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NAS BRUNSWICK  
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REVISED FINAL RESOURCE CONSERVATION AND RECOVERY ACT PARTIAL CLOSURE  
REPORT FOR BUILDING 594 WITH TRANSMITTAL LETTER NAS BRUNSWICK ME  
8/24/2010  
NAS BRUNSWICK

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

August 24, 2010

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: Revised Final RCRA Partial Closure Report for Building 594

Dear Mr. Vigneault:

A copy of the Revised Final RCRA Partial Closure Report for Building 594 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](mailto:michael.fagan1@navy.mil).

Sincerely,



*for* LISA M. JOY  
Environmental Director

Enclosure: (1) Revised Final RCRA Partial Closure Report for Building 594

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

**RCRA PARTIAL CLOSURE REPORT  
for  
BUILDING 594 – AIR OPERATIONS RADAR TOWER  
NAVAL AIR STATION BRUNSWICK, MAINE  
USEPA IDENTIFICATION NUMBER ME8170022018  
AUGUST 2010**

**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 Building 594, at Naval Air Station Brunswick (NAS Brunswick).

Note: This closure report supersedes the Final RCRA Partial Closure Report for Building 594 - Air Operations Radar Tower, dated March 2010.

**2. PROPERTY DESCRIPTION**

Building 594, known as the Air Operations Radar Tower, is a former US Air Force radar tower building currently being used as a boiler room and for storage space. It is located on Beasley Circle, north of Building 87 (Anti-Submarine Warfare Operations Center [ASWOC] building) inside the Command Patrol and Reconnaissance Wing Five (CPRW-5) compound at NAS Brunswick (Figure 1). It was constructed in 1950 and consists of a 900-square-foot, two-story, steel frame building with steel-panel covering on a concrete slab foundation.

Building 594 contains a boiler room on the first floor containing two chill water compressors, two diesel powered electrical generators and two gas fired boilers for Building 87. An external, enclosed stairway leads to the second floor which contains the chill water heat exchangers. Radar equipment was formerly located on this floor. Building 594 was originally heated by the base's central steam plant, then converted to a fuel-oil fired-heating system, and is currently heated by a natural-gas heating system. A site plan is attached (Figure 2). Photographs of the facility are provided as an attachment.

Building 594 is located within the Building 87 (ASWOC) parcel. The Building 87 Parcel RCRA Partial Closure Report addresses the land surrounding and the groundwater underlying Building 594.

**3. PROPERTY HISTORY AND RECORDS RESEARCH**

The Tetra Tech NUS, Inc. (TtNUS) 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 Building 594, including past use and operations at this location.

According to NAS Brunswick Environmental Department personnel, from its construction in 1950 until the late 1960s, Building 594 was used as an Air Force radar tower. It was then converted to a boiler room for the CPRW-5 compound, and to storage space on the second floor, including storage of gear for the Fleet Aviation Specialized Operational Training Group Atlantic (FASOTRAGRULANT). There is no record of hazardous waste operations at Building 594.

Records reviewed included historical aerial photographs, the NAS Brunswick Other Environmental Liabilities (OEL) Database, area-specific reports, facility plans and drawings, and hazardous operation records. Aerial photographs dated 1958, 1978, 1984, and 1989 (Sewall 1958, 1978, 1984, and 1989) were reviewed along with Public Works Department (PWD) site

base maps dated 1946, 1952, 1956, 1962, 1983, 1989, and 2006 to provide historical information (PWD 1946, 1952, 1956, 1962, 1983, 1989, and 2006).

Beginning with the 1946 map, a complex of buildings surrounded by fencing and identified as "Air Force Operations", occupies the area where Building 594 is located. Based on available information, this former Air Force facility was a Control and Warning Facility (radar station) and was in operation until the mid-1960s, when the facility was transferred to the Navy. The facility included four buildings and three radar towers. A plastic dome covered each tower protecting the radar antenna from the elements. The tower with Air Force building identification number AF-R2 was assigned its current building identification number 594 when the Navy later took control of the facility.

In the 1956 historical site plan, Building 594 is shown along with two other tower structures, Buildings 595 and 598. Building 596 (former ASWOC communications building) is shown to the north of Building 594. On the 1989 map, only one of the tower structures (Building 594) and Building 87 are shown. According to NAS Brunswick records, Building 87 was built in 1988 as an operations control center. The removal plan for the operations control center indicates that Buildings 596 and 598 were to be removed. In the 1989 photograph the current roadways, parking area, Building 87 and Building 594 are visible. In addition, it appears that the Building 594 dome cover has been removed.

The 1966 Buildings and Structure List indicates that Building 594 was in use as a storage space while a later building list indicates it was vacant in 1976.

According to the NAS Brunswick transformer database, no transformers are associated with Building 594. A 1985 historical site plan entitled "Removal Plan" indicates a former transformer located approximately 25 feet west of Building 594 (in the currently paved parking lot) was to be removed (NAVFAC, 1985). A transformer is located southwest of Building 594; this unit is addressed in the Building 87 Parcel RCRA Partial Closure Report.

Two USTs were previously located at Building 594. A 6,000-gallon, fiberglass-reinforced-plastic (FRP) No. 2 fuel oil UST (10045-069) was installed in March 1986 and removed in July 1992. This UST was replaced by a 3,000-gallon, No. 2 fuel oil UST (10045-490) in September 1992, which was removed in July 1999 and replaced by an AST. These tanks are addressed in the Building 87 Parcel RCRA Partial Closure Report.

Currently there are two ASTs located to the north of Building 594. These include a closed 4,000-gallon, double-walled No. 1 fuel oil AST (A594.1) that replaced UST 10045-490 in July 1999. It was closed on April 4, 2008. The second AST is a 4,000-gallon diesel unit (A594.0) installed adjacent to AST 594.1 in 1996. It provides diesel fuel to the generators in the boiler room on the first floor of Building 594. These tanks are also addressed in the Building 87 Parcel RCRA Partial Closure Report.

#### 4. SITE VISIT AND INVESTIGATION

A Building 594 site visit was conducted by Mr. Brandon Smith, P.E., and Mr. James Forrelli, P.E., of TtNUS on February 9, 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. TtNUS personnel were accompanied by Mr. D. Bruce Smith, the NAS Brunswick Hazardous Waste Manager. The Building 594 location was visually inspected for signs of hazardous waste generation or storage activity. Site visit observations, recorded on the attached Building Inspection Form<sup>(1)</sup>, are summarized below:

- At the time of inspection, Building 594 was in fair condition. Four generators, two boilers, and associated piping and mechanical equipment were found on the first floor. The second floor was vacant.

- No evidence of current or past hazardous waste generation activities was observed.
- No evidence of hazardous waste residues was observed.
- No signs of a past release (staining, unusual odors, etc.) were observed and no structural modifications, which could conceal signs of a past release, were observed.
- No hazardous waste storage areas or hazardous waste accumulation areas were observed.
- Only one transformer was observed in the vicinity of Building 594; this transformer, located south of Building 594, is associated with Building 87.
- The paint coating on the second-level structural steel was observed to be flaking and peeling, resulting in an accumulation of paint chips on the floor. Also, paint was observed to be flaking off the stairway interior wall and the stairway.

If paint peels, flakes, or is removed, the paint-chip waste material may be a hazardous waste, subject to RCRA requirements. Paint wastes exhibiting the "toxicity characteristic" as measured using the Toxicity Characteristic Leaching Procedure (TCLP) must be handled and disposed of in conformance with hazardous waste laws and regulations. Furthermore, since the building was constructed in 1950 there is a possibility that paint containing polychlorinated biphenyls (PCBs) may have been used at the structure. Some lead-based paint formulations produced up until 1975 contained PCBs, which improved the paint's covering ability and elasticity and reduced cracking.

Total RCRA 8 metals analysis was performed on samples of the loose-paint material from the second level and the stairway as a screening tool in lieu of TCLP. Paint-chip samples were collected at three locations on June 16, 2010 for analysis by Tetra Tech's subcontractor analytical laboratory (Analytics Environmental Laboratory, Portsmouth, New Hampshire). Sample analytical data underwent limited data validation, consisting of field duplicate evaluation, blank contamination evaluation and completeness evaluation.

Total RCRA 8 metals and PCB results for the paint-chip samples collected from the locations listed below are presented in Table 1.

- stairway (grey paint)
- 2nd level structural steel (dark-grey paint)
- 2nd level beam (white paint)

For each metal, results were compared to 20 times the TCLP regulatory limit for hazardous waste. Using "the Rule of 20," if a result is less than 20 times its TCLP regulatory limit, then the sample could not possibly "leach" enough of the chemical under TCLP conditions to exceed the TCLP limit, even if all the chemical dissolved into the extraction fluid. As indicated in Table 1, chromium and lead are present at levels in all three samples that exceed 20 times the TCLP limits for these metals. In addition, concentrations of barium and cadmium exceed 20 times the TCLP limit for the stairway paint-chip sample. No other total metals results exceed 20 times the TCLP limit.

Also, as shown in Table 1, PCBs were not detected in any of the three paint-chip samples.

## **5. HAZARDOUS WASTE GENERATION AND STORAGE**

Based on the records research, site visit observations, and NAS Brunswick Environmental Department personnel interviews, with the exception of universal waste, no hazardous waste generation or hazardous waste accumulation or storage was conducted at Building 594. However, total metals analysis of the paint-chip material accumulated on the second level indicated that this material of was potentially a hazardous waste, subject to RCRA handling and disposal requirements.

**6. CLOSURE ACTIONS**

Tetra Tech's cleaning subcontractor (Global Remediation Services, Inc.) performed loose paint and paint-chip removal activities at the Building 594 second level and stairway on July 22 and 23, 2010. All loose paint was manually scraped off using metal scrapers and wire brushes. Paint chips and dust were then swept and then vacuumed with a HEPA vacuum, placed in a 30-gallon drum (one drum generated) and transferred to the NAS Brunswick hazardous waste department for disposal. Upon completion, the Tetra Tech field representative performed a visual inspection of the loose paint and paint-chip removal areas. TCLP analysis of the removed paint-chip waste (Table 2) showed that the material does not exhibit the "toxicity characteristic" and, therefore is not subject to hazardous waste handling and disposal requirements.

**7. OTHER ENVIRONMENTAL CONSIDERATIONS**

No underground storage tanks or above ground storage tanks, except the two ASTs described in Section 3, were observed in the immediate vicinity of Building 594.

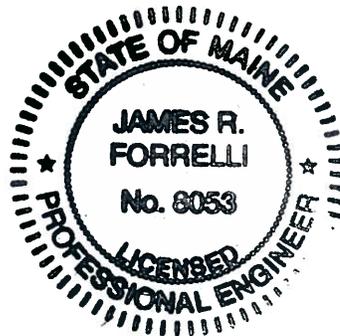
**8. LIMITATIONS**

This investigation of the hazardous waste closure requirement applies to the Building 594 footprint (as shown on Figure 2) only. It does not apply to the land surrounding or the groundwater underlying Building 594.

**9. CERTIFICATION**

Based on the findings of this investigation, there have been no activities resulting in the generation, accumulation or storage of hazardous waste at Building 594, NAS Brunswick, Maine. Therefore, the hazardous waste closure of Building 594 was completed in accordance with the provisions of MEDEP Regulations Chapter 851, Standards for Generators of Hazardous Waste, Section 11.

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



<sup>(1)</sup> 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 reflect any additional information provided at a later date that further clarifies or corrects preliminary information collected during the building inspection and file reviews.

**REFERENCES**

Environmental Department, 2009. Master/Historical Aboveground and Underground Storage Tank Inventory. NAS Brunswick, Maine. February.

NAVFAC (NAVFAC Northern Division), 1985. Removal Plan, Operational Control Center, Brunswick Naval Air Station, Maine. NACFAC Drawing 2076807.

PWD (Public Works Department), 1946. "Map of US Naval Air Station, Brunswick, Maine, Showing conditions on June 30, 1946," NAS Brunswick, Maine. June 30.

PWD, 1952. "Map of US Naval Air Station, Brunswick, Maine, Showing conditions on June 30, 1952," NAS Brunswick, Maine. June 30.

PWD, 1956. General Station Map, Enclosure 2, NAS Brunswick, Maine.

PWD, 1962. "Map of Streets," US Naval Air Station, Brunswick, Maine, NAS Brunswick, Maine.

PWD, 1983. "Existing Conditions Map. Public Works Department Drawing No. 2157," NAS Brunswick, Maine. May 5, 1983.

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

PWD, 2006. Brunswick Naval Air Station, NAS Brunswick, Maine.

PWD. 2010. Transformer Database. NAS Brunswick, Maine.

Sewall (James W. Sewall Company), 1958. NAS Brunswick Aerial Photographs. James W. Sewall Company, Old Town, Maine. October 9.

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

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

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

**TABLE 1  
INVESTIGATION PAINT-CHIP SAMPLE RESULTS  
RCRA PARTIAL CLOSURE REPORT  
BUILDING 594 – AIR OPERATIONS RADAR TOWER  
NAVAL AIR STATION BRUNSWICK, MAINE**

SAMPLE ID <sup>(1)</sup>		B594-PC01	B594-PC02	B594-PC03	
DATE		06/16/10	06/16/10	06/16/10	
LOCATION		stairway (grey paint)	2 <sup>nd</sup> level structural steel (dark- grey paint)	2 <sup>nd</sup> level beam (white paint)	
MATRIX		paint chip	paint chip	paint chip	
METALS (mg/kg)	CRITERIA				
	TCLP Limit (mg/L)	20x TCLP Limit (mg/kg)			
arsenic	5	100	4.1	3.2	6.9
barium	100	2000	7300	340	200
cadmium	1	20	31	13	6
chromium	5	100	1100	7500	5400
lead	5	100	4200	15000	5800
mercury	0.2	4	0.17	0.044	0.015 J
selenium	1	20	0.47 U	0.44 U	0.45 U
silver	5	100	1	1.8	0.74
PCB (µg/kg)	CRITERIA				
Aroclor-1016	--	--	360 U	300 U	200 U
Aroclor-1221	--	--	360 U	300 U	200 U
Aroclor-1232	--	--	360 U	300 U	200 U
Aroclor-1242	--	--	360 U	300 U	200 U
Aroclor-1248	--	--	360 U	300 U	200 U
Aroclor-1254	--	--	360 U	300 U	200 U
Aroclor-1260	--	--	360 U	300 U	200 U
Total Aroclor	--	--	360 U	300 U	200 U

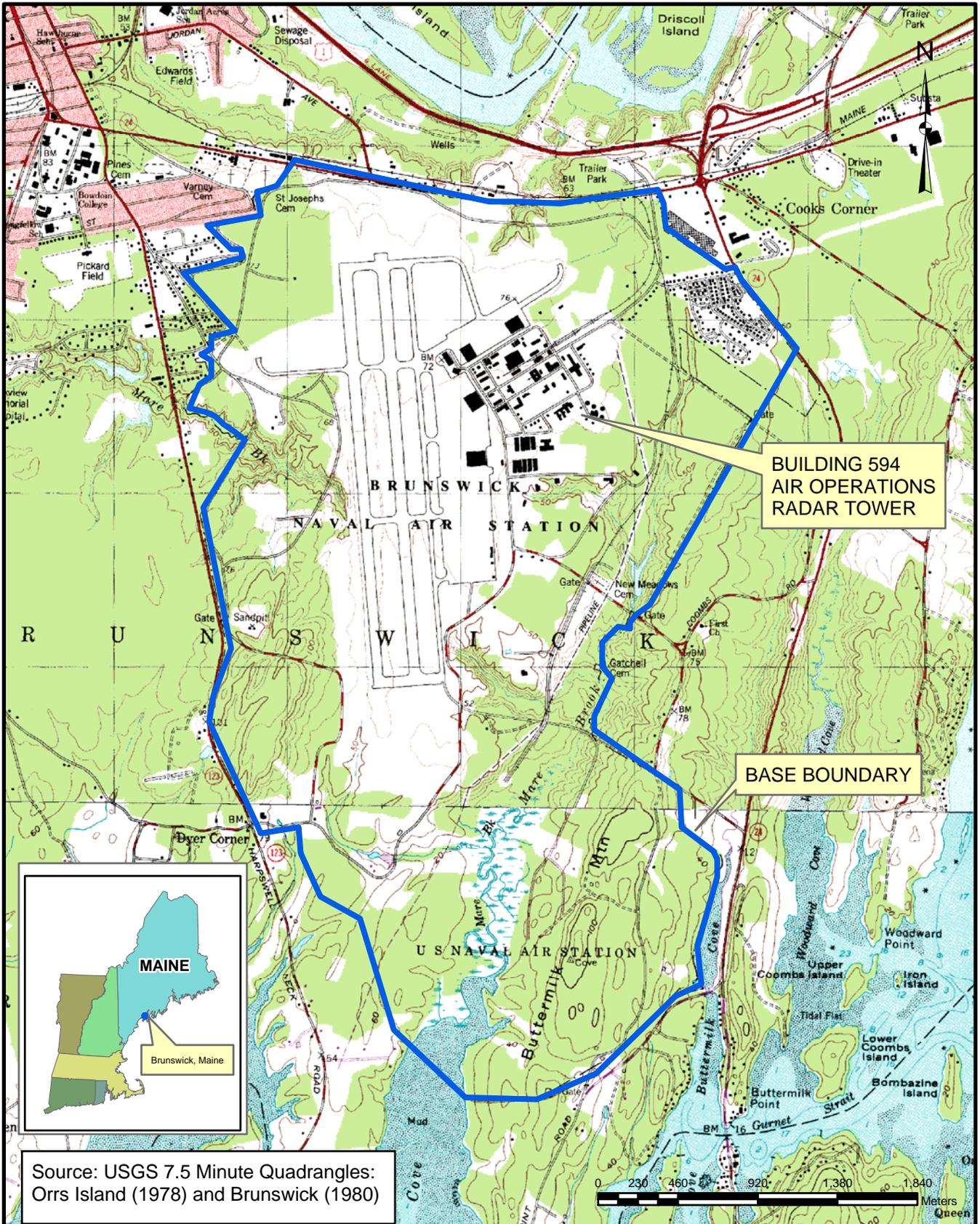
Notes:  
 (1) Sample prefix "NASB" is not shown.  
 mg/kg milligram per kilogram  
 mg/L milligram per liter  
 -- no criteria available  
 J estimated  
 U not detected (with associated detection limit)  
 shading indicates criteria exceeded

**TABLE 2  
REMOVED PAINT-WASTE SAMPLE TCLP RESULTS  
RCRA PARTIAL CLOSURE REPORT  
BUILDING 594 – AIR OPERATIONS RADAR TOWER  
NAVAL AIR STATION BRUNSWICK, MAINE**

<b>SAMPLE ID<sup>(1)</sup></b>		B594-PC05
<b>DATE</b>		07/21/10
<b>LOCATION</b>		B594
<b>MATRIX</b>		paint chip
<b>METALS (mg/L)</b>	<b>CRITERIA TCLP Limit (mg/L)</b>	
arsenic	5	0.010 J
barium	100	0.053
cadmium	1	0.36
chromium	5	2.5
lead	5	3.7
mercury	0.2	0.00006 J
selenium	1	0.035 U
silver	5	0.02 U

Notes:

- (1) Sample prefix "NASB" is not shown.
- mg/L milligram per liter
- J estimated
- U not detected (with associated detection limit)



Source: USGS 7.5 Minute Quadrangles: Orrs Island (1978) and Brunswick (1980)



Tetra Tech NUS, Inc.

**SITE LOCATION MAP**  
**BUILDING 594 - AIR OPERATIONS RADAR TOWER**  
**RCRA PARTIAL CLOSURE REPORT**  
**NAS BRUNSWICK, MAINE**

SCALE  
AS NOTED

FILE

I:\NASB\_BLDG\_594\_LOCUS.MXD

REV	DATE
0	02/12/10

FIGURE NUMBER

1



Tetra Tech NUS, Inc.

**SITE PLAN**  
**BUILDING 594 - AIR OPERATIONS RADAR TOWER**  
**RCRA PARTIAL CLOSURE REPORT**  
**NAS BRUNSWICK, MAINE**

SCALE AS NOTED	
FILE	
I:\NASB_BLDG_295_ORTHO.MXD	
REV	DATE
0	02/03/10
FIGURE NUMBER	
2	

**BUILDING INSPECTION FORM  
RCRA PARTIAL CLOSURE PROGRAM  
NAS BRUNSWICK  
BRUNSWICK, MAINE  
CTO WE22**

**Inspection Date:** 2/9/2010

**Personnel:** James Forrelli, P.E. / Brandon Smith, P.E.

**Weather:** Clear, 20s

**GENERAL BUILDING INFORMATION / USES**

Building Name: Air Operations Radar Tower  
 Function: Radar Tower / Boiler house and storage  
 Size: 900 SF  
 Year of Construction: 1950

Building 594 is located on Beasley Circle north of Building 87 (ASWOC building) inside the CPRW-5 compound at NAS Brunswick. It was constructed in 1950 originally as a radar tower for the Air Force and was converted in the late 1960s to a boiler house and was also used for storage. Building 594 consists of a 900 square-foot, two level steel paneled structure on concrete slab foundation.

Building 594 was originally a radar tower and converted into a boiler house for Building 87 and also used as storage for FASO. Building 594 contains a boiler room on the first floor containing four generators and boilers for Building 87. An external enclosed stairway leads to the second floor where radar equipment, as well as gear storage, was previous located. Currently the second floor is vacant.

No hazardous waste was generated during the operations in Building 594, according to NASB personnel.

Building 594 was originally heated via steam, then converted to fuel oil, and finally natural gas.

**BUILDING INSPECTION / CONDITION**

No record of hazardous waste stored at Building 594.

The building was not occupied at the time of the site visit and appeared in fair condition.

No evidence of current or past hazardous waste generation activities was observed.

Flaking paint chips were observed in the second level and the entry that surrounds the building and may be lead based paint.

No signs of a past release (staining, unusual odors, stressed vegetation, etc.) were observed. No modifications to the structure, which may conceal signs of a past release, were observed.

No hazardous waste storage areas or hazardous waste accumulation areas were observed.

No transformers that could be a potential source of polychlorinated biphenyls (PCBs) contamination in the event of a leak were observed.

**HAZARDOUS WASTE STORED / GENERATED**

No hazardous waste was stored or generated at Building 594, according to NASB personnel.

**POTENTIAL PCB-CONTAINING TRANSFORMERS**

No potential PCB-containing transformers were identified during the site inspection or review of the NASB transformer database.

**APPLICABLE REPORTS / DOCUMENTS**

Available historical plans and aerial photos were reviewed for past property uses:

1946 plan - CPRW5 compound present; labeled as "Operations (AF)". 594 not present.

1952 plan - Same as 1946

1956 plan - Building 594 shown; compound labeled "USAF".

1958 aerial - Building 594 present, along with 3 similar tower structures and building 596 to the north.

1962 plan - Building 596 (ASWOC communications) present to the north of 594.

1978 aerial - same as 1958 aerial.

1983 plan - Only 594 and unidentified building to the south are shown in compound.

1984 aerial - Only 1 of the 3 other tower structures is still present.

1989 plan - same as 1983 plan.

1989 aerial - All buildings except 594 were demolished since 1984 aerial. New roads and parking area, and Building 87 present.

1993 aerial - same as 1989 aerial

2006 plan - Same as 1989 plan, with Building 43 (Telephone Exchange) shown at the compound entrance.

Two USTs were previously located at Building 594. A 6,000 gallon fiberglass reinforced plastic (FRP) #2 fuel oil UST (10045-069) was installed in March 1986 and removed in July 1992.

This UST was replaced by a 3,000 gallon #2 fuel oil UST (10045-490) in September 1992. It was removed in July 1999 and replaced by an AST.

Currently there are two ASTs located to the north of Building 594. a 4,000-gallon double-walled #1 fuel oil AST (A594.1) replaced UST 10045-490 in July 1999. It was closed on 04/23/08. A 4,000 gallon diesel AST (A594.0) is located adjacent to AST 594.1 and was installed in 1996. It provides diesel to the generators in the boiler room on the first floor of Building 594.

**HAZARDOUS WASTE STORAGE RECORDS**

No hazardous waste was historically stored at Building 594, according to NAS Brunswick Hazardous Waste Manager, D. Bruce Smith.

**MISCELLANEOUS NOTES**

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

(SEE ATTACHED BUILDING FLOOR PLAN AND PHOTOGRAPHS)

INSPECTOR SIGNATURE:



Brandon Smith, P.E.

**PHOTOGRAPHS**



No. 1 Building 594 – NAS Brunswick  
Air Operations Radar Tower southwest elevation

February 9, 2010



No. 2 Building 594 – NAS Brunswick  
Air Operations Radar Tower first floor interior

February 9, 2010



No. 3 Building 594 – NAS Brunswick  
Air Operations Radar Tower southwest elevation

February 9, 2010



No. 4 Building 594 – NAS Brunswick  
Air Operations Radar Tower first floor interior

February 9, 2010



No. 5 Building 594 – NAS Brunswick  
Air Operations Radar Tower southwest elevation

June 16, 2010



No. 6 Building 594 – NAS Brunswick  
Air Operations Radar Tower second level following loose paint chip and paint chip removal

July 23, 2010