SUBJECT: Installation Restoration Program (IRP) No Further Action Decision Documents for NAS Willow Grove (ARF) PA

TO: Naval Facilities Engineering Command
Northern Division
Restoration Management Section
ATTN: Adrienne Townsend
US Naval Base, Bldg 77L
Philadelphia PA 19112-5094

1. Attached for your information are no further action decision documents for three Air Force Reserve IRP sites at Willow Grove. The recently completed Site Investigation (SI) Report (Apr 90) states that soil and groundwater analyses indicate that the Waste Oil Area, B4330, the Heating Plant, and the Old Well House do not present a threat to the environment or human health. Therefore, the AF Reserve completed decision documents presenting the rationale for no further action to be done at these sites.

2. The SI report states that further investigation work is recommended at the washrack area to determine if TCE contamination is from that site or another source. Request any further investigation be closely coordinated with this office to ensure appropriate planning and programming actions can be completed.

3. Please refer any questions to Sheryl Faust-Beck at DSN 468-5598.

FOR THE COMMANDER

BOBBY G. CLARY
Asst DCS/Engineering & Services

cc: 913 TAG/DEEV wo Atch
U.S. AIR FORCE
INSTALLATION RESTORATION PROGRAM

WILLOW GROVE ARF, PA

DECISION DOCUMENT

HEATING PLANT (SITE 0T06)

JUNE 1990

HEADQUARTERS, U.S. AIR FORCE RESERVE
ROBINS AIR FORCE BASE, GEORGIA 31098-6001
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1. Location of Willow Grove ARF
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INTRODUCTION

The objective of this decision document is to describe the setting, present the technical findings of previous studies, evaluate potential remedial alternatives, and ultimately document the Air Force Reserve (AFRES) position on the final status of the Heating Plant (Installation Restoration Program Site OT06) at the Willow Grove AFRES facility, Pennsylvania.

SITE IDENTIFICATION

The Willow Grove AFRES facility consists of approximately 162 acres located 23 miles north of Philadelphia in southeast Montgomery County and northeast of Willow Grove Naval Air Station (Fig 1). The IRP site described in this decision document consists of suspected small spills occurring at the installation heating plant (Fig 2).

BACKGROUND

Site Description

The Heating Plant utilizes two boilers to supply steam and hot water to fourteen buildings at the AFRES facility. The boilers are fueled primarily by #6 fuel oil, although a small amount of #2 fuel oil is utilized during start-up procedures and to purge the fuel lines. Fuel oils are stored in adjacent aboveground storage tanks (#221 and #212) which have spill containment walls but no bottom liners. Chemicals used at the plant include small amounts (approximately 20 gallons per year) of solvents, corrosion inhibitors, and water softening agents.

In early 1984, a 50 gallon spill of #6 fuel oil is known to have occurred due to overfilling of tank #221. The entire discharge was located within the spill containment walls associated with the tank. Due to the storage and handling of chemicals in miscellaneous drums in and around the Heating Plant, various other small spills may have occurred within the area.

Previous Investigations

An IRP Records Search for Willow Grove ARF was completed by Roy F. Weston Inc. in November 1984. The purpose of the records search was to identify the potential for environmental contamination due to past waste disposal practices and to assess the probability for contamination migration. A total of seven sites were initially identified at the AFRES installation.

In 1989 and 1990 EA Engineering, Science, and Technology, Inc. (EA) conducted a Site Inspection (SI) at four sites at the Willow Grove AFRES facility in order to define the type and extent of contamination and determine the potential need for remedial action. At the Heating Plant the field investigation consisted of a soil gas survey conducted in and around the spill containment walls surrounding tanks #221 and #212.
Figure 1: LOCATION OF WILLOW GROVE ARF
ENVIRONMENTAL SETTING

Willow Grove ARF is located in the Southeastern Coastal Plain/Allegheny Plateau physiographic province. The topography consists of gently northwestwardly sloping hills and nearly level plains. Elevations range from 264 to 315 feet above mean sea level.

Willow Grove receives an average annual precipitation of approximately 41 inches with an average annual net precipitation of 18 inches. Maximum rainfall occurs in late summer in connection with local thunderstorms. The one-year, 24-hour rainfall in the vicinity of Willow Grove is about 2.7 inches.

The predominant bedrock at Willow Grove consists of the sandstones and shales of the Stockton Formation. The Stockton Formation is overlain by a thin (2 to 15 feet) cover of soil and unconsolidated sediments. Bedrock in the area dips generally to the northwest and contains zones of well developed vertical jointing.

Groundwater beneath the facility occurs within the Stockton Formation and is strongly influenced by the size, frequency, distribution, and orientation of fractures within this formation. The surficial sediments are generally in good hydrologic connection with the underlying bedrock and act as a storage medium for seasonal infiltration which is slowly transmitted as recharge to the bedrock aquifer. All groundwater within the surficial sediments and the Stockton Formation flow generally to the northwest below Willow Grove. The Stockton Formation is the major water producing aquifer for private and industrial applications in the area of Willow Grove.

Surface water runoff from the Base is collected through a series of manmade ditches, culverts, and storm sewers which discharge into a local ponding basin. Discharge from the basin flows northward into Little Neshaminy Creek and then into the Delaware River.

RESULTS AND SIGNIFICANCE OF PREVIOUS INVESTIGATIONS

Results and Significance of Soil Gas Survey

In 1989, as part of the SI field investigation at the Heating Plant, a soil gas survey was conducted by EA Inc. The survey consisted of analyzing the soil gas from a total of six sample points in and around the spill containment walls surrounding aboveground tanks #221 and #212 (Fig 3). Analysis of the samples revealed no volatile organic compounds to be present in the soils of the area.

CONTAMINATION ASSESSMENT

Sampling of soil gas obtained adjacent to the aboveground fuel oil tanks associated with the Heating Plant revealed no evidence of contamination due to past operations at the site. All available evidence demonstrates that contamination of the environment has not occurred at this site.
Figure 3
ARF Site 6, Heating Plant site plan.
CONTROL MEASURES

Due to the extremely small quantities of material known to have been spilled within the engineered spill containment area at this site and the absence of any detected contamination, no control measures or remediation efforts are necessary or justified.

RECOMMENDATIONS

No contamination associated with past activity at the Heating Plant has been detected and no significant discharge is known to have occurred at the site. Due to the absence of detected contamination, this site is judged to pose no threat to public health or the environment of the Willow Grove area. Based on the findings of the most recent investigation, AFRES recommends that no further action be taken at the Heating Plant (Site OT06) at the Willow Grove AFRES facility.

REFERENCES


U.S. AIR FORCE
INSTALLATION RESTORATION PROGRAM

WILLOW GROVE AFB, PA

DECISION DOCUMENT

OLD WELL HOUSE (SITE OT07)

JUNE 1990

HEADQUARTERS, U.S. AIR FORCE RESERVE
ROBINS AIR FORCE BASE, GEORGIA 31098-6001
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INTRODUCTION

The objective of this decision document is to describe the setting, present the technical findings of previous studies, evaluate potential remedial alternatives, and ultimately document the Air Force Reserve (AFRES) position on the final status of the Old Well House (Installation Restoration Program Site OT07) at the Willow Grove AFRES facility, Pennsylvania.

SITE IDENTIFICATION

The Willow Grove AFRES facility consists of approximately 162 acres located 23 miles north of Philadelphia in southeast Montgomery County and northeast of Willow Grove Naval Air Station (Fig 1). The IRP site described in this decision document consists of a former well house which is currently utilized as a hazardous materials storage building (Fig 2).

BACKGROUND

Site Description

The Old Well House consists of a small building containing an abandoned well-head which was closed by capping and sealed immediately after installation in 1962. The well was never utilized as a water source. The structure is currently utilized as a hazardous materials storage area for paints, paint thinners, and lacquer thinners. No evidence of past spillage is visible in or around the building location.

Previous Investigations

An IRP Records Search for Willow Grove was completed by Roy F. Weston Inc. in November 1984. The purpose of the records search was to identify the potential for environmental contamination due to past waste disposal practices and to assess the probability for contamination migration. A total of seven sites were initially identified at the AFRES installation. The Old Well House was initially identified as a site due to the close proximity of the stored hazardous materials to the abandoned wellhead.

In 1989 and 1990 EA Engineering, Science, and Technology, Inc. (EA) conducted a Site Inspection (SI) at four sites at the Willow Grove AFRES facility in order to define the type and extent of contamination and determine the potential need for remedial action. Due to the absence of any evidence of past spillage and inability to sample the well within the Old Well House due to prior closure, no additional investigation was undertaken at the Old Well House.

ENVIRONMENTAL SETTING

Willow Grove is located in the Southeastern Coastal Plain/Allegheny Plateau physiographic province. The topography consists of gently northwestwardly sloping hills and nearly level plains. Elevations range from 264 to 315 feet above mean sea level.
Figure 1: LOCATION OF WILLOW GROVE ARF
Figure 2: LOCATION OF SITES RECOMMENDED FOR CONFIRMATION
Willow Grove receives an average annual precipitation of approximately 41 inches with an average annual net precipitation of 18 inches. Maximum rainfall occurs in late summer in connection with local thunderstorms. The one-year, 24 hour rainfall in the vicinity of Willow Grove is about 2.7 inches.

The predominant bedrock at Willow Grove consists of the sandstones and shales of the Stockton Formation. The Stockton Formation is overlain by a thin (2 to 15 feet) cover of soil and unconsolidated sediments. Bedrock in the area dips generally to the northwest and contains zones of well developed vertical jointing.

Groundwater beneath the facility occurs within the Stockton Formation and is strongly influenced by the size, frequency, distribution, and orientation of fractures within the consolidated sediments. The surficial sediments are generally in good hydrologic connection with the underlying bedrock and act as a storage medium for seasonal infiltration which is slowly transmitted as recharge to the bedrock aquifer. All groundwater within the surficial sediments and the Stockton Formation flow generally to the northwest below Willow Grove ARF. The Stockton Formation is the major water producing aquifer for private and industrial applications in the area of Willow Grove.

Surface water runoff from the base is collected through a series of manmade ditches, culverts, and storm sewers which discharge into a local ponding basin. Discharge from the basin flows northward into Little Neshaminy Creek and then into the Delaware River.

RESULTS AND SIGNIFICANCE OF PREVIOUS INVESTIGATIONS

Because the well within the Old Well House had been capped in 1962 and no evidence exists that contaminants were ever released within the Old Well House, no site characterization was undertaken at this facility.

CONTAMINATION ASSESSMENT

There have been no suspected or confirmed spills of materials within the Old Well house which could have possibly endangered public safety or the environment. All evidence demonstrates that contamination of the environment has not occurred at this site.

CONTROL MEASURES

Due to the prior capping of the well within the Old Well House and the absence of any detected contamination, no control measures or remediation efforts are necessary or justified for the Old Well House at the Willow Grove AFRES facility.
RECOMMENDATIONS

No contamination associated with past activity at the Old Well House has been observed and no significant discharge is known to have occurred at the site. Due to the prior capping of the interior well and the complete absence of contamination, this site is judged to pose no threat to public health or the environment of the Willow Grove area. AFRES recommends that no further action be taken at the Old Well House (Site OT07) at the Willow Grove AFRES facility.

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1. Location of Willow Grove ARF
2. Location of Waste Oil Storage Area
3. Waste Oil Storage Area Site Plan
INTRODUCTION

The objective of this decision document is to describe the setting, present the technical findings of previous studies, evaluate potential remedial alternatives, and ultimately document the Air Force Reserve (AFRES) position on the final status of the Waste Oil Storage Area, Bldg 4330 (Installation Restoration Program (IRP) Site SS05) at the Willow Grove AFRES facility, Pennsylvania.

SITE IDENTIFICATION

The Willow Grove AFRES facility consists of approximately 162 acres located 23 miles north of Philadelphia in southeast Montgomery County and northeast of Willow Grove Naval Air Station (Fig 1). The IRP site described in this decision document consists of a 100 ft² area behind Building 330 previously used for storage of a waste-oil bowser (Fig 2).

BACKGROUND

Site Description

This site was used between 1970 and 1980 as a storage area for an above-ground tank (bowser) which was used for the storage of waste oils from various shops. The bowser was removed in 1980 at which time oil staining was observed in the surficial sediments of the area. Overfilling and spillage at the bowser were reported to have occurred in quantities ranging from 100 to 200 gallons per year.

Adjacent to, and downslope from, the bowser storage area, a spill of about 300 gallons of JP-4 fuel is known to have occurred in 1982. The spill occurred in a former vehicle storage area and was immediately reported to the Base Fire Department. Visibly contaminated soils were immediately excavated from the site.

Previous Investigations

An IRP Records Search for Willow Grove was completed by Roy F. Weston Inc. in November 1984. The purpose of the records search was to identify the potential for environmental contamination due to past waste disposal practices and to assess the probability for contamination migration. A total of seven sites were initially identified at the AFRES installation.

In 1989 and 1990 EA Engineering, Science, and Technology, Inc. (EA) conducted a Site Inspection (SI) at four sites at the Willow Grove AFRES facility in order to define the type and extent of contamination and determine the potential need for remedial action. In the Waste Oil Storage Area, this investigation consisted of a soil gas survey and the installation and sampling of two soil borings.
Figure 1: LOCATION OF WILLOW GROVE ARF
Figure 2: Location of Waste Oil Storage Area
ENVIROHMENTAL SETTING

Willow Grove is located in the Southeastern Coastal Plain/Allegheny Plateau physiographic province. The topography consists of gently northwestwardly sloping hills and nearly level plains. Elevations range from 264 to 315 feet above mean sea level.

Willow Grove receives an average annual precipitation of approximately 41 inches with an average annual net precipitation of 18 inches. Maximum rainfall occurs in late summer in connection with local thunderstorms. The one-year, 24-hour rainfall in the vicinity of Willow Grove is about 2.7 inches.

The predominant bedrock at Willow Grove consists of the sandstones and shales of the Stockton Formation. The Stockton Formation is overlain by a thin (2 to 15 feet) cover of soil and unconsolidated sediments. Bedrock in the area dips generally to the northwest and contains zones of well developed vertical jointing.

Groundwater beneath the facility that occurs within the Stockton Formation is strongly influenced by the size, frequency, distribution, and orientation of fractures within the consolidated sediments. The surficial sediments are generally in good hydrologic connection with the underlying bedrock and act as a storage medium for seasonal infiltration which is slowly transmitted as recharge to the bedrock aquifer. All groundwater within the surficial sediments and the Stockton Formation flow generally to the northwest below Willow Grove ARF. The Stockton Formation is the major water producing aquifer for private and industrial applications in the area of Willow Grove.

Surface-water runoff from the base is collected through a series of manmade ditches, culverts, and storm sewers which discharge into a local ponding basin. Discharge from the basin flows northward into Little Neshaminy Creek and then into the Delaware River.

RESULTS AND SIGNIFICANCE OF PREVIOUS INVESTIGATIONS

Results and Significance of Soil Borings

As part of the Site Investigation conducted by EA in 1989, two soil borings were emplaced in the area of the Waste Oil Storage Area. One boring was placed within the bounds of the former bowser storage area and the other within the area of the suspected JP-4 spill area (Fig 3). The boring at the waste oil bowser storage area was drilled until bedrock was reached at four and one half foot depth. The boring in the spill area was drilled until bedrock was reached at eight foot depth. No groundwater was encountered during the drilling of the soil borings. The cuttings from both borings were collected and sampled for volatile and semivolatile organic compounds, total petroleum hydrocarbons, and total organic carbon.

Results of the analysis revealed only low levels (24 mg/Kg) of total petroleum hydrocarbons to be present within the former bowser storage area. No volatile or semivolatile compounds were positively identified within the bowser storage area.
Figure 3: ARF Site - Building 330 Waste Oil Storage Area site plan.
Within the Spill Area, analysis of the soil revealed the existence of higher levels of total petroleum hydrocarbons (530 mg/Kg) as well as limited volatile and semivolatile organics (benzene and 2-methylnaphthalene).

CONTAMINATION ASSESSMENT

Analysis of the soils within the former bowser storage area behind Building 330 revealed the existence of only very low levels of total petroleum hydrocarbons. No other contaminants were detected within the soils and shallow groundwater does not appear to be present at the site. There is currently no evidence of any adverse environmental impact due to past operations at this Waste Oil Storage Area.

Analysis of the soils within the JP-4 spill area has revealed the existence of elevated levels of total petroleum hydrocarbons as well as minor volatile and semivolatile contaminants. This spill site is located adjacent to a local drainage ditch which receives drainage from an upgradient Navy Fuel Farm. Due to the reported excavation of contaminated soils at the time of the spill and the suspected contamination at the upgradient fuel farm (the Navy Fuel Farm is currently under investigation under the Navy's IRP program), the exact source of the detected contamination cannot be determined with certainty. Further investigation of the contamination detected adjacent to the drainage ditch will be undertaken through the Navy IRP program.

CONTROL MEASURES

Identification of Control Measures

The following alternative control measures were identified for the Waste Oil Storage Area, Building 330:

1. Excavation of contaminated soils.
2. Treatment of contaminated soils.
3. No Further Action.

Screening of Control Measures

The control measures were screened to select a technically feasible and cost-effective plan to control the release of hazardous substances to the environment. The following criteria were used to screen each control measure:

1. Currently known characteristics of the site.
2. Technical feasibility and effectiveness of the remedial action at the site.
Evaluation of the Alternative Control Measures

Alternative 1: Excavation of contaminated soils.

This alternative was not chosen due to: (1) the low levels of contamination detected at the site; (2) the limited extent of detected contamination; (3) and the low risk to human health and the environment posed by the contaminant detected. Further investigation of the contamination detected adjacent to the drainage ditch will be undertaken through the Navy IRP program.

Alternative 2: Treatment of contaminated soils.

This alternative was not chosen due to: (1) the low levels of contamination detected at the site; (2) the limited extent of detected contamination; and (3) the low risk to human health and the environment posed by the contaminants detected. Therefore, the high cost of implementing soil remediation technology at this site is not justified. Further investigation of the contamination detected adjacent to the drainage ditch will be undertaken through the Navy IRP program.

Alternative 3: No Further Action

This alternative was chosen due to the low levels of contamination detected at the bowser storage site and the limited extent of detected contamination. The Navy IRP program will further address the contamination detected near the drainage ditch.

RECOMMENDATIONS

No significant contamination has been detected within the former bowser storage area of the Waste Oil Storage Area. This site poses no threat to the public health or the environment of the Willow Grove Air Reserve Facility area. The low-level contamination detected adjacent to the drainage ditch will continue to be addressed through the NAVY IRP program currently active at Naval Air Station Willow Grove. Based on the results of the most recent analysis, we feel further investigation of the area is not warranted. AFRES recommends that no further action be taken at the Waste Oil Storage Area, Building 330 (Site SS05) at the Willow Grove AFRES facility.

REFERENCES
