



PROPOSED PLAN OF REMEDIAL ACTION

Delaware Air National Guard Site
Sites 1, 2, 3, 4(A&B), 6, and Groundwater Operable Unit
New Castle County, Delaware
DNREC Project No. DE-1003

April 2010

Delaware Department of Natural Resources and Environmental Control
Division of Air and Waste Management
Site Investigation & Restoration Branch
391 Lukens Drive
New Castle, Delaware 19720

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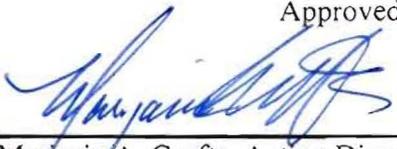
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Delaware Air National Guard Site
IRP Sites 1, 2, 3, 4(A&B), 6, and Groundwater Operable Unit
New Castle County, Delaware
DNREC Project No. DE-1003



Approval:

This Proposed Plan meets the requirements of the Hazardous Substance Cleanup Act.

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|---|
| Approved by: |
|  |
| Marjorie A. Crofts, Acting Director Division of Air & Waste Management |
| 4.19.10 |
| Date |

IRP Sites 1, 2, 3, 4(A&B), 6, and
Groundwater Operable Unit
Delaware Air National Guard
New Castle, DE



What is the Delaware Air National Guard Site?

The Delaware Air National Guard Base (DANGB) is located at the New Castle County Airport (NCCA), a county-owned facility, and comprises 57 acres of leased land on the northeast corner of the airport (Figure 1). The DANGB is currently home to the 166th Airlift Group. Activities at the Base consist of training Air National Guard (ANG) personnel, and supporting and maintaining the C-130 aircraft.

Under the Department of Defense's Installation Restoration Program (IRP), eight IRP sites have been identified at the Base. These IRP sites are areas that have been identified as having contamination which needs to be addressed. This Proposed Plan addresses soil contamination at IRP Sites 1, 2, 3, 4A, 4B, 6, and groundwater contamination at a corresponding Groundwater Operable Unit (OU) at the DANGB (Figure 2). Further description of each IRP site and the Groundwater OU is provided below:

IRP Site 1: IRP Site 1 is a grassy area located just off the western edge of the Refueler Parking Area (RPA) near the Northwest Drainage Ditch.

IRP Site 2: IRP Site 2 is located in the petroleum, oil, and lubricant (POL) storage area. The POL yard consists of five 50,000-gallon underground storage tanks (USTs) and associated fueling equipment. It was previously connected to a fuel hydrant system in the Aircraft Parking Apron (APA).

IRP Site 3: IRP Site 3 is associated with an abandoned fuel line that was used to transport No. 2 fuel oil.

IRP Site 4A: IRP Site 4A is located at the western edge of the APA and was previously leased by a commercial aircraft carrier.

IRP Site 4B: IRP Site 4B is located at the southern, southeastern, and eastern edge of the APA. In addition, the site also includes Building 2815, the main Base Hangar, and the surrounding area. The former fuel hydrant system was also located at this site.

Within the IRP Site 4B boundary, JP-8 free product was recently encountered in some monitoring wells. The source of the JP-8 free product will be investigated and remediated as a separate OU and will not be addressed in this Proposed Plan. This OU will be addressed at a later date in a separate document.

IRP Site 6: IRP Site 6 is the former site of a bulk fuel storage area, which included six 25,000-gallon USTs before they were removed.

Groundwater OU: The Groundwater OU consists of the contaminated groundwater across the Base, which is limited to the upper water-bearing unit.

NOTE: IRP Sites 5 and 7 were closed through prior closure actions where the contamination was remediated. IRP Site 5 is the Southeast Drainage Ditch (SDD) at the southeastern portion of the Base. A removal action was performed and in May 1999, DNREC approved a No Further

Response Action Planned (NFRAP) decision for IRP Site 5. IRP Site 7 is associated with three former USTs located near Building 2818. Tank closures at Site 7 resulted in the excavation and disposal of 439 tons of impacted soil. DNREC approved a NFRAP decision for Site 7 in May 1999.

Address: 2600 Spruance Drive, New Castle, Delaware

Nearest major intersection: Spruance Drive and Commons Boulevard (Rt. 37)

Area: 57 acres

Surrounding Property: The rest of the New Castle County Airport (NCCA) lies to the west and south of the Base, and a commercial business park is located to the north on Corporate Commons Boulevard (Rt. 37). In addition to commercial usage, there are several residential areas in the vicinity of the Base including the Wilmington Manor neighborhood that is located adjacent to and northeast of the Base.

Zoning: Commercial

Site Utilities: Artesian Water Company water supply lines, sewer service, and other utility lines such as communication lines are present at the Base.

Surface water: The Christiana River is located approximately 1.25 miles to the north and northwest of the Base.

Topography: The Base lies at an elevation of about 70 feet above sea level. The terrain is generally flat and paved.

Groundwater: The Columbia and Potomac Aquifers underlie the Base. Shallow groundwater flows to the south/southwest with depth to groundwater varying from 20 to 38 feet below ground surface (bgs).

What caused contamination at the Delaware Air National Guard Site?

The DANGB was used as a United States (U.S.) Army Airfield in the 1940s. It was converted to a U.S. Air Force Base after World War II (WWII) and was primarily used for demobilization of WWII aircraft. The ANG has leased the property since 1957. Past operational activities at the DANGB may have resulted in releases of petroleum and hazardous substances to soil, sediment, surface water, and/or groundwater at sites across the Base. Environmental investigations have been conducted at the Base since 1987 to evaluate the environmental impact of these potential releases.

IRP Site 1

A release from refueling trucks, discharge from a drainage ditch or other unknown sources caused soil to be impacted by petroleum contamination.

IRP Site 2

During the 1970s, overfilling of a UST resulted in a release of approximately 10,000 gallons of aviation gasoline within the POL yard. Other releases have also contributed to petroleum contamination at this site.

IRP Site 3

An abandoned fuel line was accidentally ruptured resulting in the release of approximately 50 gallons of aviation gasoline.

IRP Site 4A

Most of the contamination at IRP Site 4A occurred between 1960 and 1974. Contamination of this area was caused by minor spills of fuel, oil, and solvents on the ground and in hangars. Waste oil from maintenance was often dumped along the edge of the apron.

IRP Site 4B

Aircraft were historically maintained both on and north of this site resulting in petroleum and chlorinated hydrocarbon contamination. The fuel hydrant system contributed to the petroleum contamination. In addition, the recent JP-8 release may be attributed to the abandonment of the fuel hydrant system.

IRP Site 6

During the removal of the USTs at this site, petroleum-contaminated soil and groundwater were documented in the vicinity of the USTs.

Groundwater OU

No groundwater contamination at the Base has migrated beyond the Base boundaries. The hangar area, Building 2815 (within IRP Site 4B), is one of the major sources of the chlorinated hydrocarbon contamination detected in shallow groundwater at the Base. Low concentrations of chlorinated hydrocarbons were also detected in groundwater at IRP Sites 3 and 4A. Chlorinated hydrocarbons migrate southwesterly in the direction of shallow groundwater flow. The concentration of chlorinated hydrocarbons decreases with distance from the hangar (source area) in the downgradient direction.

The POL facility is the major source of the free phase and dissolved phase petroleum contamination detected in shallow groundwater at the Base. Widespread petroleum contamination is associated with past releases of aviation gasoline and jet fuel (JP-4 and JP-8) from IRP Sites 2 and 4B. The free phase and dissolved phase contamination migrated southwesterly with shallow groundwater flow. Currently, a bioventing remediation system is in place to address free phase plume at both of these sites.

What is the environmental problem at the Delaware Air National Guard Site?

IRP Site 1

Polycyclic aromatic hydrocarbons (PAHs) were found in the surface soil at low concentrations.

IRP Site 2

The POL facility is interpreted to be the major source of the free phase petroleum contamination detected in shallow groundwater. It was determined that up to 5,620 gallons of free-phase JP-4 lie beneath IRP Site 2. The free product thickness was approximately 2.5 feet prior to the interim cleanup action at the site, and is currently reduced to 0.07 feet.

IRP Site 3

Benzo(a)pyrene, a PAH, was detected in soil at concentrations that exceeded DNREC standards. Following the remedial investigation (RI), the Base conducted a removal action of the shallow soil contamination in support of the new tarmac construction project.

IRP Site 4A

PAHs were detected in the soil at low concentrations.

IRP Site 4B

It was determined that as much as 43,600 gallons of petroleum free product were present in the ground at IRP Site 4B prior to the interim cleanup action. JP-8 free product was recently encountered in some

monitoring wells within IRP Site 4B. The source of the JP-8 free product will be investigated and remediated as a separate OU and will not be addressed in this Proposed Plan.

Near the main Base Hangar (Building 2815), soil is contaminated by chlorinated hydrocarbons, which exceed the DNREC standards. The chlorinated hydrocarbons in the soil may be a remnant of the original source of the chlorinated hydrocarbon groundwater plume.

IRP Site 6

Low concentrations of PAHs were detected in the soil at IRP Site 6. The ANG requested that IRP activities at IRP Site 6 be associated with IRP Site 2, and DNREC approved the request in 1992.

Groundwater OU

The shallow groundwater contamination is listed below by area:

- IRP Site 2 – Petroleum hydrocarbons
- IRP Site 3 – Petroleum hydrocarbons, chlorinated hydrocarbons
- IRP Site 4A – Petroleum hydrocarbons, chlorinated hydrocarbons
- IRP Site 4B – Petroleum hydrocarbons, chlorinated hydrocarbons
- IRP Site 6 – Contamination from IRP Site 2

Sampling indicated that contamination in the shallow groundwater is not migrating to the deeper groundwater aquifer, which is used for potable water. Both the dissolved chlorinated and petroleum hydrocarbon plumes present in the shallow groundwater appear to be static and do not extend beyond the Base boundary.

The 2006 RI was conducted to determine the source and extent of dissolved chlorinated hydrocarbons in shallow groundwater as well as the extent of petroleum hydrocarbons in groundwater at the Base. It was determined that the Hanger area is the source of the chlorinated hydrocarbon contamination, and the extent of both the dissolved phase petroleum and chlorinated hydrocarbon contamination is well defined. No groundwater contamination at the Base has migrated beyond the Base boundaries.

What does the owner want to do at the Delaware Air National Guard Site?

The Delaware Air National Guard wants to continue current operations at the Base, where they lease the land from New Castle County.

What cleanup actions have been taken at the Delaware Air National Guard Site?

Interim cleanup actions have been taken at IRP Sites 2 and 4B:

IRP Site 2

A groundwater treatment/product removal system was previously operated at IRP Site 2. The system removed the free product accumulated at the site.

A bioventing system was installed at IRP Site 2 during 2003–2004. The system injects air into the soil and shallow groundwater wells which increases the oxygen levels in the vadose zone and shallow groundwater, and in turn, increased the microbial degradation of the free product present at the site.

The treatment system is operational. The average decrease in free product thickness in all of the monitoring wells gauged at IRP Site 2 is 98.7 percent.

IRP Site 4B

A bioventing system was also installed at IRP Site 4B during 2003–2004. Until recently, measurable free product had not been detected in the groundwater monitoring wells since January 2005. However, JP-8 free product was recently encountered in some monitoring wells within IRP Site 4B. The source of the JP-8 free product will be investigated and remediated as a separate OU and will not be addressed in this Proposed Plan.

What additional cleanup actions are needed at the Delaware Air National Guard Site?

The following cleanup actions are proposed for the site and are subject to public comments:

IRP Site 1

A risk assessment concluded that there is no risk to human receptors above the acceptable level at IRP Site 1. DNREC proposes no further action for soil at IRP Site 1 based on the risk assessment.

IRP Site 2

The planned removal action of the USTs and associated contaminated soil, coupled with the operation of the current bioventing remedial system, are proposed to address the petroleum-contaminated soil at IRP Site 2.

IRP Site 3

Since the PAH-contaminated soil was removed during the new tarmac construction project, DNREC proposes no further action for soil at IRP Site 3.

IRP Site 4A

A risk assessment indicated that risk to human receptors is within the acceptable level. Therefore, DNREC proposes no further action for soil at IRP Site 4A.

IRP Site 4B

The proposed remedy for soil at IRP Site 4B is soil vapor extraction (SVE) for the chlorinated hydrocarbons in soil near the main Base Hangar, which will address the chlorinated solvent contamination in the soil. The recent JP-8 free product findings may be attributed to the fuel hydrant system abandoned in place under the tarmac. The investigation and remedial action for this source will be handled as a separate OU and will not be included in this proposed plan.

IRP Site 6

Due to the low concentrations of PAHs, the risk to human receptors is within the acceptable level. Therefore, DNREC proposes no further action for soil at IRP Site 6.

Groundwater OU

The proposed remedy for groundwater at DANGB is Monitored Natural Attenuation (MNA) with Institutional Controls. A monitoring plan will be developed which will address the frequency and duration of the groundwater monitoring and the criteria by which DNREC will determine if the remedy

for the groundwater OU is complete. Based on groundwater monitoring results, DNREC may determine that Enhanced In-Situ Bioremediation, or an equivalent active remedial system, is necessary to protect human health and the environment. DNREC proposes to establish a groundwater management zone as an institutional control for the shallow groundwater underlying the Base.

The following cleanup actions are proposed for the site and are subject to public comments:

1. At IRP Site 1, no further action for soil.
2. At IRP Site 2, remove the USTs and petroleum hydrocarbon-contaminated soil and restart the bioventing system.
3. At IRP Site 3, no further action for soil.
4. At IRP Site 4A, no further action for soil.
5. At IRP Site 4B, treat the chlorinated hydrocarbon contaminated soil with a SVE system.
6. At IRP Site 6, no further action for soil.
7. Establish a groundwater management zone (GMZ) for the upper water-bearing unit underlying the Base.
8. Implement the MNA for the Groundwater OU at the Base.

Upon completion of the items listed, each IRP Site/OU will be eligible for a Certificate of Completion of Remedy.

What are the long-term plans for the Site after the cleanup?

Groundwater at the Base will be monitored for natural attenuation (MNA), with the option of requiring active remedy based on the effectiveness of MNA, and the requirements of the GMZ will be maintained.

How can I find additional information or comment on the Proposed Plan?

The complete files on the site including the RI are available at the DNREC office, 391 Lukens Drive in New Castle. Most documents are also found on: <http://www.nav.dnrec.delaware.gov/DEN3/>

The Proposed Plan will be available at the New Castle Public Library, at the office of DNREC-SIRB (391 Lukens Drive, New Castle, DE 19720), and online at <http://www.awm.delaware.gov/SIRB/Pages/SIRBPlans.aspx>. The 30-day public comment period begins on April 25, 2010 and ends at close of business (4:30 PM) on May 28, 2010. Please send written comments to the DNREC office or call Stephanie Scholl, Project Manager at 302-395-2600. A Public Meeting will be held on May 26, 2010 during the comment period and will be noticed.

Attached is the Proposed Plan for the DANGB site issued by the National Guard Bureau (NGB) in accordance with Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). As a federal facility, the DANGB site is subject to CERCLA requirements. The Proposed Plan issued by the NGB contains the same remedy proposals as the Proposed Plan issued by DNREC, although it is in a different format. In consultation with the NGB, DNREC will review comments on the Proposed Plans, issued by DNREC and the NGB, submitted during the public comment period.



Delaware River

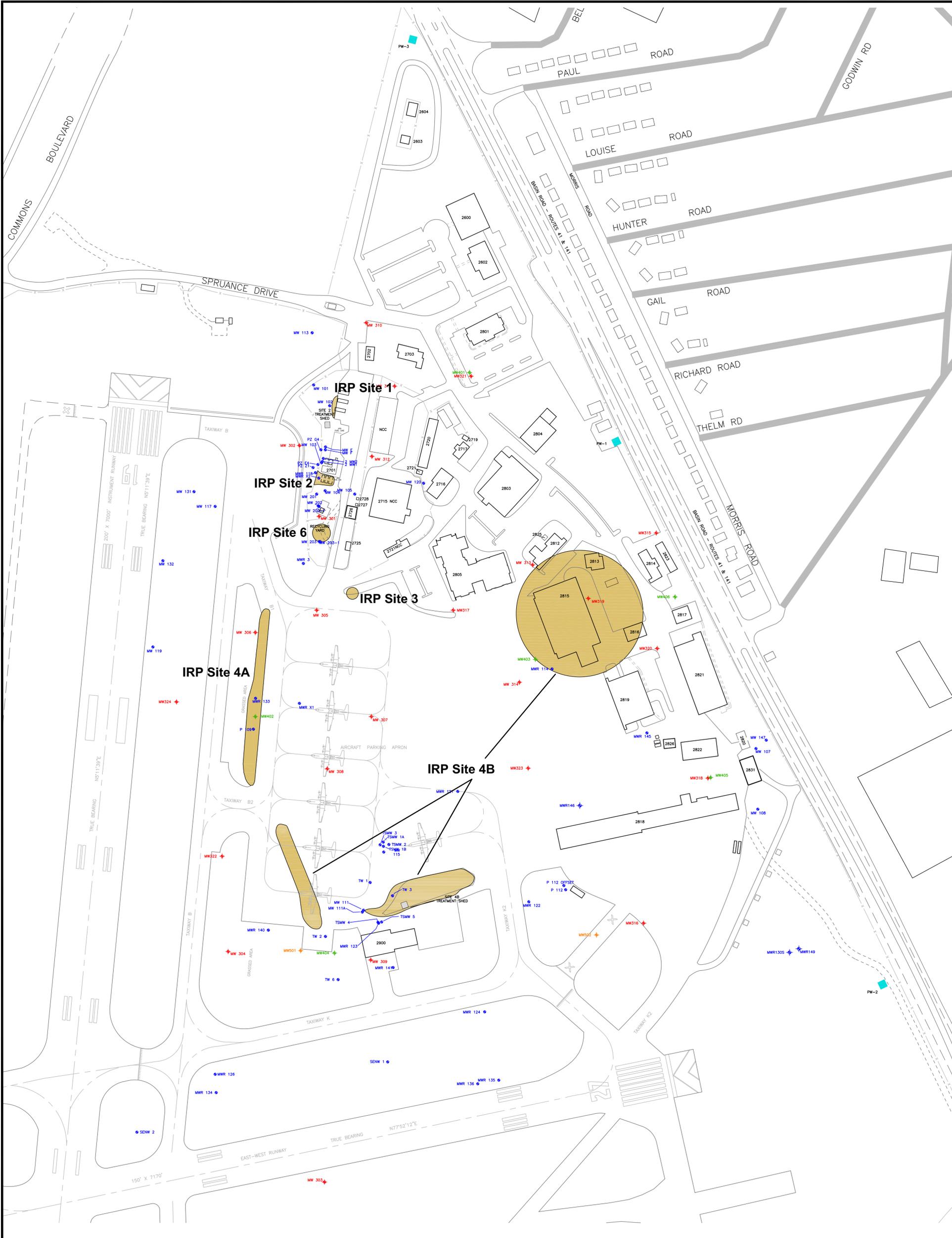
DEANG
New
Castle

Delaware

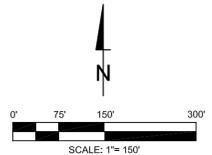
Delaware Air National Guard

FIGURE 1
Delaware Air National Guard Regional Area
New Castle, Delaware

| | |
|-----------------------------|---------------------|
| CONTRACT NO Contract No. | TASK NO Task No. |
| DESIGNED BY P Granger | DRAWN BY W Ccc |
| CHECKED BY J Dot | DATE 01/12/01 |
| SCALE 1" = 0.5 miles | SHEET 1 of 1 |
| REVISED - ArcMap - ArcInfo | |



- LEGEND:**
- EXISTING MONITORING WELL
 - + NEW SHALLOW MONITORING WELL
 - + NEW INTERMEDIATE MONITORING WELL
 - + NEW DEEP MONITORING WELL
 - ARTESIAN WATER CO. PUMPING WELL
 - IRP SITE



| DATE | BY | REVISIONS | NO. |
|------|----|-----------|-----|
| | | | |
| | | | |
| | | | |
| | | | |

Delaware Air National Guard –
New Castle, Delaware

Figure 2

| | |
|---------------------------------------|-------------------------|
| CAD FILE NAME: Fig 2 IRP Sites.Dwg | |
| CHECKED BY: E. Larsen | DATE: Aug 26, 2009 |
| DRAWN BY: M. Scharf | CONTRACT NO.: |
| DESIGNED BY: M. Scharf | DWG SCALE: 1" = 150' |

Glossary of Terms Used in this Proposed Plan

| | |
|--|--|
| Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) | Passed in 1980 and amended in 1986, CERCLA is commonly referred to as the Superfund Law. It provides for liability, compensation, cleanup, and emergency response in connection with the cleanup of inactive hazardous waste disposal sites that endanger public health and safety of the environment. CERCLA is codified at 42 U.S.C. §§ 9601 to 9675. |
| Certificate of Completion of Remedy (COCR) | A formal determination by the Secretary of DNREC that remedial activities required by the Final Plan of Remedial Action have been completed. |
| Groundwater | Water beneath the ground surface that fills spaces between materials such as sand, soil, or gravel to the point of saturation. In aquifers, groundwater occurs in quantities sufficient for drinking water, irrigation, and other uses. Groundwater may transport substances that have percolated downward from the ground surface as it flows towards its point of discharge. |
| Hazardous Substance Cleanup Act (HSCA) | Delaware Code Title 7, Chapter 91. The law that enables DNREC to identify parties responsible for hazardous substances releases and requires cleanup with oversight of the Department. |
| Installation Restoration Program (IRP) | This program was established by the DoD in 1975 to identify, assess, characterize, and clean up or control contamination caused by historical disposal activities and other operations at military installations. |
| Institutional Controls | Non-engineered methods, such as administrative or legal controls, that limit the way land or resources can be used, help minimize the potential for human exposure to contamination, and protect the integrity of a remedy. |
| Proposed Plan of Remedial Action | A plan for cleaning up a hazardous site submitted by DNREC and subject to public comments. |
| Final Plan of Remedial Action | DNREC's proposal for cleaning up a hazardous site after it has been reviewed by the public and finalized. |
| Risk | Likelihood or probability of injury, disease, or death. |
| Soil | Freely divided rock-derived material containing an admixture of organic matter and capable of supporting vegetation. |

ATTACHMENT 1

What is a *Proposed Plan*?

A Proposed Plan of Remedial Action (Proposed Plan) is a summary of how DNREC plans to clean up a contaminated site. A Final Plan of Remedial Action (Final Plan) is the adoption of the Proposed Plan, after all comments made by the public within the comment period of twenty days have been considered and addressed by DNREC.

The Delaware State Legislature passed the Hazardous Substance Cleanup Act (HSCA) in 1990. The Legislature made sure that members of the public would be informed about environmental problems in their own neighborhoods and have a chance to express their opinion concerning the cleanup of those environmental problems before DNREC takes action.

After DNREC studies a site, it summarizes the problems there and proposes one or more possible solutions in a Proposed Plan. The Proposed Plan contains enough information to allow lay persons to understand the site. More detailed information can be found in the reports and documents approved by DNREC. All of the documents and reports created by DNREC or consultants during the course of the investigation of the site are available to the public at the offices of DNREC-SIRB or at DNREC's website:

<http://www.nav.dnrec.delaware.gov/DEN3/>

DNREC issues the Proposed Plan by advertising it in at least one newspaper in the county where the site is located. The legal notices for the Proposed Plans and the Final Plans usually run on Wednesdays or Sundays in the legal classified section of the News Journal and/or the Delaware State News. The public comment period begins on the day (Wednesday), or the day after (Sunday) the newspaper publishes the legal notice for the Proposed Plan.

DNREC frequently holds public meetings during the comment period. Those meetings are usually held near the site in the evening. Citizens can request a public meeting if DNREC did not already schedule one.

Comments are collected at the public meetings, by phone or in writing. DNREC considers all comments and questions from the public before the Proposed Plan is finalized and adopted as a Final Plan.
