.63	.0749	0.000	294	8	100.0
11/21/09	6:45a	---	---	---	---	---	0.120	0.000	65.9	63	52.9	65.5	11.63	.0749	0.000	298	8	100.0
11/21/09	7:00a	---	---	---	---	---	0.119	0.000	65.8	63	52.9	65.4	11.63	.0749	0.000	292	8	100.0
11/21/09	7:15a	---	---	---	---	---	0.118	0.000	65.6	63	52.7	65.2	11.64	.0750	0.000	293	8	100.0
11/21/09	7:30a	---	---	---	---	---	0.118	0.000	65.6	63	52.7	65.2	11.64	.0750	0.000	289	8	99.3
11/21/09	7:45a	---	---	---	---	---	0.118	0.000	65.4	63	52.5	64.9	11.64	.0750	0.000	292	8	100.0
11/21/09	8:00a	---	---	---	---	---	0.118	0.000	65.4	63	52.5	64.9	11.64	.0750	0.000	294	8	100.0
11/21/09	8:15a	---	---	---	---	---	0.108	0.000	65.3	63	52.4	64.8	11.64	.0750	0.000	296	8	100.0
11/21/09	8:30a	---	---	---	---	---	0.099	0.000	65.3	63	52.4	64.8	11.64	.0750	0.000	295	8	100.0
11/21/09	8:45a	---	---	---	---	---	0.093	0.000	65.1	63	52.2	64.6	11.65	.0751	0.000	295	8	100.0
11/21/09	9:00a	---	---	---	---	---	0.090	0.000	65.1	63	52.2	64.6	11.65	.0751	0.000	298	8	100.0
11/21/09	9:15a	---	---	---	---	---	0.095	0.000	64.9	63	52.0	64.4	11.65	.0751	0.000	296	8	100.0
11/21/09	9:30a	---	---	---	---	---	0.090	0.000	64.9	63	52.0	64.4	11.65	.0751	0.000	297	8	100.0
11/21/09	9:45a	---	---	---	---	---	0.075	0.000	64.9	63	52.0	64.4	11.65	.0751	0.000	299	8	100.0
11/21/09	10:00a	---	---	---	---	---	0.066	0.000	64.9	63	52.0	64.4	11.65	.0751	0.000	298	8	100.0
11/21/09	10:15a	---	---	---	---	---	0.061	0.000	64.9	63	52.0	64.4	11.65	.0751	0.000	296	8	100.0
11/21/09	10:30a	---	---	---	---	---	0.058	0.000	64.9	63	52.0	64.4	11.65	.0752	0.000	296	8	100.0
11/21/09	10:45a	---	---	---	---	---	0.057	0.000	64.9	63	52.0	64.4	11.65	.0751	0.000	296	8	100.0
11/21/09	11:00a	---	---	---	---	---	0.047	0.000	64.9	63	52.0	64.4	11.65	.0751	0.000	294	8	100.0
11/21/09	11:15a	---	---	---	---	---	0.035	0.000	65.1	63	52.2	64.6	11.65	.0751	0.000	295	8	100.0
11/21/09	11:30a	---	---	---	---	---	0.042	0.000	65.1	62	51.8	64.5	11.45	.0751	0.000	299	8	100.0
11/21/09	11:45a	---	---	---	---	---	0.043	0.000	65.1	62	51.8	64.5	11.45	.0751	0.000	289	8	99.3
11/21/09	12:00p	---	---	---	---	---	0.033	0.000	65.1	62	51.8	64.5	11.45	.0751	0.000	293	8	100.0
11/21/09	12:15p	---	---	---	---	---	0.033	0.000	65.3	62	51.9	64.7	11.44	.0750	0.000	291	8	100.0
11/21/09	12:30p	---	---	---	---	---	0.036	0.000	65.3	63	52.4	64.8	11.64	.0750	0.000	291	8	100.0
11/21/09	12:45p	---	---	---	---	---	0.031	0.000	65.3	63	52.4	64.8	11.64	.0750	0.000	288	8	99.0
11/21/09	1:00p	---	---	---	---	---	0.032	0.000	65.3	63	52.4	64.8	11.64	.0750	0.000	287	8	98.6

MCAS Cherry Point OU1 11/21/09

Date	Time	Solar Energy	Hi Solar Rad.	UV Index	UV Dose	Hi UV	Heat D-D	Cool D-D	In Temp	In Hum	In Dew	In Heat	In EMC	In Air Density	ET	Wind Samp	Wind Tx	ISS Recept
11/21/09	1:15p	---	---	---	---	---	0.022	0.000	65.3	63	52.4	64.8	11.64	.0750	0.000	291	8	100.0
11/21/09	1:30p	---	---	---	---	---	0.019	0.000	65.3	63	52.4	64.8	11.64	.0749	0.000	288	8	99.0
11/21/09	1:45p	---	---	---	---	---	0.023	0.000	65.4	63	52.5	64.9	11.64	.0749	0.000	292	8	100.0
11/21/09	2:00p	---	---	---	---	---	0.033	0.000	65.4	63	52.5	64.9	11.64	.0749	0.000	292	8	100.0
11/21/09	2:15p	---	---	---	---	---	0.041	0.000	65.4	63	52.5	64.9	11.64	.0749	0.000	289	8	99.3
11/21/09	2:30p	---	---	---	---	---	0.046	0.000	65.4	63	52.5	64.9	11.64	.0749	0.000	291	8	100.0
11/21/09	2:45p	---	---	---	---	---	0.046	0.000	65.4	63	52.5	64.9	11.64	.0749	0.000	294	8	100.0
11/21/09	3:00p	---	---	---	---	---	0.048	0.000	65.4	63	52.5	64.9	11.64	.0750	0.000	295	8	100.0
11/21/09	3:15p	---	---	---	---	---	0.051	0.000	65.4	63	52.5	64.9	11.64	.0750	0.000	293	8	100.0
11/21/09	3:30p	---	---	---	---	---	0.055	0.000	65.4	63	52.5	64.9	11.64	.0750	0.000	292	8	100.0
11/21/09	3:45p	---	---	---	---	---	0.059	0.000	65.4	63	52.5	64.9	11.64	.0750	0.000	294	8	100.0
11/21/09	4:00p	---	---	---	---	---	0.065	0.000	65.3	63	52.4	64.8	11.64	.0750	0.000	299	8	100.0
11/21/09	4:15p	---	---	---	---	---	0.069	0.000	65.3	63	52.4	64.8	11.64	.0750	0.000	297	8	100.0
11/21/09	4:30p	---	---	---	---	---	0.071	0.000	65.3	63	52.4	64.8	11.64	.0750	0.000	298	8	100.0
11/21/09	4:45p	---	---	---	---	---	0.074	0.000	65.3	63	52.4	64.8	11.64	.0750	0.000	297	8	100.0
11/21/09	5:00p	---	---	---	---	---	0.077	0.000	65.1	63	52.2	64.6	11.65	.0750	0.000	297	8	100.0
11/21/09	5:15p	---	---	---	---	---	0.082	0.000	65.1	63	52.2	64.6	11.65	.0751	0.000	299	8	100.0
11/21/09	5:30p	---	---	---	---	---	0.086	0.000	65.1	63	52.2	64.6	11.65	.0751	0.000	299	8	100.0
11/21/09	5:45p	---	---	---	---	---	0.090	0.000	64.9	63	52.0	64.4	11.65	.0751	0.000	298	8	100.0
11/21/09	6:00p	---	---	---	---	---	0.094	0.000	64.9	63	52.0	64.4	11.65	.0751	0.000	300	8	100.0
11/21/09	6:15p	---	---	---	---	---	0.097	0.000	64.9	63	52.0	64.4	11.65	.0751	0.000	297	8	100.0
11/21/09	6:30p	---	---	---	---	---	0.100	0.000	64.8	63	51.9	64.3	11.65	.0751	0.000	300	8	100.0
11/21/09	6:45p	---	---	---	---	---	0.103	0.000	64.8	63	51.9	64.3	11.65	.0752	0.000	299	8	100.0
11/21/09	7:00p	---	---	---	---	---	0.104	0.000	64.6	63	51.7	64.0	11.65	.0752	0.000	300	8	100.0
11/21/09	7:15p	---	---	---	---	---	0.106	0.000	64.6	63	51.7	64.0	11.65	.0752	0.000	299	8	100.0
11/21/09	7:30p	---	---	---	---	---	0.110	0.000	64.5	63	51.6	63.9	11.65	.0752	0.000	299	8	100.0
11/21/09	7:45p	---	---	---	---	---	0.112	0.000	64.5	63	51.6	63.9	11.65	.0752	0.000	300	8	100.0
11/21/09	8:00p	---	---	---	---	---	0.117	0.000	64.3	63	51.4	63.7	11.65	.0753	0.000	298	8	100.0
11/21/09	8:15p	---	---	---	---	---	0.119	0.000	64.3	63	51.4	63.7	11.65	.0753	0.000	300	8	100.0
11/21/09	8:30p	---	---	---	---	---	0.119	0.000	64.1	63	51.2	63.5	11.65	.0753	0.000	297	8	100.0
11/21/09	8:45p	---	---	---	---	---	0.120	0.000	64.0	63	51.1	63.3	11.65	.0754	0.000	298	8	100.0
11/21/09	9:00p	---	---	---	---	---	0.124	0.000	64.0	63	51.1	63.3	11.65	.0754	0.000	299	8	100.0
11/21/09	9:15p	---	---	---	---	---	0.128	0.000	63.8	63	51.0	63.1	11.65	.0754	0.000	299	8	100.0
11/21/09	9:30p	---	---	---	---	---	0.131	0.000	63.8	63	51.0	63.1	11.65	.0754	0.000	298	8	100.0
11/21/09	9:45p	---	---	---	---	---	0.134	0.000	63.6	63	50.8	62.9	11.65	.0754	0.000	299	8	100.0
11/21/09	10:00p	---	---	---	---	---	0.133	0.000	63.5	63	50.7	62.8	11.65	.0754	0.000	300	8	100.0
11/21/09	10:15p	---	---	---	---	---	0.133	0.000	63.5	63	50.7	62.8	11.65	.0754	0.000	299	8	100.0
11/21/09	10:30p	---	---	---	---	---	0.133	0.000	63.3	63	50.5	62.5	11.65	.0755	0.000	300	8	100.0
11/21/09	10:45p	---	---	---	---	---	0.135	0.000	63.2	63	50.4	62.4	11.65	.0755	0.000	299	8	100.0
11/21/09	11:00p	---	---	---	---	---	0.138	0.000	63.0	63	50.2	62.2	11.65	.0755	0.000	298	8	100.0
11/21/09	11:15p	---	---	---	---	---	0.142	0.000	63.0	63	50.2	62.2	11.65	.0755	0.000	299	8	100.0
11/21/09	11:30p	---	---	---	---	---	0.143	0.000	62.9	63	50.1	62.1	11.65	.0755	0.000	299	8	100.0
11/21/09	11:45p	---	---	---	---	---	0.145	0.000	62.7	63	49.9	61.9	11.65	.0755	0.000	300	8	100.0
11/22/09	12:00a	---	---	---	---	---	0.144	0.000	62.7	63	49.9	61.9	11.65	.0755	0.000	298	8	100.0

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Date	Time	Arc. Int.
11/21/09	12:15a	15
11/21/09	12:30a	15
11/21/09	12:45a	15
11/21/09	1:00a	15
11/21/09	1:15a	15
11/21/09	1:30a	15
11/21/09	1:45a	15
11/21/09	2:00a	15
11/21/09	2:15a	15
11/21/09	2:30a	15
11/21/09	2:45a	15
11/21/09	3:00a	15
11/21/09	3:15a	15
11/21/09	3:30a	15
11/21/09	3:45a	15
11/21/09	4:00a	15
11/21/09	4:15a	15
11/21/09	4:30a	15
11/21/09	4:45a	15
11/21/09	5:00a	15
11/21/09	5:15a	15
11/21/09	5:30a	15
11/21/09	5:45a	15
11/21/09	6:00a	15
11/21/09	6:15a	15
11/21/09	6:30a	15
11/21/09	6:45a	15
11/21/09	7:00a	15
11/21/09	7:15a	15
11/21/09	7:30a	15
11/21/09	7:45a	15
11/21/09	8:00a	15
11/21/09	8:15a	15
11/21/09	8:30a	15
11/21/09	8:45a	15
11/21/09	9:00a	15
11/21/09	9:15a	15
11/21/09	9:30a	15
11/21/09	9:45a	15
11/21/09	10:00a	15
11/21/09	10:15a	15
11/21/09	10:30a	15
11/21/09	10:45a	15
11/21/09	11:00a	15
11/21/09	11:15a	15
11/21/09	11:30a	15
11/21/09	11:45a	15
11/21/09	12:00p	15
11/21/09	12:15p	15
11/21/09	12:30p	15
11/21/09	12:45p	15
11/21/09	1:00p	15

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Date	Time	Arc. Int.
11/21/09	1:15p	15
11/21/09	1:30p	15
11/21/09	1:45p	15
11/21/09	2:00p	15
11/21/09	2:15p	15
11/21/09	2:30p	15
11/21/09	2:45p	15
11/21/09	3:00p	15
11/21/09	3:15p	15
11/21/09	3:30p	15
11/21/09	3:45p	15
11/21/09	4:00p	15
11/21/09	4:15p	15
11/21/09	4:30p	15
11/21/09	4:45p	15
11/21/09	5:00p	15
11/21/09	5:15p	15
11/21/09	5:30p	15
11/21/09	5:45p	15
11/21/09	6:00p	15
11/21/09	6:15p	15
11/21/09	6:30p	15
11/21/09	6:45p	15
11/21/09	7:00p	15
11/21/09	7:15p	15
11/21/09	7:30p	15
11/21/09	7:45p	15
11/21/09	8:00p	15
11/21/09	8:15p	15
11/21/09	8:30p	15
11/21/09	8:45p	15
11/21/09	9:00p	15
11/21/09	9:15p	15
11/21/09	9:30p	15
11/21/09	9:45p	15
11/21/09	10:00p	15
11/21/09	10:15p	15
11/21/09	10:30p	15
11/21/09	10:45p	15
11/21/09	11:00p	15
11/21/09	11:15p	15
11/21/09	11:30p	15
11/21/09	11:45p	15
11/22/09	12:00a	15

MCAS Cherry Point OU1 11/22/09

Date	Time	Temp Out	Hi Temp	Low Temp	Out Hum	Dew Pt.	Wind Speed	Wind Dir	Wind Run	Hi Speed	Hi Dir	Wind Chill	Heat Index	THW Index	THSW Index	Bar	Rain	Rain Rate	Solar Rad.
11/22/09	12:15a	51.3	51.4	51.2	75	43.6	3.0	ENE	0.75	8.0	NE	51.1	51.0	50.8	---	30.121	0.00	0.00	---
11/22/09	12:30a	51.2	51.3	51.2	76	43.9	3.0	ENE	0.75	7.0	ENE	51.0	50.9	50.7	---	30.123	0.00	0.00	---
11/22/09	12:45a	50.9	51.2	50.9	76	43.6	3.0	ENE	0.75	6.0	NE	50.7	50.7	50.5	---	30.120	0.00	0.00	---
11/22/09	1:00a	50.1	50.9	50.1	78	43.5	1.0	NE	0.25	6.0	ENE	50.1	50.0	50.0	---	30.121	0.00	0.00	---
11/22/09	1:15a	49.7	50.1	49.7	79	43.5	1.0	NE	0.25	4.0	NE	49.7	49.6	49.6	---	30.123	0.00	0.00	---
11/22/09	1:30a	49.4	49.7	49.4	80	43.5	2.0	ENE	0.50	4.0	NE	49.4	49.3	49.3	---	30.120	0.00	0.00	---
11/22/09	1:45a	49.2	49.5	49.2	81	43.6	1.0	NE	0.25	5.0	NE	49.2	49.2	49.2	---	30.118	0.00	0.00	---
11/22/09	2:00a	49.0	49.2	49.0	82	43.7	1.0	NE	0.25	4.0	ENE	49.0	49.0	49.0	---	30.120	0.00	0.00	---
11/22/09	2:15a	49.0	49.0	48.9	83	44.1	2.0	ENE	0.50	6.0	NE	49.0	49.0	49.0	---	30.115	0.00	0.00	---
11/22/09	2:30a	48.8	49.0	48.8	83	43.9	1.0	ENE	0.25	4.0	NE	48.8	48.8	48.8	---	30.125	0.00	0.00	---
11/22/09	2:45a	48.8	48.9	48.8	84	44.2	1.0	NE	0.25	4.0	NE	48.8	48.8	48.8	---	30.125	0.00	0.00	---
11/22/09	3:00a	48.5	48.8	48.5	83	43.6	1.0	NE	0.25	4.0	NNE	48.5	48.5	48.5	---	30.134	0.00	0.00	---
11/22/09	3:15a	48.6	48.6	48.4	84	44.0	3.0	ENE	0.75	7.0	NE	48.1	48.6	48.1	---	30.126	0.00	0.00	---
11/22/09	3:30a	48.8	48.8	48.6	83	43.9	4.0	ENE	1.00	8.0	ENE	47.5	48.8	47.5	---	30.124	0.00	0.00	---
11/22/09	3:45a	48.8	48.8	48.7	83	43.9	4.0	ENE	1.00	10.0	ENE	47.5	48.8	47.5	---	30.120	0.00	0.00	---
11/22/09	4:00a	48.9	48.9	48.8	84	44.3	4.0	ENE	1.00	11.0	ENE	47.6	49.0	47.7	---	30.124	0.00	0.00	---
11/22/09	4:15a	48.8	49.0	48.8	83	43.9	4.0	ENE	1.00	10.0	ENE	47.5	48.8	47.5	---	30.124	0.00	0.00	---
11/22/09	4:30a	48.6	48.8	48.6	83	43.7	4.0	ENE	1.00	10.0	ENE	47.3	48.6	47.3	---	30.123	0.00	0.00	---
11/22/09	4:45a	48.5	48.6	48.5	83	43.6	4.0	ENE	1.00	10.0	ENE	47.2	48.5	47.2	---	30.130	0.00	0.00	---
11/22/09	5:00a	48.4	48.5	48.4	83	43.5	4.0	ENE	1.00	8.0	NE	47.0	48.4	47.0	---	30.130	0.00	0.00	---
11/22/09	5:15a	48.3	48.4	48.3	83	43.4	4.0	ENE	1.00	8.0	ENE	46.9	48.3	46.9	---	30.133	0.00	0.00	---
11/22/09	5:30a	48.2	48.3	48.1	84	43.6	4.0	ENE	1.00	11.0	ENE	46.8	48.2	46.8	---	30.130	0.00	0.00	---
11/22/09	5:45a	48.1	48.2	48.1	84	43.5	3.0	ENE	0.75	7.0	ENE	47.5	48.1	47.5	---	30.138	0.00	0.00	---
11/22/09	6:00a	48.0	48.1	48.0	84	43.4	3.0	ENE	0.75	8.0	NE	47.4	48.0	47.4	---	30.141	0.00	0.00	---
11/22/09	6:15a	48.0	48.1	48.0	84	43.4	4.0	ENE	1.00	10.0	NE	46.6	48.0	46.6	---	30.139	0.00	0.00	---
11/22/09	6:30a	48.0	48.0	47.9	84	43.4	4.0	ENE	1.00	8.0	ENE	46.6	48.0	46.6	---	30.142	0.00	0.00	---
11/22/09	6:45a	47.9	48.0	47.9	84	43.3	2.0	ENE	0.50	6.0	ENE	47.9	47.9	47.9	---	30.149	0.00	0.00	---
11/22/09	7:00a	48.0	48.0	47.9	84	43.4	4.0	ENE	1.00	10.0	ENE	46.6	48.0	46.6	---	30.156	0.00	0.00	---
11/22/09	7:15a	47.8	48.0	47.8	85	43.5	2.0	ENE	0.50	6.0	ENE	47.8	47.8	47.8	---	30.158	0.00	0.00	---
11/22/09	7:30a	48.1	48.1	47.8	85	43.8	4.0	ENE	1.00	10.0	NE	46.7	48.1	46.7	---	30.161	0.00	0.00	---
11/22/09	7:45a	48.4	48.4	48.1	85	44.1	2.0	NE	0.50	7.0	NE	48.4	48.4	48.4	---	30.174	0.00	0.00	---
11/22/09	8:00a	48.9	48.9	48.4	85	44.6	1.0	ENE	0.25	6.0	ENE	48.9	49.0	49.0	---	30.182	0.00	0.00	---
11/22/09	8:15a	50.1	50.1	49.0	84	45.5	3.0	ENE	0.75	8.0	NE	49.8	50.2	49.9	---	30.178	0.00	0.00	---
11/22/09	8:30a	50.8	50.8	50.1	81	45.2	4.0	ENE	1.00	10.0	ENE	49.8	50.7	49.7	---	30.186	0.00	0.00	---
11/22/09	8:45a	51.2	51.2	50.8	82	45.9	2.0	ENE	0.50	8.0	NE	51.2	51.1	51.1	---	30.187	0.00	0.00	---
11/22/09	9:00a	52.1	52.1	51.2	81	46.4	3.0	ENE	0.75	7.0	ENE	52.0	51.9	51.8	---	30.182	0.00	0.00	---
11/22/09	9:15a	53.1	53.1	52.1	79	46.8	4.0	ENE	1.00	13.0	ENE	52.4	52.8	52.1	---	30.182	0.00	0.00	---
11/22/09	9:30a	54.1	54.1	53.1	76	46.7	6.0	ENE	1.50	13.0	NE	52.5	53.6	52.0	---	30.179	0.00	0.00	---
11/22/09	9:45a	54.5	54.5	54.1	74	46.4	7.0	ENE	1.75	13.0	E	52.6	53.9	52.0	---	30.181	0.00	0.00	---
11/22/09	10:00a	55.2	55.2	54.5	74	47.1	6.0	ENE	1.50	14.0	ENE	53.8	54.6	53.2	---	30.176	0.00	0.00	---

MCAS Cherry Point OU1 11/22/09

Date	Time	Solar Energy	Hi Solar Rad.	UV Index	UV Dose	Hi UV	Heat D-D	Cool D-D	In Temp	In Hum	In Dew	In Heat	In EMC	In Air Density	ET	Wind Samp	Wind Tx	ISS Recept
11/22/09	12:15a	---	---	---	---	---	0.143	0.000	62.5	63	49.7	61.7	11.65	.0756	0.000	298	8	100.0
11/22/09	12:30a	---	---	---	---	---	0.144	0.000	62.4	63	49.6	61.5	11.65	.0756	0.000	300	8	100.0
11/22/09	12:45a	---	---	---	---	---	0.147	0.000	62.2	63	49.4	61.3	11.65	.0756	0.000	298	8	100.0
11/22/09	1:00a	---	---	---	---	---	0.155	0.000	62.2	63	49.4	61.3	11.65	.0757	0.000	300	8	100.0
11/22/09	1:15a	---	---	---	---	---	0.159	0.000	62.1	63	49.4	61.2	11.65	.0757	0.000	300	8	100.0
11/22/09	1:30a	---	---	---	---	---	0.162	0.000	62.1	63	49.4	61.2	11.65	.0757	0.000	300	8	100.0
11/22/09	1:45a	---	---	---	---	---	0.165	0.000	61.9	63	49.2	61.0	11.65	.0757	0.000	299	8	100.0
11/22/09	2:00a	---	---	---	---	---	0.167	0.000	61.8	63	49.1	60.9	11.65	.0757	0.000	300	8	100.0
11/22/09	2:15a	---	---	---	---	---	0.167	0.000	61.8	63	49.1	60.9	11.65	.0757	0.000	299	8	100.0
11/22/09	2:30a	---	---	---	---	---	0.169	0.000	61.6	63	48.9	60.7	11.65	.0758	0.000	300	8	100.0
11/22/09	2:45a	---	---	---	---	---	0.169	0.000	61.4	63	48.7	60.5	11.65	.0758	0.000	299	8	100.0
11/22/09	3:00a	---	---	---	---	---	0.172	0.000	61.4	63	48.7	60.5	11.65	.0758	0.000	300	8	100.0
11/22/09	3:15a	---	---	---	---	---	0.171	0.000	61.3	63	48.6	60.4	11.65	.0758	0.000	300	8	100.0
11/22/09	3:30a	---	---	---	---	---	0.169	0.000	61.1	63	48.4	60.1	11.65	.0759	0.000	298	8	100.0
11/22/09	3:45a	---	---	---	---	---	0.169	0.000	61.0	63	48.3	60.0	11.65	.0759	0.000	297	8	100.0
11/22/09	4:00a	---	---	---	---	---	0.168	0.000	61.0	63	48.3	60.0	11.65	.0759	0.000	300	8	100.0
11/22/09	4:15a	---	---	---	---	---	0.169	0.000	60.8	63	48.1	59.8	11.65	.0759	0.000	299	8	100.0
11/22/09	4:30a	---	---	---	---	---	0.171	0.000	60.7	63	48.0	59.7	11.65	.0759	0.000	299	8	100.0
11/22/09	4:45a	---	---	---	---	---	0.172	0.000	60.7	62	47.6	59.6	11.45	.0760	0.000	299	8	100.0
11/22/09	5:00a	---	---	---	---	---	0.173	0.000	60.5	63	47.8	59.5	11.65	.0760	0.000	299	8	100.0
11/22/09	5:15a	---	---	---	---	---	0.174	0.000	60.3	62	47.2	59.2	11.45	.0760	0.000	299	8	100.0
11/22/09	5:30a	---	---	---	---	---	0.175	0.000	60.3	62	47.2	59.2	11.45	.0760	0.000	299	8	100.0
11/22/09	5:45a	---	---	---	---	---	0.176	0.000	60.2	62	47.1	59.1	11.45	.0761	0.000	299	8	100.0
11/22/09	6:00a	---	---	---	---	---	0.177	0.000	60.0	62	46.9	58.9	11.45	.0761	0.000	297	8	100.0
11/22/09	6:15a	---	---	---	---	---	0.177	0.000	60.0	62	46.9	58.9	11.45	.0761	0.000	299	8	100.0
11/22/09	6:30a	---	---	---	---	---	0.177	0.000	59.9	62	46.8	58.8	11.45	.0761	0.000	298	8	100.0
11/22/09	6:45a	---	---	---	---	---	0.178	0.000	59.7	62	46.7	58.5	11.46	.0762	0.000	299	8	100.0
11/22/09	7:00a	---	---	---	---	---	0.177	0.000	59.7	62	46.7	58.5	11.46	.0762	0.000	299	8	100.0
11/22/09	7:15a	---	---	---	---	---	0.179	0.000	59.6	62	46.6	58.4	11.46	.0762	0.000	298	8	100.0
11/22/09	7:30a	---	---	---	---	---	0.176	0.000	59.6	62	46.6	58.4	11.46	.0762	0.000	299	8	100.0
11/22/09	7:45a	---	---	---	---	---	0.173	0.000	59.4	62	46.4	58.2	11.46	.0763	0.000	298	8	100.0
11/22/09	8:00a	---	---	---	---	---	0.168	0.000	59.4	62	46.4	58.2	11.46	.0763	0.000	299	8	100.0
11/22/09	8:15a	---	---	---	---	---	0.155	0.000	59.3	62	46.3	58.1	11.46	.0763	0.000	298	8	100.0
11/22/09	8:30a	---	---	---	---	---	0.148	0.000	59.3	62	46.3	58.1	11.46	.0763	0.000	299	8	100.0
11/22/09	8:45a	---	---	---	---	---	0.144	0.000	59.3	62	46.3	58.1	11.46	.0763	0.000	297	8	100.0
11/22/09	9:00a	---	---	---	---	---	0.134	0.000	59.3	62	46.3	58.1	11.46	.0763	0.000	298	8	100.0
11/22/09	9:15a	---	---	---	---	---	0.124	0.000	59.1	62	46.1	57.9	11.47	.0764	0.000	299	8	100.0
11/22/09	9:30a	---	---	---	---	---	0.114	0.000	59.1	62	46.1	57.9	11.47	.0764	0.000	300	8	100.0
11/22/09	9:45a	---	---	---	---	---	0.109	0.000	59.1	62	46.1	57.9	11.47	.0764	0.000	299	8	100.0
11/22/09	10:00a	---	---	---	---	---	0.102	0.000	64.8	61	51.0	64.1	11.25	.0754	0.000	298	8	100.0

MCAS Cherry Point OU1 11/22/09

Date	Time	Arc. Int.
11/22/09	12:15a	15
11/22/09	12:30a	15
11/22/09	12:45a	15
11/22/09	1:00a	15
11/22/09	1:15a	15
11/22/09	1:30a	15
11/22/09	1:45a	15
11/22/09	2:00a	15
11/22/09	2:15a	15
11/22/09	2:30a	15
11/22/09	2:45a	15
11/22/09	3:00a	15
11/22/09	3:15a	15
11/22/09	3:30a	15
11/22/09	3:45a	15
11/22/09	4:00a	15
11/22/09	4:15a	15
11/22/09	4:30a	15
11/22/09	4:45a	15
11/22/09	5:00a	15
11/22/09	5:15a	15
11/22/09	5:30a	15
11/22/09	5:45a	15
11/22/09	6:00a	15
11/22/09	6:15a	15
11/22/09	6:30a	15
11/22/09	6:45a	15
11/22/09	7:00a	15
11/22/09	7:15a	15
11/22/09	7:30a	15
11/22/09	7:45a	15
11/22/09	8:00a	15
11/22/09	8:15a	15
11/22/09	8:30a	15
11/22/09	8:45a	15
11/22/09	9:00a	15
11/22/09	9:15a	15
11/22/09	9:30a	15
11/22/09	9:45a	15
11/22/09	10:00a	15