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NAS BRUNSWICK
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FINAL RESOURCE CONSERVATION AND RECOVERY ACT PARTIAL CLOSURE REPORT
FOR FORMER RESIDENTIAL AREA LAND AREA 16 WITH TRANSMITTAL LETTER NAS
BRUNSWICK ME
2/11/2011
NAS BRUNSWICK

**ENVIRONMENTAL DEPARTMENT
NAVAL AIR STATION
437 HUEY DRIVE
BRUNSWICK, ME 04011**

February 11, 2011

Mr. Edward Vigneault
Maine Department of Environmental Protection
Division of Oil and Hazardous Waste Facilities Registration
17 State House Station
Augusta, ME 04333-0017

Subj: Final RCRA Partial Closure Report for Former Residential Area (Land Area 16)

Dear Mr. Vigneault:

A copy of the Final RCRA Partial Closure Report for Former Residential Area (Land Area 16) at Naval Air Station Brunswick is provided as Enclosure (1).

If you have any questions, please contact Mr. Mike Fagan at 921-1717 or via e-mail at michael.fagan1@navy.mil.

Sincerely,



For LISA M. JOY
Environmental Director

Enclosure: (1) Final RCRA Partial Closure Report for Former Residential Area (Land Area 16)

Copy to:
NAVFAC Mid-Atlantic (B. Abraham)
NAS Brunswick (M. Fagan/D. Smith)
EPA Region I (M. Daly)
MRRR (V. Boundy)
Curtis Memorial Library (L. Oliver)
Lepage Environmental (C. Lepage)
BRAC PMO NE (P. Burgio)

RCRA PARTIAL CLOSURE REPORT
for
FORMER RESIDENTIAL AREA
NAVAL AIR STATION BRUNSWICK, MAINE
USEPA IDENTIFICATION NUMBER ME8170022018
JANUARY 2011

1. INTRODUCTION

The purpose of this report is to present the findings and conclusions of the investigation conducted to determine if the Maine Department of Environmental Protection (MEDEP) RCRA or hazardous waste closure requirements have been completed for the Former Residential Area at Naval Air Station Brunswick (NAS Brunswick).

2. PROPERTY DESCRIPTION

The Former Residential Area is located in the northwest section of NAS Brunswick, along the northwestern boundary of the base (Figure 1). The area encompasses approximately 129 acres and is bordered to the north by the Bowdoin College Lot 2 Area and Route 24 (Bath Road) beyond; to the east by the Runways Area; to the south by the West Base Area, previously identified as the Former Munitions Bunker Area; and to the west by the base boundary fence line, and beyond, by a residential area within the Town of Brunswick (Figure 2). Perimeter Road is a two-lane, asphalt-paved roadway that runs approximately north-south through the western portion of the Former Residential Area.

The Former Residential Area consists mainly of forested, open space with some grassy areas, and with a paved area that is part of a closed runway. The topography within the area is generally flat. The total difference in elevation across the area is approximately 8 feet, with a maximum elevation of approximately 78 feet mean sea level (msl) in the central portion of the area. From the area of Perimeter Road, the land surface slopes generally to the south. There are no surface water features such as streams or ponds within the former Residential Area. An area of potential interest (AOPI), referred to as the Mercury Disposal Area (MDA), lies within the westernmost portion of the Former Residential Area, to the west of Perimeter Road.

Photographs of Former Residential Area are provided in the attachment.

It is noted that the three buildings or facilities listed below (also indicated in Figures 2 and 3) are located within the physical boundaries of the Former Residential Area, but have been addressed under separate RCRA Partial Closure Reports or have been transferred to another Federal Facility.

- Building 146, Water Main Entrance Shelter (Tetra Tech, 2010a)
- Building 296, Old TACAN Transmitter Building (demolished in 2005) (Tetra Tech, 2010b)
- Building 231, Air Traffic Control Tower (this building was transferred to the Federal Aviation Administration (FAA) in 2010, along with an adjacent area of land that includes a portion of the former runway (Tetra Tech, 2010c)

3. PROPERTY HISTORY AND RECORDS RESEARCH

The Tetra Tech NUS, Inc. (Tetra Tech) project team interviewed NAS Brunswick Environmental Department personnel and performed records research at both NAS Brunswick and the MEDEP office in Augusta, Maine to collect available information concerning the Former Residential Area, including past use and operations at that location.

Records reviewed include historical aerial photographs, the NAS Brunswick Other Environmental

Liabilities (OEL) Database, area-specific reports, facility plans and drawings, and hazardous waste records. Aerial photographs dated 1953, 1958, 1978, 1981, 1984, 1989, 1993 and 1997 (Sewall, 1953, 1958, 1978, 1981, 1984, 1989, 1993 and 1997) were reviewed. Public Works Department (PWD) site base maps dated 1943, 1946, 1952, 1956, 1957, 1975, 1989, and 2006 (PWD, 1943, 1946, 1952, 1956, 1957, 1975, 1989, and 2006) and site building lists for 1950, 1965, 1976, 2003, and 2008 (PWD, 1950, 1965, 1976, 2003, and 2008) were also reviewed.

This area is a combination of open space and former residential properties which were obtained for relocation of the NAS Brunswick runways in the 1940s.

The 1943 map of the air station does not include the northwest area of the base where the Former Residential Area is located. The earliest map that includes this area is the 1946 map, which shows a shed and a number of scattered buildings identified as abandoned houses, present in the northern portion of this area. These former residential buildings (113, 114, 116, 117, and 503-505) are listed as removed and do not appear on the 1956 or future maps. A gate and gatehouse, a public storehouse (former Building 108), and the western end of a former runway, oriented east-west, were also located in the southern portion of the Former Residential Area. This runway, shown as Runway 9, was closed sometime around 1957.

Beginning with the 1957 site plan and also appearing in the 1958 aerial photograph, Building 296 is shown as "Vortex Tower 296". Building 146 first appears on the 1989 map and Building 231 is first visible on the 2006 map. No other buildings are visible in the reviewed maps that include the Former Residential Area. Aerial photographs of the area show what are presumed to be the stated buildings, but which could not be clearly identified. The reviewed building lists confirmed that these buildings were constructed around the time they were shown on the historical maps.

The Former Residential Area includes four areas (along the western boundary and to the north and south) that were designated as seasonal, archery hunting areas for base personnel (from September 6th through December 13th) (Navy, 2008c).

The northernmost portion of the Former Residential Area, the area located just south of Bowdoin College Lot 2 Area and east of the base fence line (Figure 3), was classified as a Category 1 Community Environmental Response Facilitation Act (CERFA) uncontaminated property, which is a real property on which no hazardous substances and no petroleum products or their derivatives are known to have been released or disposed (Tetra Tech, 2006 [CERFA report]). This northern section, (designated as Area A-5 in the CERFA report), was a residential area in the 1940s, and has had no evident use or development since the government acquired the property. The remainder of the Former Residential Area, to the south and west, was classified as a Category 3 CERFA property, which is an area of potential release and/or disposal. This classification was made due to the presence of trash/debris piles (consistent with old homestead debris), disturbed ground, and the potential for migration of contamination from off-base sources (Tetra Tech, 2006).

The NAS Brunswick records indicate that no oil/water separators (OWS), aboveground storage tanks (ASTs), or underground storage tanks (USTs) are associated with the Former Residential Area (PWD, 2008b; Environmental Department, 2009).

The Former Residential Area is not served by the base-wide sanitary sewer system and no individual septic systems are located there (Navy, 2006).

The NAS Brunswick Transformer Database lists no electrical transformers for the Former Residential Area (PWD, 2009) (except for two pad-mounted transformers associated with Building 296 and discussed in the RCRA partial Closure Report for Building 296 (Tetra Tech, November 2010).

A review of the MEDEP spills database and the NAS Brunswick spill logbook identified no

reported spills within the Former Residential Area (MEDEP, 2010; Environmental Department, 2005).

From the Soil Background Study for NAS Brunswick, soil data are available for five soil boring sample locations within the Former Residential Area (Tetra Tech, 2010d). Preliminary groundwater data from four monitoring well locations within the Former Residential Area has been collected as part of an ongoing NAS Brunswick background investigation. Additional preliminary data is available from an ongoing screening investigation of AOPIs that included the MDA, located within the Former Residential Area (Figure 3). This data includes six soil samples and four groundwater samples (including one duplicate sample) collected from three boring locations that were completed as temporary monitoring wells, as described in the Work Plan for the AOPI Screening Investigation (Tetra Tech, 2010e). The soil and groundwater sampling locations within the Former Residential Area are shown on Figure 3 and are summarized below.

Location	Sample ID ⁽¹⁾	Notes
North-central section of the Former Residential Area, and hydraulically downgradient of the MDA wells, but upgradient of background wells located north of Route 24 (Bath Road)	BG-MW-01, BG-MW-02, BG-MW-03, and BG-MW-04	background wells within the Former Residential Area
	BG-SB-01, BG-SB-02, BG-SB-03, and BG-SB-04	soil borings within the Former Residential Area
Located in the Mercury Disposal Area, approximately 1,500 feet southwest of the above-listed background wells	MDA-GW01, MDA-GW02, and MDA-GW03	monitoring wells in the wooded area near the western base boundary
	MDA-SB01, MDA-SB02, and MDA-SB03	soil borings in the wooded area near the western base boundary (collected during drilling prior to well installation)

(1) Well ID prefix "NASB-" not shown.

As part of the ongoing background investigation, preliminary groundwater data collected in the fall of 2009 and the spring of 2010 indicate that groundwater is encountered between approximately 10 and 12 feet below ground surface (bgs) at the wells located within the Former Residential Area. Groundwater level measurements show that the groundwater flow direction from this portion of NAS Brunswick is to the north-northeast, across the Bowdoin College Lot 2 Area, toward and underneath Route 24 (Bath Road). The AOPI work plan suggests a groundwater divide may be present in the area resulting in flow to the south or southeast towards Mere Brook (Tetra Tech, 2010e).

During both the fall and spring groundwater monitoring events at background wells, neither total nor dissolved metals concentrations exceeded the Maine Maximum Exposure Guidelines (MEGs), with the exception of total and dissolved sodium, which was detected above the MEGs in downgradient well NASB-BG-MW-28, located northeast of the Bowdoin College Lot 2 Area.

The soil and groundwater samples that were collected from the MDA sampling locations in October 2010 were analyzed for mercury. Mercury was not detected in any of the groundwater samples, but was detected in one surface soil sample from MDA-SB03 (collected from 0 to 1 foot bgs) and in the duplicate sample, at concentrations of 0.55 and 0.93 micrograms per kilogram (µg/kg), respectively. The detected mercury concentrations do not exceed the most stringent Maine Remedial Action Guidelines (RAGs) for soil (10 µg/kg). Based on information from the background soil study, and preliminary groundwater information from the ongoing background study and from the AOPI investigation at the MDA, discussed above, groundwater underlying the Former Residential Area does not appear to have been impacted by any historic disposal activities at NAS Brunswick.

4. SITE VISIT AND INVESTIGATION

A site visit was conducted by Mr. Brian Geringer, Mr. Brandon Smith, P.E., and Mr. James Forrelli, P.E., of Tetra Tech on November 3, 2010. The purpose of the visit was to verify information gathered during the records search and to collect additional information as necessary to prepare this closure report. Tetra Tech personnel were accompanied by Mr. D. Bruce Smith, the NAS Brunswick Hazardous Waste Manager.

The Former Residential Area was visually inspected for signs of hazardous waste generation or storage. Site visit observations, recorded on the attached Building Inspection Form ⁽¹⁾, are summarized below:

- At the time of the inspection, there was no active use of the Former Residential Area.
- There are no existing improvements/development in the Former Residential Area (no observed development since the government closed the runway and the old TACAN at Building 296).
- No evidence of current or past hazardous waste generation was observed.
- No evidence of hazardous waste residues was observed.
- No signs of a past release (staining, unusual odors, etc.) were observed.
- One suspected hazardous waste disposal area (the Mercury Disposal Area) in the western portion of the Former Residential Area was inspected and three monitoring wells were observed near that location.
- A few isolated areas of discarded household items and some metal were observed in the woods south of the Bowdoin College Lot 2 Area. In these areas, items including corroded metal pots, pans, and metal cans, old glass bottles and jars, and broken porcelain items were observed scattered along the ground surface.
- In the central portion of the area, to the east of Perimeter Road, three background wells were observed.

Based on the records research findings and site visit observations, the historical use of the area has been mostly residential with some light industrial use (associated with the former runway and supporting structures). The nature and frequency of discarded household items appears to be an insignificant remnant of the former residential use of the area, before it was acquired by the federal government to establish NAS Brunswick. Soil and groundwater sample results from other investigations within this area, both completed and ongoing, indicate that past activities have not significantly affected the soil and groundwater quality within this area.

The detection of mercury at a low level in surface soil at one location during the AOPM MDA investigation suggests that low level mercury hazardous waste residue is present at the Former Residential Area. While no information is available to gauge the quantity of hazardous waste that may have been disposed of in this area, the low mercury concentration (below its Maine RAG) in soil at just one sample location and its non-detection in groundwater indicate the likelihood that a minor amount of waste was involved.

Based on the records research findings and site visit observations, it was determined that neither further inspection nor sampling at the Former Residential Area is required to complete the MEDEP hazardous waste closure requirements.

5. HAZARDOUS WASTE GENERATION AND STORAGE

Based on the records research, site visit observations, and NAS Brunswick Environmental Department personnel interviews, no hazardous waste generation or hazardous waste storage was conducted at the Former Residential Area.

Mercury-contaminated hazardous waste may have been disposed of in a wooded, suspected

AOPI, located in the western section of the Former Residential Parcel. The preliminary analytical results for soil and groundwater samples collected in this area as part of the ongoing AOPI investigation indicate that groundwater in this area has not been impacted by any historical disposal activities. Preliminary surface soil results showed only a low level detection of mercury at just one soil sample location; the concentration did not exceed the MEDEP RAG. Based on the available data, no mercury waste or residue remains at levels that would be considered harmful to human health or the environment.

6. OTHER ENVIRONMENTAL CONSIDERATIONS

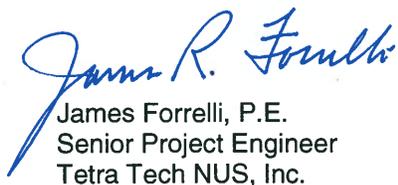
According to NAS Brunswick records, no ASTs, USTs, or oil/water separators have been utilized at the Former Residential Area.

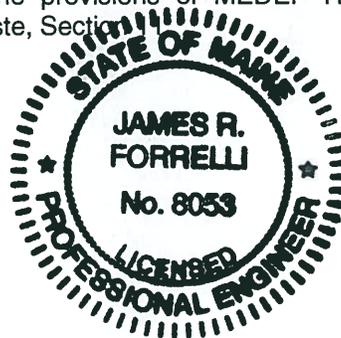
7. LIMITATIONS

This investigation of the hazardous waste closure requirement applies to the Former Residential Area (as shown on Figures 2 and 3) only. The Mercury Disposal Area in the western section of the Former Residential Area is being addressed under the ongoing AOPI Investigation, the preliminary results of which are presented and discussed in a separate technical memorandum.

8. CERTIFICATION

Based on the findings of this investigation, there have been no activities resulting in the generation, accumulation, or storage of hazardous waste at the Former Residential Area, NAS Brunswick, Maine, with the exception of possible mercury waste disposal that may have occurred at the suspect MDA, which is under investigation. The preliminary results of the investigation indicate that no mercury waste or residue remains in the MDA at levels that would be harmful to human health or the environment. Therefore, the hazardous waste closure of the Former Residential Area was completed in accordance with the provisions of MEDEP Regulations Chapter 851, Standards for Generators of Hazardous Waste, Section 851.01, Subchapter 1, Part 1.


James Forrelli, P.E.
Senior Project Engineer
Tetra Tech NUS, Inc.



⁽¹⁾ The Building Inspection Form provides preliminary information collected during the building inspection, including information from visual observations, Navy personnel interviews, and from documents reviewed during file reviews. It does not reflect any additional information provided at a later date that further clarifies or corrects preliminary information collected during the building inspection and file reviews.

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PWD, 1965. "Index of Structures, Department of the Navy Bureau of Yards & Docks Department" US Naval Air Station Brunswick, Maine. Updated May 13.

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PWD, 1989. "Existing Conditions Map. Public Works Department Drawing No. 2157" NAS Brunswick, Maine. Revised April 2.

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October 9.

Sewall, 1978. NAS Brunswick Aerial Photographs. James W. Sewall Company, Old Town, ME. November 22.

Sewall, 1981. NAS Brunswick Aerial Photographs. James W. Sewall Company, Old Town, ME. October 17.

Sewall, 1984. NAS Brunswick Aerial Photographs. James W. Sewall Company, Old Town, ME. April 23.

Sewall, 1989. NAS Brunswick Aerial Photographs. James W. Sewall Company, Old Town, ME. April 2.

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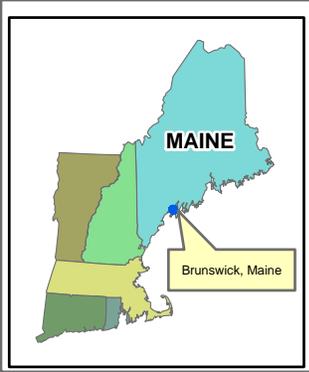
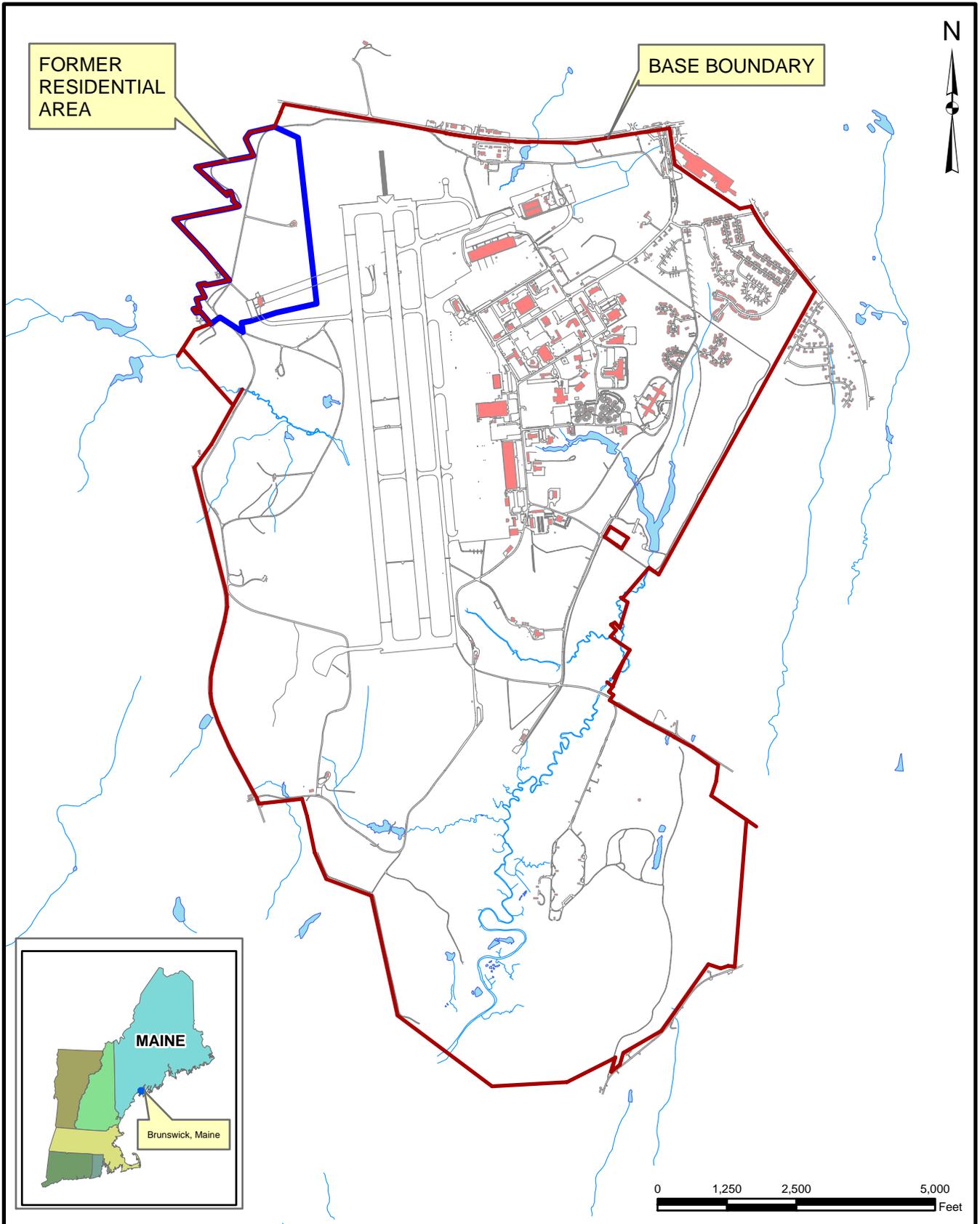
Tetra Tech, 2010a. Final RCRA Partial Closure Report for Building 146 - Water Main Entrance, Building 147 – Water Meter Pit Shelter, Naval Air Station Brunswick, Maine. Tetra Tech NUS, Inc, King of Prussia, Pennsylvania. September.

Tetra Tech, 2010b. Final RCRA Partial Closure Report for Building 296 – Old TACAN Transmitter Building, Naval Air Station Brunswick, Maine. Tetra Tech NUS, Inc, King of Prussia, Pennsylvania. November.

Tetra Tech, 2010c. Site Visit and Records Search Report for Building 231 – Air Traffic Control Tower, Naval Air Station Brunswick, Maine. Tetra Tech NUS, Inc, King of Prussia, Pennsylvania. February.

Tetra Tech, 2010d. Interim Report, Soil Background Study for Naval Air Station Brunswick, Naval Air Station, Brunswick, Maine. April.

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Tetra Tech NUS, Inc.

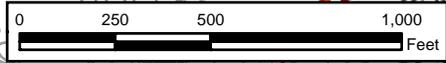
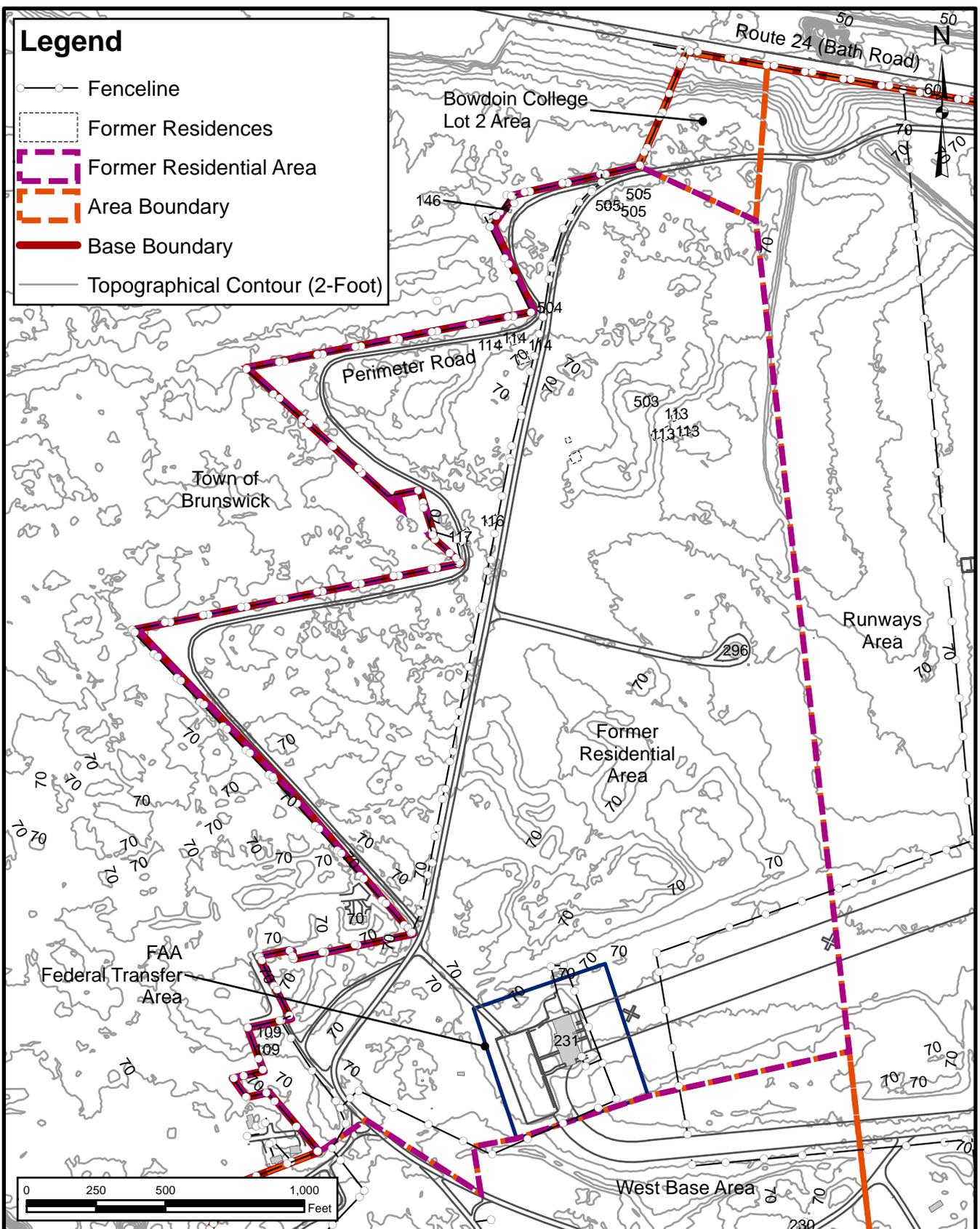
SITE LOCATION MAP
 FORMER RESIDENTIAL AREA
 RCRA PARTIAL CLOSURE REPORT
 NAVAL AIR STATION BRUNSWICK, MAINE

SCALE AS NOTED	
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REV 0	DATE 01/28/11
FIGURE NUMBER 1	

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Legend

- Fenceline
- Former Residences
- Former Residential Area
- Area Boundary
- Base Boundary
- Topographical Contour (2-Foot)



TETRA TECH

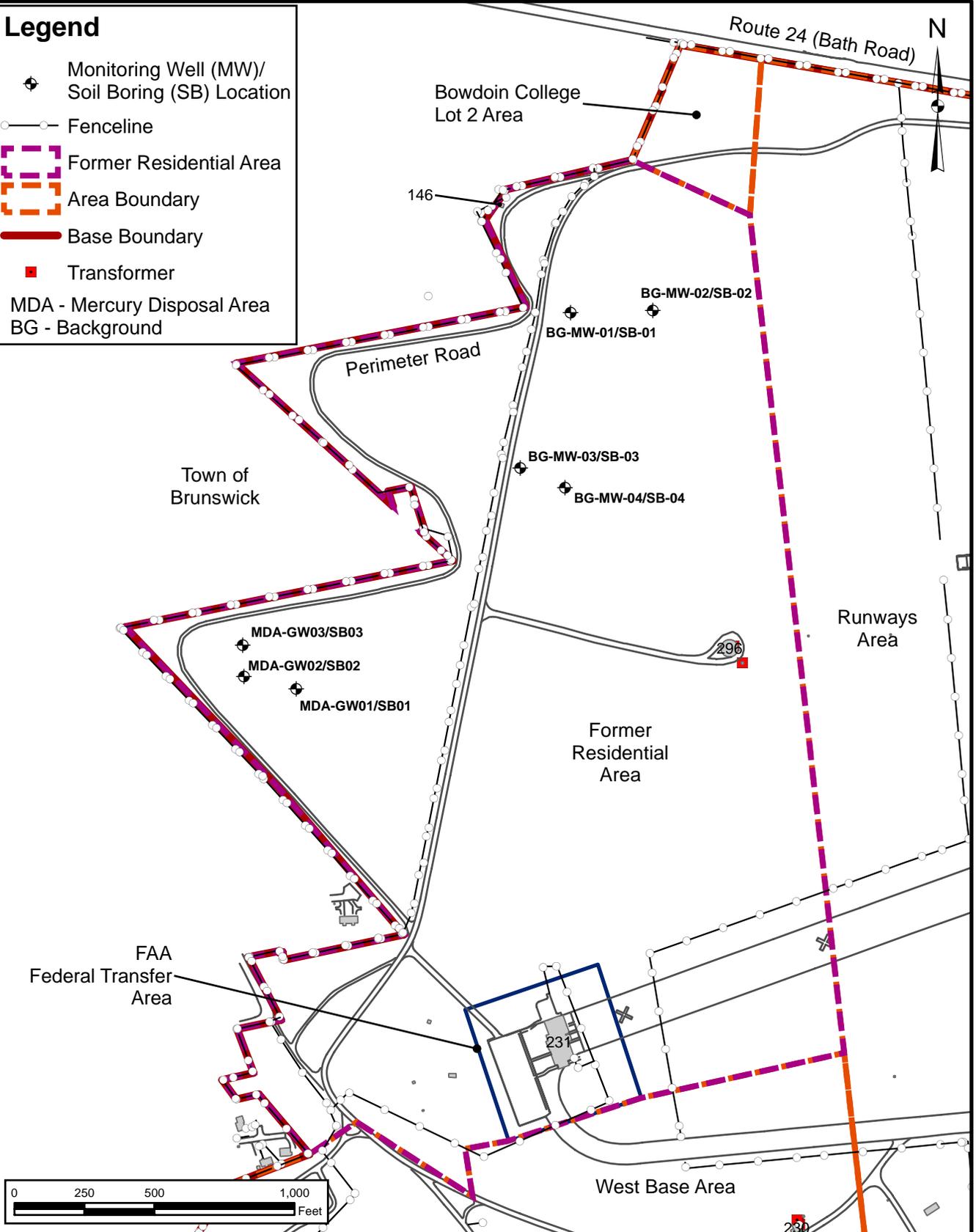
SITE PLAN
FORMER RESIDENTIAL AREA
RCRA PARTIAL CLOSURE REPORT
NAVAL AIR STATION BRUNSWICK, MAINE

SCALE AS NOTED	
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2	

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Legend

-  Monitoring Well (MW)/ Soil Boring (SB) Location
-  Fenceline
-  Former Residential Area
-  Area Boundary
-  Base Boundary
-  Transformer
- MDA - Mercury Disposal Area
- BG - Background



SAMPLING LOCATIONS - OTHER INVESTIGATIONS
FORMER RESIDENTIAL AREA
RCRA PARTIAL CLOSURE REPORT
NAVAL AIR STATION BRUNSWICK, MAINE

SCALE AS NOTED	
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FIGURE NUMBER	
3	

Former Residential Area

**HWSA INSPECTION REPORT
HAZARDOUS WASTE STORAGE AREAS CLOSURE
NAS BRUNSWICK
BRUNSWICK, MAINE
CTO WE22**

Inspection Date: 11/3/10

Personnel: Brian Geringer / James Forrelli, P.E. / Brandon Smith, P.E.

Weather: Partly Cloudy

GENERAL BUILDING INFORMATION / USES

Building Name: Former Residential Area

Function: Forested Open Space

Size: or 129.4 acres

Year of Construction: NA

The Former Residential Area is located in the northwest section of NAS Brunswick and is bounded to the north by the Bowdoin College Lot 2 Area; to the east by the Runways Area; to the south by the West Base Area; and to the west by the Base boundary fence line and beyond, by a residential area in the Town of Brunswick. Perimeter Road passes through the Former Residential Area, from north to south.

The Former Residential Area is forested open space with no development.

HWSA INSPECTION / CONDITION

At the time of inspection, the Former Residential Area was vacant and the grounds appeared to be in reasonably good condition. Household waste (artifacts) and some metal debris were observed in the woods, south of the Bowdoin College Lot 2 Area. A suspected former mercury disposal area that was located in the northwestern portion of the area was inspected. Three monitoring wells were observed in the vicinity of the former disposal area, adjacent to the residential area, and other background wells were located in the central portion of the area, east of Perimeter Road. No evidence of current or other past hazardous waste disposal, or hazardous waste generation was observed. No evidence of hazardous waste residues was observed. No signs of a past release (staining, unusual odors, etc.) were observed. No hazardous waste storage areas were evident.

POTENTIAL PCB-CONTAINING TRANSFORMERS

One pad-mounted transformer and one switch transformer, associated with Building 296, was observed within the area, but they do not appear to be PCB-containing transformers.

APPLICABLE REPORTS / DOCUMENTS

Available historical aerial photos and base maps were reviewed for past uses:

1943 map – None, area of map does not include Parcel 16.

1946 map – Scattered “abandoned” residential houses are present (nos. 113, 114, 116, 117 and 503 - 505) and a shed are shown.

1950 building list – None.

1952 map – Same as 1946 map.

1953 aerial – Scattered small buildings???

1956 map – None.

1957 map – Building 296 (Vortex Tower) location first shown

Former Residential Area

APPLICABLE REPORTS / DOCUMENTS cont'd

1958 aerial – Building 296 is the only visible structure in this location.
1965 building list – Building 296 is listed as “Transmitter Building (VOR)”
1975 map – Same as 1956 map.
1976 building list – Same as 1965 building list.
1978 map – Same as 1956 map.
1978 aerial – Same as 1953 aerial.
1979 map – Same as 1956 map.
1981 aerial – Same as 1953 aerial.
1983 map – Same as 1956 map.
1984 aerial – Same as 1953 aerial.
1989 map – Same as 1956 map.
1993 aerial – Same as 1953 aerial.
1997 aerial – Same as 1953 aerial.
2003 building list – Lists Building 146 (Waterman Entrance Shelter) as having been constructed in 1987
2006 map – Same as 1956 map.
2008 building list – Same as 2003 building list.
Current Google aerial – Current site configuration.

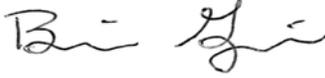
According to NASB records, no above ground storage tanks (ASTs), underground storage tanks (USTs), or oil-water separators (OWS) were registered to the Former Residential area, except the UST/AST associated with Building 296.

HAZARDOUS WASTE STORAGE RECORDS

No hazardous waste was historically stored at the Former Residential Area according to NAS Brunswick Hazardous Waste Manager, D. Bruce Smith.

MISCELLANEOUS NOTES

The Tetra Tech personnel were accompanied on the inspection by D. Bruce Smith Hazardous Waste Manager.

INSPECTOR SIGNATURE:  _____

PHOTOGRAPHS



No. 1 Former Residential Area, NAS Brunswick November 3, 2010
View north from Building 231 - Air Traffic Control Tower; Building 296 visible in right background



No. 2 Former Residential Area, NAS Brunswick November 3, 2010
View north along inner Perimeter Road



No. 3 Former Residential Area, NAS Brunswick November 3, 2010
View east from inner Perimeter Road; Hangar 6 in background



No. 4 Former Residential Area, NAS Brunswick November 3, 2010
AOPI mercury disposal area monitoring well location MW01



No. 5 Former Residential Area, NAS Brunswick November 3, 2010
AOPI mercury disposal area monitoring well location MW02



No. 6 Former Residential Area, NAS Brunswick November 3, 2010
AOPI mercury disposal area monitoring well location MW03