AFP 59 01008

TECHNICAL OPERATIONS PLAN
INSTALLATION RESTORATION PROGRAM
PHASE II (STAGE I) - CONFIRMATION/QUANTIFICATION
AIR FORCE PLANT 59
JOHNSON CITY, NEW YORK

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December 1985

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1.0 INTRODUCTION

As requested by the U.S. Air Force Occupational and Environmental Laboratory (OEHL), Fred C. Hart Associates has prepared the following Technical Operations Plan for Phase II confirmation work at the Air Force Plant 59 (AFP), in Johnson City, New York. The recommended work is based upon review of several documents; Phase I - Records Search (October 1984), and assorted data provided by the U.S. Air Force (USAF) and General Electric Company (GE) at the AFP, personnel and included data gathered at a site visit conducted on October 31, 1985. This specific approach was taken with the intent to fulfill the requirements of the USAF Phase II investigation philosophy.

1.1 Purpose of Study

The purpose of this study is to conduct a contaminant source investigation at the Air Force Plant 59 to determine: 1) the presence or absence of contamination within the specified areas of the field survey; 2) the potential for migration within the specified areas of the field survey; 3) the extent/magnitude of contamination of the AFP property; and 4) potential environmental consequences and health risks of migrating contaminants (if found) based on state and federal standards for these contaminants. HART will prepare a final report evaluating the results of the field investigation which will include all historic and current data collected by HART on the facility, an analysis of all data collected during the investigation and an identification of any contaminants which may have originated from property other than the AFP.

1.2 Site Description

The AFP is located in Broome County, New York, in the Village of Johnson City, about 3 miles west-northwest of the center of the City of Binghamton, and about 4 miles east of the center of the Village of Endicott. Other nearby towns (within 5 miles) include Maine, Chenango, Dickinson, Union, Binghamton, and Vestal. A location and vicinity map of AFP is shown in Figure 1, and a site map is shown in Figure 2.

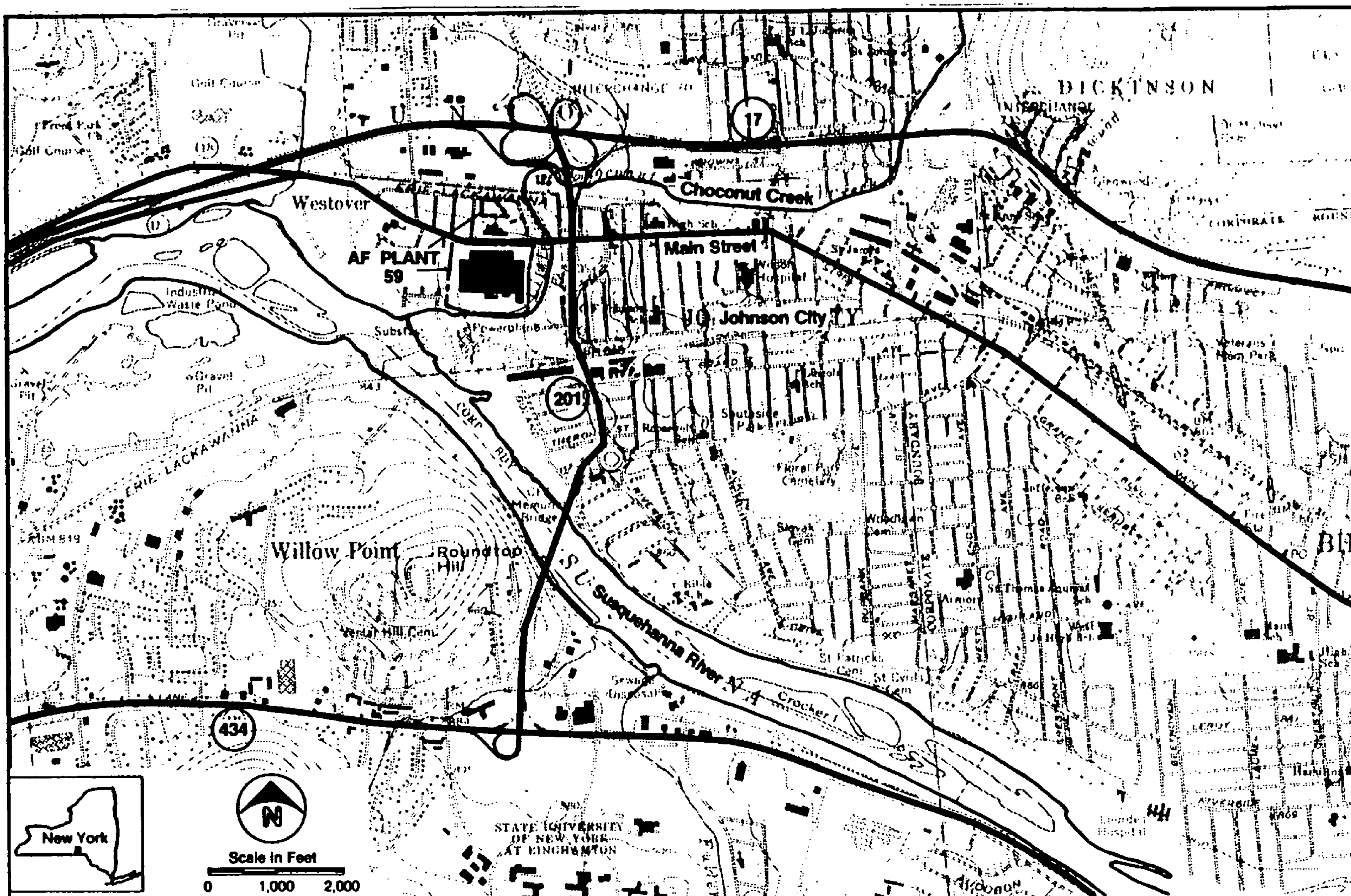
The total land area of AFP is 29.6 acres. The main entrance of AFP is at 600 Main Street (New York State Route 17C), which is the northern boundary of the installation. The AFP is located on a bend of Little Choconut Creek which runs just to the east and south of the installation. The confluence of Little Choconut Creek and the Susquehanna River is about 1,000 feet west of the southwest corner of the plant. A 0.6-acre parking lot which is part of AFP property, but not contiguous with the main plant-site, is located north of Main Street.

The AFP is an Air Force-owned electro-mechanical systems production facility operated under contract by the General Electric Company. Aircraft electronic equipment is manufactured for both military and commercial clients. Authority to use Government-owned facilities for nongovernment work is obtained on a continuing basis from the Defense Logistics Agency.

The mission of AFP is the manufacture and assembly of electronic and electro-mechanical equipment. General Electric Company is currently producing flight control systems, weapons control systems, laser systems, internal navigation and guidance systems, and aerospace ground support equipment.

1.3 Site History

The AFP was designed and built by PLANCOR, the Defense Plant Corporation, a subsidiary of the Reconstruction Finance Corporation in 1942. The



From CH2M HILL, 1984

FIGURE 1

Location and Vicinity Map of Air Force Plant 59

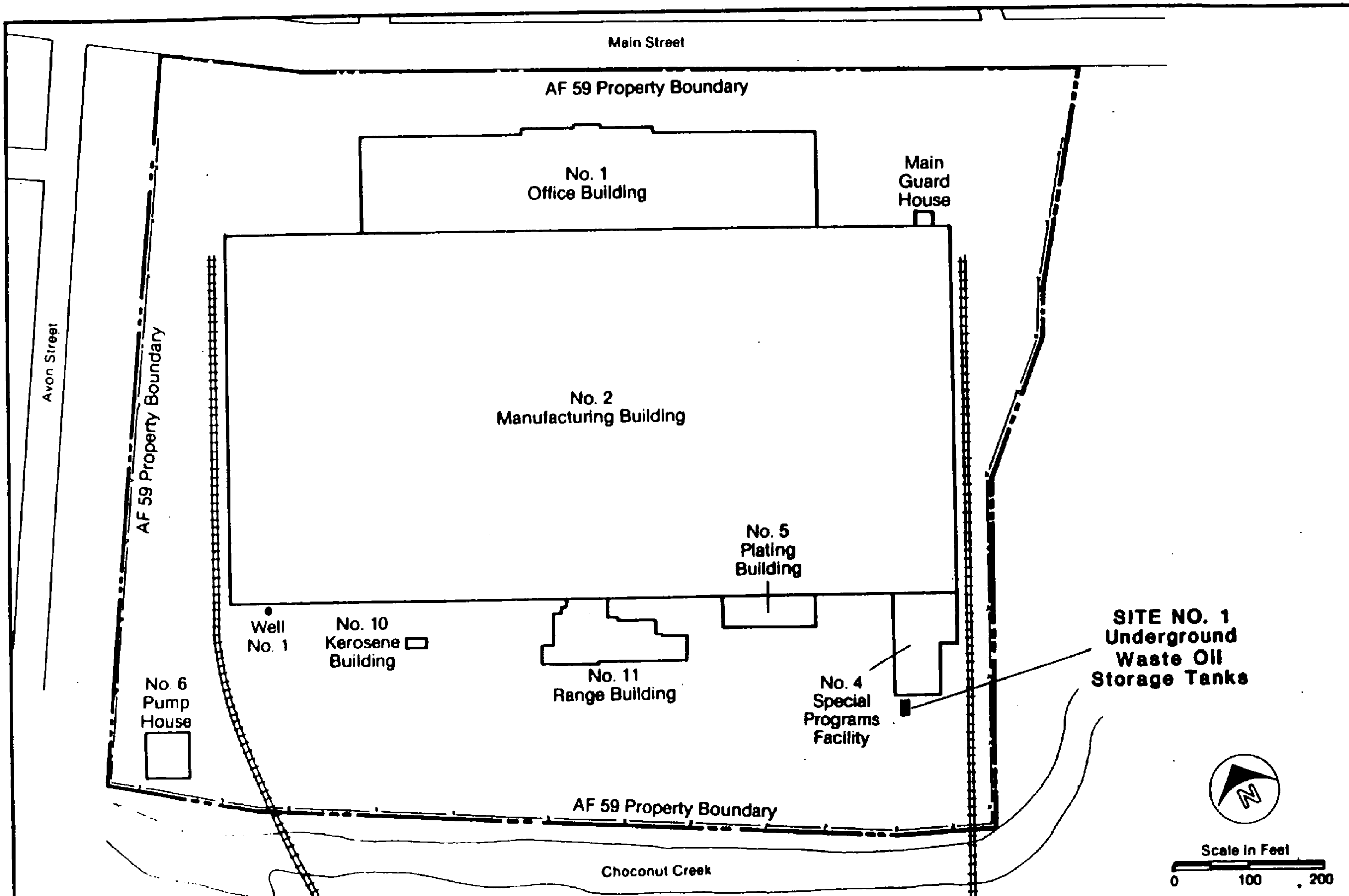


FIGURE 2

Site Map, Indicating Area of Potential Contamination

From CH2M HILL, 1984

original building contained 621,500 square feet of floor space and has remained essentially unchanged.

The original contractor at the plant was Remington Rand, Incorporated. Remington Rand manufactured aluminum aircraft propellers for the Second World War effort from 1942 to 1945, and then closed. In April 1949, AFP was reopened as an aircraft controls manufacturing facility with General Electric Company as the sole contractor. The major manufacturing process at that time was parts machining for electro-mechanical control systems. Machine shop activity peaked in 1967 at the height of the Vietnam War effort.

Activity at the plant dropped off markedly in the 1970's. Parts machinery activities were further curtailed as a result of technological advances that have made control systems more strictly electrical in nature. Currently, 2,300 employees work at AFP on three shifts.

Several improvements have been made to the outdoor facilities at AFP over the years. In 1959, the gravel and dirt parking lots surrounding the manufacturing building were paved. New York State built an earthen containment dike along the banks of the Little Choconut Creek as part of a mid-1960s flood control project. A water supply well was drilled immediately south of the manufacturing building to reduce the plant's usage of municipal water in 1974. A water recharge well for non-contact cooling water was also drilled at this time but its use was quickly discontinued due to subsurface subsidence. General Electric Company discontinued its use of the railroad spur in the early 1950s, the spur was paved over, and the trestle over Little Choconut Creek was eventually removed in 1980.

General Electric Company currently manufactures flight control, laser systems, weapons control, internal navigation, and guidance systems at AFP. These systems are used in various military aircraft including the F-18, F-15, F-111, and B-1. In addition, a small amount of work is done for Boeing 757 and 767 commercial jets.

1.4 Hazardous Materials Handling

Industrial operations at AFP were performed by Remington Rand from 1942 to 1945, and by AFP from 1949 to the present. The plant was idle during the intervening 4 years. Remington Rand manufactured airplane propellers; AFP manufactures aerospace control and electrical systems. Manufacture of these aircraft-associated parts resulted in generation of varying quantities of the same waste products. Wastes generated are (a) waste oils, including cutting oils, lubricating oils, and coolants; (b) spent solvents, including degreasers; (c) spent process chemicals, including plating acids, caustics, chromium and cyanide solutions; and (d) paint residues. The total quantity of these wastes currently generated is about 50,000 gallons per year. Waste quantities are dependent on contractor workload and have varied over time.

In general, the standard procedures for past and present industrial waste disposal practices have been as follows: (1) concentrated plating baths have been neutralized in an above ground holding tank and removed by a contractor (1952 to present); (2) plating rinsewater was treated in a settling tank for metal precipitation prior to discharge to Outfall 001 (1952 to 1969); plating rinsewater was treated in a settling tank for chromium reduction and metal precipitation prior to discharge to Outfall 001 (1969 to July 1984); plating rinsewater is treated by an anion and cation exchange column and reused (July 1984 to present); (3) waste oils were primarily recovered, with some waste oils being discharged to an oil/water separator upstream of Outfall 002 (1942 to 1953); waste oils are discharged to two underground waste oil storage tanks and removed by a contractor (1953 to present); and (4) kerosene-based degreasing solvents were disposed of with the waste oils (1942 to 1969); spent solvents are drummed and removed by a contractor (1969 to present).

1.5 Potential Sources of Environmental Contamination

One main area of potential environmental contamination will be investigated in this study of the AFP. This is the Underground Waste Oil Storage Tanks area (Site No. 1) that has been used for the temporary storage of waste oils since the two 1,000-gallon underground tanks were installed in 1953 (Figure 2). Waste oils including synthetic hydraulic oils, cutting oils, and coolants are collected from the various machining areas of the plant by a "Spencer Vac" system, which consists of a small mobile collection tank and vacuum system. Prior to 1969, some non-chlorinated kerosene-based degreasers were also placed in the storage tanks. Once collected, the waste oils are then pumped from the "Spencer Vacs" by an air pump located inside the main building to the two underground waste oils tanks located outside of Building No. 4. The waste oils are then temporarily stored for subsequent vacuum truck pickup and disposal by a private contractor.

The waste oil tanks are inspected daily to prevent overtopping of the tanks. However, waste oil spills have occurred during the contractor removal of the tank contents, which is conducted on a monthly basis. Interviewees reported that the spills were the result of the release of the residual volume of the vacuum truck suction hose. The area surrounding the tanks had been backfilled with gravel during their installation. The gravel area surrounding both tanks was heavily stained. In the past, the stained gravel had been removed and replaced with fresh gravel for aesthetic reasons.

1.5.1 Area 1. Area No. 1 has been identified as a potential threat due to the close proximity of wells and the fact that the population within 3 miles of the site is served by groundwater. The waste oils are identified are hazardous and persistent.

2.0 SITE INVESTIGATION SUMMARY

2.1 Introduction

The remedial investigation proposed by HART is designed to monitor the entire site of the AFP. The existing production well on site will be sampled as part of this investigation.

2.2 Task 2 Groundwater Supply Production Well

A new groundwater production well will soon be installed at the AFP (not part of this plan). This well will be sampled, and the samples split with OEHL according to the Technical Operations Plans. The well will be tested in the field for specific conductance, temperature and pH. The laboratory analyses include Volatile Organics, RCRA Metals (As, Ba, Cd, Cr, Pb, Hg, Se, Ag), and Oil and Grease.

2.3 Task 3 Groundwater Monitoring Well Installation

Three shallow boreholes (35 feet) SW-1, SW-2, SW-3, will be drilled around the Area 1 (two downgradient, one upgradient) and be completed as groundwater monitoring wells (Figure 3). The boreholes will all be continuously sampled, with a split spoon sampler. Wells will be constructed of 2 inch Schedule 40 PVC flush joint casing with machine slotted 10 slot (.01 inch) screen that are 10 feet in length (Figure 4).

Each well will receive a filter pack, bentonite seal, have the annular space grouted to the surface, and a protective casing with locking cap will be installed. Each sample that is described will be screened with an Organic Vapor Analyzer (OVA) to determine the presence and degree of hydrocarbon contamination. Wells will be installed through a 6 inch O.D. hollow stem auger. The augers will be cleaned with a steam cleaner between each borehole.

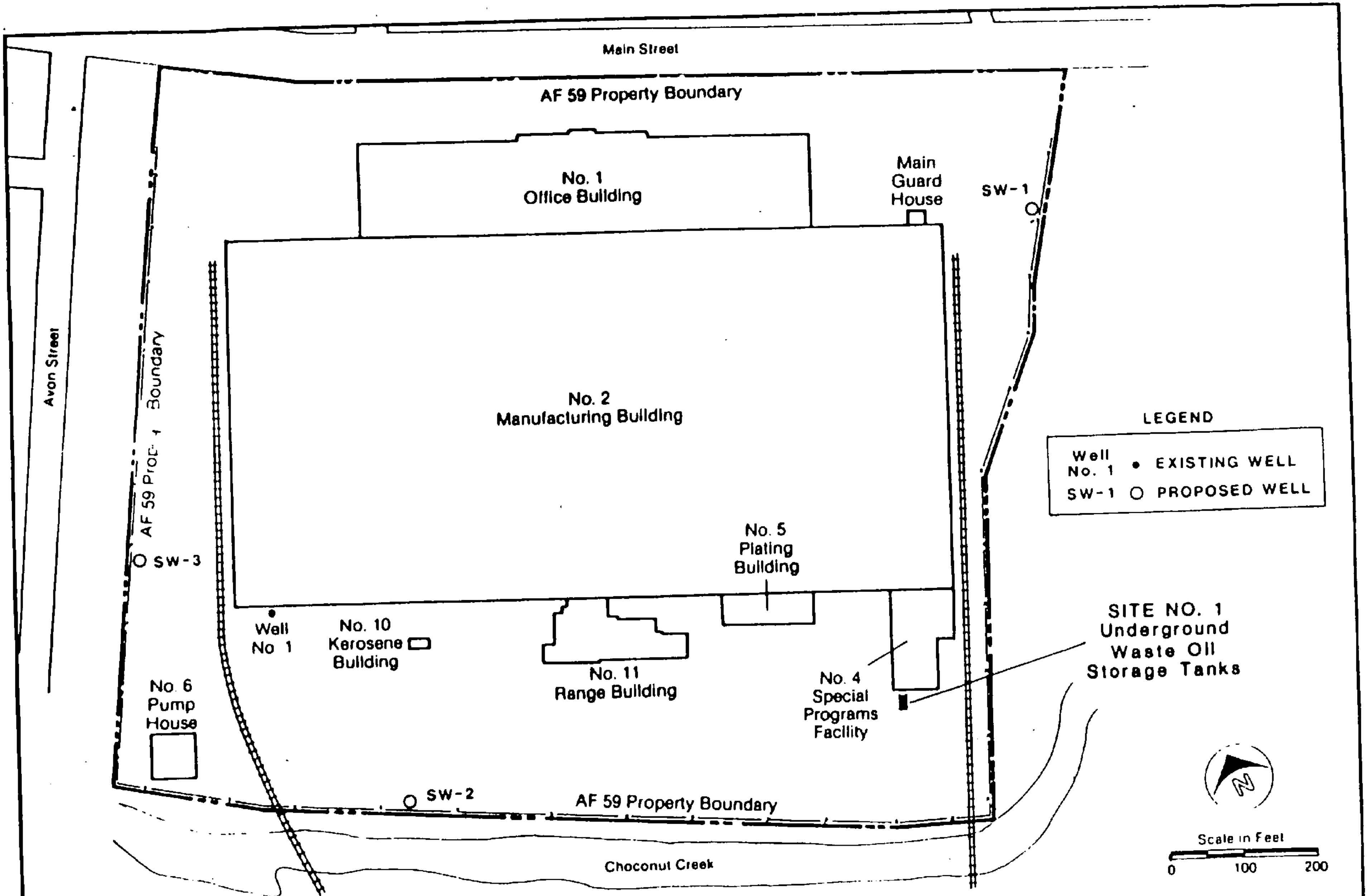


FIGURE 3

Location of Groundwater Monitoring Wells

From CH2M HILL, 1984

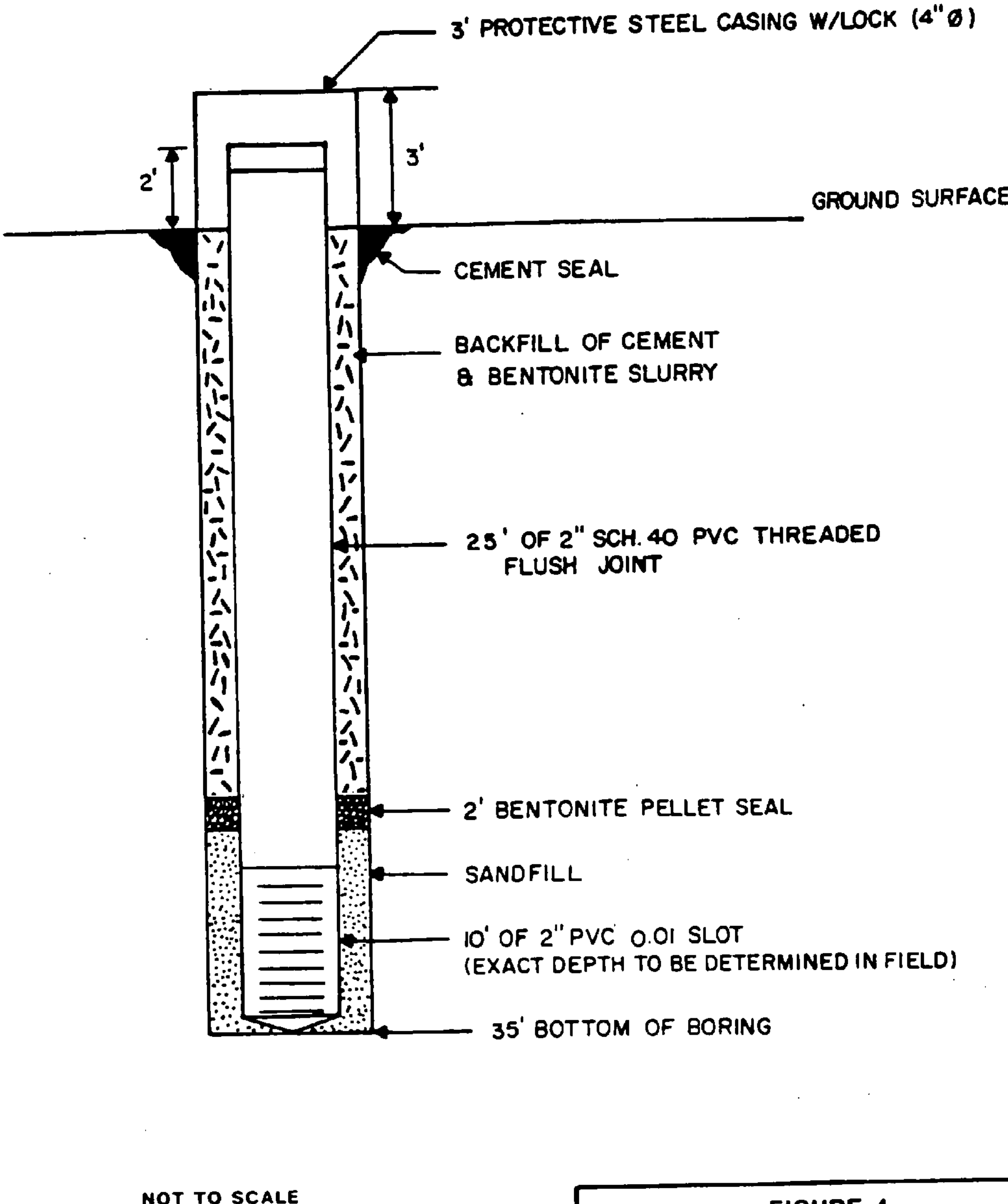


FIGURE 4

GENERALIZED WELL CONSTRUCTION DIAGRAM

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Geochemical analysis will be performed on three soil samples, one from each well. The samples will be taken from the soil-water interface and laboratory analyses will be performed for Volatile Organics, Oil and Grease.

Geotechnical analyses will be performed on soil samples to determine permeability and grain size distribution. Three shelby tube samples, one from each well, will be taken in the saturated zone for falling head permeability testing. The sample depth will be chosen in the field. Additionally, two soil samples from each of the three shallow wells will be analyzed for grain size distribution (sieve and hydrometer analysis). If possible, one sample from each borehole will be unsaturated and the other saturated.

Note, all soil samples will be split with the Air Force, and cuttings from the boreholes will be drummed and left on the site.

2.4 Task 4 Groundwater Sampling Program

A total of 4 wells will be sampled (Figure 3). This includes the 3 wells installed for this study and the existing production well. Prior to sampling, all wells will be properly flushed to provide representative samples. Bailers will be decontaminated between wells. Samples will be placed in properly prepared bottles, and placed in a cooler at 4°C. Coolers will be sealed and shipped overnight to Princeton Testing Laboratories. Samples will be split and a set of samples will be sent to OEHL in Texas. Proper chain-of-custody procedures will be followed which are described in Section 14.0.

The wells will be tested in the field for specific conductance, temperative and pH. The laboratory analyses include Volatile Organics, RCRA metals (As, Ba, Cd, Cr, Pb, Mg, Se, Ag), and Oil and Grease. One duplicate sample, trip blank and field blank will also be taken.

QA/QC procedures for Princeton Testing Laboratories and detection limits for the various testing parameters are found in Section 7.7.

Wells will be sampled all at once rather than individually because it is more convenient to perform one round of sampling, than sample individual wells as they are completed. Also, samples cannot be stored for any length of time, requiring samples to be shipped within a few days of their collection.

2.5 Task 5 - Surveying of Wells

A professional surveyor will survey the horizontal and vertical locations of the wells.

2.6 Task 6 - Water Level Measurements

Measurements will be made of all the water levels in all groundwater monitoring wells at the AFP. This will be completed in one day.

2.7 Task 7 - Training of USAF Personnel to Perform Certain On-Going Portions of the Work

Hart Associates will train USAF personnel to take groundwater levels in the monitor wells that will be installed during this investigation.

3.0 FIELD SET-UP

3.1 Detailed Work Plan

Prior to undertaking sampling or drilling operations, HART will prepare for an effective and safe field investigation at the AFP. This will include establishing a command office and materials storage area. Portable decontamination equipment necessary to perform operations will be provided as described in Section 11.0, Decontamination Procedures. HART and its subcontractors will also have sufficient safety equipment of adequate quality and level to equip the number of personnel necessary to perform the sampling described in this plan, according to the Site Safety Plan prepared for this investigation (Appendix A).

HART is responsible for having in the field the subcontracted drilling, sampling and well testing equipment necessary to perform the required work. This will include providing drums and other facilities necessary for temporary field storage of potentially contaminated soil, and disposable equipment. In particular, drilling cuttings will be placed in drums during the drilling operations. This material will be tested for hazardousness (EP Toxicity and Ignitability tests) and if found hazardous, AFP will arrange for disposal of the material in a secured landfill.

This Technical Operations Plan contains the details of the work planned at the AFP and will be available to on-site personnel.

3.2 Health and Safety Plan

To protect the health and safety of field personnel a Health and Safety Plan identifying the expected hazardous material and levels of safety is found in Appendix A.

3.3 Subcontractors

Several subcontractors have been identified to perform work on this site and are listed below:

- Laboratory Analysis

  Princeton Testing Laboratories
  Princeton, New Jersey

- Surveyor

  Hawk Engineering
  Binghamton, New York

- Geotechnical Testing

  J & L Testing Laboratory
  Pittsburgh, Pennsylvania

- Borehole Drilling & Monitoring Well Installation

  Empire Soil Investigatins Inc.
  Groton, New York

4.0 CALIBRATION OF FIELD EQUIPMENT

The following measuring equipment will be necessary to use for the on-site remedial investigation.

OVA. For in-field analysis of soil-gas during drilling, screening of soil samples taken during drilling and sediment samples. Calibration required: The OVA will be calibrated so that the relative response of the instrument will be 100% for tetrachloroethylene or methane.

pH Meter. For in field analysis of water samples. Calibration required: Factory or laboratory buffer and litmus paper will be used.

Electrical Conductivity Meter. For measurement during well sampling. Calibration: Factory calibrated annually.

Mercury Thermometers. For measurement of water temperatures during sampling. Calibration: Factory calibrated once.

M-Scope. For measurement of water level in well. Calibration: Periodically measured against surveyor's tape.

Other equipment that might become necessary during the field investigation will be calibrated according to the manufacturers' recommendations and/or generally accepted practice. Calibration procedures will be documented for the project file.

5.0 PREVENTIVE MAINTENANCE OF FIELD EQUIPMENT

All equipment used by HART and it subcontractors for work for the offsite remedial investigation will be required to be maintained under a preventive maintenance program. HART uses a program of preventive maintenance for the following equipment expected to be used.

- OVA
- pH Meter
- Electrical Conductivity Meter
- Mercury Thermometers
- M-scope

HART will subcontract the following activities during the study.

- Drilling and installation of monitoring wells
- Surveying of measuring points for wells

HART has specified or will specify to subcontractor firms providing these services that any and all equipment used at the AFP be maintained in a proper and safe working order. Any equipment or device determined to not be in such order by HART field personnel will be replaced, repaired, or corrected.

6.0 FIELD ANALYTICAL PROCEDURES AND DATA REPORTING

6.1 Chemical Data

- Procedures for Field Measurement of pH. Readings will be taken periodically in buffer solutions of the appropriate range at the same temperature during repeated sampling events. The users manual for the pH meter will be available to field personnel.

- Procedures for Field Measurement of Electrical Conductivity. When rapid sample changes are not occurring or expected, replicate measurements will be made. A standard solution of known conductivity may be made available for checking precision. Several readings are taken and the arithmetic mean used as the reported value. The users manual for the electrical conductivity meter will be available to field personnel.

- Procedures for Field Measurement of Volatile Organics. Approximately 20 ml of soil will be placed in VOA vials. The vials will be placed in a 50°C hot water bath for 10 minutes. An aliquot of air from the head space within the vial will then be withdrawn by syringe for direct injection into the OVA.

6.2 Hydraulic Data

- Procedures for Measurements. An M-scope will be used to measure to 0.01 foot the water level under static (non-pumping/static) conditions.

6.3 Soil Boring Data

- Soil Sampling. Continuous split spoon samples and Shelby tubes will be collected at each test boring site. Sample depth will be monitored by the subcontractor (driller) under the supervision of the on-site geologist.

- Blow Counts. Soil density shall be determined by recording the number of blows necessary for the split spoon to penetrate six inches of soil.

6.4 Surveying Data

- Horizontal Location. All sampling sites and monitoring wells will be located on aerial photographs or other map by reference to known features. Location accuracy will be one foot in general.

- Vertical Location. The elevation of all new monitoring wells and existing wells will be surveyed by a subcontracted licensed surveyor to the nearest 0.05 foot.

7.0 SAMPLE NUMBERING SYSTEM

A sample numbering system will be used to identify each sample taken during the on-site remedial investigation. The numbering system will provide a tracking procedure to allow retrieval of information about a particular site and assure that each sample is uniquely numbered. A listing of sample numbers will be maintained by the HART field team leader. Each sample number will consist of five parts as described below.

7.1 Project Identification

The designation AFP 59 will be used to identify the Air Force Plant 59.

7.2 Site Identification

Each sampling site will be identified by a three to four letter identifier code, with the following prefix:

DW Deep Production well
SW Shallow monitoring well

A numerical suffix unique to each prefix will follow. A map and surveyors data will be used to locate each sampling site.

7.3 Sequence Number

A two letter code will be used to identify the type of sample collected, such as:

SS soil sample collected during drilling
SD sediment sample
GW groundwater sample
WS Surface water sample

7.4 Sample Depth

The depth or depth interval at which the sample is collected will be noted on the label.

7.5 Investigation Sequence Sample Number

In addition to the numbers and symbols used to identify the location, type and depth of a sample, a numbering system will be used to indicate the the order in which samples are sent to the various laboratories. This system will begin with the first chemical sample selected and end with the last. It will consist of a three digit number and will sequentially record the the chemical samples selected during the investigation. The purpose is to track the chemical samples in order to identify any gaps. A duplicate system will be maintained for the split samples.

7.6 Split Sampling

Two sets of samples will be collected. The labels HART, for Fred C. Hart Associates, and USAF OEHL to indicate the sample that will be sent to the USAF OEHL laboratory, will be used to differentiate the analyzer of each set.

7.7 Examples

Examples of sample numbers are:

- AFP 59, SW-1, SS-3, 4'-6', HART 005. Air Force Plant 59; 35 foot deep Monitoring Well #1; third soil sample collected between a depth of four and six feet below the surface; retained by HART. Fifth chemical sample selected for analysis.

- AFP 59, SW-1, SS-3, 4'-6', EPA 005. Same as previous sample, except it is retained for analysis by EPA-designated laboratory. Also identified as fifth chemical sample split and sent to OEHL. EPA.

7.8 Blanks, Knowns, Spikes, Splits and Duplicates

QA/QC blank and duplicate samples, to be sent to the USAF OEHL laboratory and the HART subcontractor, Princeton Testing Laboratories at Princeton, NJ, will be given sample numbers similar to those for collected samples except that the sequence number will be unique. The identity of QA/QC samples will be recorded in field log books, but will not be marked in any way on the sample containers. Ten percent of all soil samples and ten percent of all water samples will be duplicates and there will be one trip blank for every shipment of VOA's of groundwater. Five percent of each sample type will be trip blanks.

7.9 USAF OEHL Samples

Samples sent to the USAF OEHL laboratory will be accompanied by the following information:

1. Purpose of sample (analyte).
2. Installation name (base).
3. Sample number (on container).
4. Source/location of sample.
5. Contract task number and title of project.
6. Method of collection (bailer, suction pump, air-lift pump, etc.).
7. Volumes removed before sample taken.
8. Special conditions (use of surrogates, filtering, etc.).
9. Preservatives used, especially nonstandard types.

8.0 DRILLING AND INSTALLATION OF GROUNDWATER MONITORING WELL

Three new monitoring wells are planned for installation. The proposed locations are shown in Figure 2. Each well site and maximum depth of drilling and casing are described below:

- SW-1, SW-2, SW-3 - Depth = 35 feet; screened interval = 25 to 35 feet., 2-inch diameter casing in 6-inch diameter hole.

Subcontractor specifications for drilling and installing the groundwater monitoring well have been prepared by HART and will be used for the project.

8.1 Drilling

The project schedule requires the use of two drill rigs working concurrently. The boreholes will be drilled using 6-inch O.D. hollow stem auger. Prior to drilling the wells, each site will be staked and underground utilities will be checked by AFP personnel.

All drilling equipment and materials will be decontaminated prior to and after use according to procedures found in Section 11, Decontamination Procedures. Hollow auger drilling will be performed with hollow-stem augers having an internal diameter large enough to accommodate a 2-inch diameter sampler. The lead flight of augers will be equipped with an appropriate cutting bit to allow penetration of a wide range of materials varying from clay and silt to sand and gravel.

Solid waste from the drilling will be analyzed as they are generated with the OVA. Drill cuttings will be drummed as they are generated. If hazardous chemicals of concern are not detected, the materials will be disposed of onsite. If drill materials are determined to be hazardous, they will be drummed for later disposal by AFP. Drummed materials will be tested for EP Toxicity and Ignitibility as well as Priority Pollutants.

Proper disposal of the material will depend on test results. AFP will be responsible for disposal of materials that are determined to be hazardous.

8.2 Soil Sampling

Soil samples will be collected during drilling with split-spoon drive samplers of two-inch outside diameter. Decontamination procedures for sampling equipment are described in Section 11.0. Samples will be taken continuously (i.e., from two foot intervals the length of the boring) using a two foot long split spoon sampler. All soil samples will be logged in general accordance with "Description of Soils (Visual Manual Procedure)", ASTM D2488-69, which is based on the Unified Soil Classification System.

A portion of the soil sample from the least disturbed center of the split spoon will be placed in a VOA vial for on-site OVA analysis. The remaining portion of the soil sample will be placed in a properly labeled glass jar. The VOA vials will be analyzed in the field for the presence of volatile organic compounds and the results recorded. Based on the results, soil samples will be selected for submittal to the laboratories for further analysis.

Undisturbed samples for triaxial permeability tests using a Shelby tube sampler will be taken if a confining layer is encountered during drilling. Both ends of the retrieved shelby tube shall be sealed with wax and no other form of sampling will be attempted from the tube to insure the integrity of the undisturbed sample. Also, two samples per borehole will be obtained for grain size analysis.

Unless otherwise indicated by the OVA screening tests, it is anticipated that all soil samples will contain only low or medium concentrations of organics and low concentrations of inorganics.

8.3 Monitoring Well Construction and Completion

The on-site OVA testing of soil samples will aid in determining the depth to which the monitor well screen will be installed at each boring. However, a maximum depth for each well has been established in the Scope of Work. The well screen will be installed adjacent to the zone of highest chemical concentrations within the aquifer of intended study. A generalized well construction diagram is shown in Figure 4.

The open borehole below the interval to be screened will be backfilled with appropriate material such as clean sand, or gravel pack.

All wells will be 2-inch diameter PVC flush joint riser and have 10 foot length screens. All screens will have a slot (aperture) size of 0.010 inch. Riser pipe will be the same diameter as the screen and connected only by threaded type joints.

The gravel pack will consist of acid-resistant, washed and graded silica sand. The sand will be furnished in sacks and will be clean and free from oil, acid, organic matter or other deleterious substances.

The gravel pack material will continue to be added to the annulus until the entire screen is surrounded and the gravel has extended about 3 feet above the top of the screen. A 2 foot thick bentonite pellet layer will then be placed in the annulus and set directly on the gravel pack. The bentonite pellet seal will assure that no grout materials will percolate through the gravel pack and enter the well.

All but the top 2 feet of remaining annulus will then be tremmie grouted with a granular bentonite/cement slurry mixture. The top 2 feet will be grouted with cement, and a 5 foot long steel casing will be set into this cement. If possible, this outer steel casing will extend about 3 feet above ground surface. The outer protective steel casing will come to rest within several inches of the top of the riser pipe, and will have a locking cap.

Following the completion of each monitor well, HART field personnel will construct a detailed well-completion sketch. This well summary will also detail the composition and amount of the materials used during well construction.

8.4 Well Development

All groundwater monitoring wells will be developed as part of the well installation process. Development will be done to create a good hydraulic connection between the well and the aquifer in which it is screened. This is important for obtaining reliable groundwater data and representative groundwater samples. Well development is achieved by removing fine grained geologic materials away from the well screen. Each well will be developed as soon as practical after completion by jetting. If possible, well development will continue until discharge water is clear and free of sediments.

9.0 GROUNDWATER MONITORING AND SAMPLING

A total of 4 wells will be sampled. This includes the 3 wells (SW-1, SW-2, SW-3) installed for this study and the one existing production well (DW-1). All measuring, purging and sampling equipment will be decontaminated as described in Section 12.0 prior to data collection.

9.1 Groundwater Level Measurements

After all well installation is completed, the groundwater level of all the wells will be measured within a 24-hour period. The instrument (M-scope: Slope Indicator Co., Model 51453) will be lowered down the well and measured from the top of the PVC casing. When the electrode of the M-scope comes into contact with water, an audio signal will be emitted. The instrument will also be used to sound the bottom of the well. HART will train AFP personnel to take additional groundwater levels in the monitor wells that will be installed during this investigation. Groundwater levels must be periodically monitored in order to determine groundwater flow directions over time. It is not cost-effective for HART personnel to travel to the site for the limited time period required to take these measurements. AFP personnel will be trained to provide monthly groundwater level measurements in the wells.

9.2 Surveying of Wells

A professional surveyor will survey the horizontal and vertical locations of the wells. Survey elevations of all newly installed monitor wells will be done with respect to a U.S.G.S. Bench Mark and will be measured to an accuracy of 0.05 feet. Horizontal locations will be done to an accuracy of 1 foot and recorded on site maps. It is necessary to establish the elevation of well casings for calculation of groundwater elevations.

9.3 On-Site Analysis

Monitor Well Sampling. In order for valid representative groundwater samples to be collected from the monitor wells, it is very important to properly prepare the well prior to sample collection. This preparation entails removing all the water which is standing in the casing and grabbing the sample from water which has recently been recharged from the aquifer.

To accomplish this, the depth to water from the top of the well casing is measured. This value will be used in conjunction with the total casing length to determine the height of the water column. The volume of water standing in the well will then be calculated. Five times this volume will be removed by pumping or bailing before the sample is collected. In cases where a well is emptied until dry and is very slow to recover, the volume required for evacuation may be reduced to two or three standing water volumes.

Once the well is adequately evacuated, sample collection will be accomplished by lowering a stainless steel, bottom loading bailer with a teflon check valve into the well. Each bailer will be fitted with a stainless steel wire leader and a new piece of nylon cord. A different pre-cleaned bailer will be devoted to each well. If the bailer has not been used for well evacuation, the first 3 bails of water will be wasted to rinse any cleaning agents which might still be present on the bailer. The samples will be poured directly from the bailers to sample jars for temperature, pH, and specific conductance.

Temperature. Measurements of the sample temperature will be taken using a decontaminated mercury thermometer. The field measurement represents the temperature of the aquifer unit at a particular location and time. Variations in sample temperature may enable interpretation of a temperature gradient which reflects aquifer hydraulics. This measurement will also be used to calibrate the pH and conductivity meters in the field.

pH. The pH of each sample will be measured with a Corning Model 3 pH Meter. Field measurements of sample pH will be used as a relative check of the lab measurements. The pH of a sample tends to change upon contact with air, and stabilizes once the sample becomes fully aerated. Therefore, the pH measurements of aerated samples will be used as a relative indicator of groundwater contamination.

Specific Conductivity. The specific conductivity of each sample will be measured with a Hach Model 17250 Conductivity Meter. Elevated specific conductivities indicate the presence of conductive ions such as chlorides and sulfides in the groundwater. High concentrations of these ions indicate contamination.

9.4 Sampling for Off-Site Analysis

Prior to sampling for lab analysis, all wells will be properly flushed as described above in Section 9.3. Bailers will be used to obtain groundwater samples. Bailers will be decontaminated between wells. Samples will be placed in properly prepared bottles, and placed in a cooler at 4°C. Coolers will be sealed and shipped over-night to the designated laboratory. Samples will be split and one sample will be shipped to Princeton Testing Labs. Proper chain-of-custody procedures will be followed when transferring the samples from the field to the laboratory. In addition, accurate records will be kept of all sampling activity, and will include the following information: Date, time, location, sample number, depth to water measurement, method and volume of water evacuation and sampling techniques. Analytical parameters can be found in Section 2.0.

10.0 DECONTAMINATION PROCEDURES

All equipment which comes in contact with potentially contaminated soil or water, including OVA, drilling, soil and water sampling, water-level measuring and sample preparation equipment, will be cleaned prior to and after each use on this project. Decontamination will consist of combinations of steam cleaning and/or detergent (trisodium phosphate) wash, water rinse, methanol rinse and distilled water rinse.

10.1 Drilling, Soil Sampling and Monitoring Well Installation

All drilling equipment will be decontaminated by steam-cleaning between locations, to prevent the chance of cross contamination from one location to another. All tools used for soil sampling and packaging, including split barrel samplers, sample-cutting knives, etc., will be decontaminated prior to the collection of each sample. Decontamination of these tools will include a wash in distilled water, a solvent rinse, and a second rinse with distilled water. Monitoring well casing, screens and fittings are to be delivered to the site in a clean condition.

During the field sampling program, the OVA will be checked periodically for contamination by running an analysis of a known compound of air. When necessary, the equipment will be decontaminated prior to continuing work, but not less frequently than once per day. OVA equipment to be decontaminated as necessary will include syringes, injection ports, columns and detectors.

10.2 Well Development

All equipment used for well development will be decontaminated prior to and after use at each well. This will include decontamination of downhole piping. The decontamination procedures will be similar to those described for drilling equipment in Section 10.1.

10.3 Water Level Measurement

The electrical sounding (M-Scope) tape used to measure water levels will be cleaned with a disposable soap-impregnated cloth and wiped with methanol upon removal from each well to avoid chemical crosscontamination between wells.

10.4 Water Sampling

Stainless steel bailers will be decontaminated before and after each use by detergent wash, clean water rinse, methanol rinse and distilled water rinse. No bailer shall be used at more than a single well after and prior to decontamination. A new piece of nylon rope will be used as the hoisting line and disposed of when sampling is completed at each well.

Submersible pump, piping and fittings will be decontaminated prior to and after use at each well. The equipment will be decontaminated by either steam-cleaning or hot water and detergent wash with methanol rinse followed by distilled water rinse.

10.5 Personnel Decontamination

The personnel decontamination procedures to be used at AFP will be performed at each drilling location or other sampling sites prior to entering vehicles or leaving the study area. HART and each subcontractor will provide all protective clothing for its own personnel and the equipment necessary to comply with decontamination procedures specified in the Site Safety Plan (Appendix A).

In the interest of expediency and efficiency, the following personnel decontamination procedures will be followed, if necessary. However, it is anticipated that field investigation activities will be conducted at level D.

1. Remove disposable booties (if used) and place into plastic bag for disposal.

2. Wash outer gloves in detergent solution and rinse in clean water. Remove outer gloves and place into plastic bag for disposal or retain for subsequent reuse.

3. Wash neoprene boots with detergent solution and rinse with clean water. Remove boots and retain for subsequent reuse.

4. Remove the tyvek coveralls. Take care to prevent the release and dispersion of dusts which may have accumulated on the coveralls during onsite operations and place overalls into the disposable plastic bag.

5. Place all independent disposable bags into one larger bag. Seal this bag and dispose of as garbage unless OVA probe of samples indicates contact with high concentrations of hazardous materials. If high concentrations are indicated, disposables will be placed in a 55-gallon drum with other solid wastes for eventual disposal by AFP.

6. Thoroughly wash hands and face.

11.0 SAMPLE HANDLING AND PACKING

11.1 Split Sample Procedures

All water, sediment and soil samples shall be split along the guidelines of Quality Assurance/Quality Control (QA/QC) protocols and procedures established by HART. One set of samples will be forwarded for analysis through overnight delivery to Princeton Testing Laboratories, Princeton, New Jersey. The other set of samples will be forwarded for analysis through overnight delivery to OEHL.

The following procedures will be used for splitting soil and groundwater samples.

Soil. Only fairly homogenous samples will be chosen providing a minimum of pebble-sized particles. Initially, the sample will be placed in a stainless steel bowl. Prior to placing the sample in the bowl, the bowl would have been washed with a detergent, rinsed with distilled water and washed again with a solvent (methanol). The sample will be mixed with a stainless steel trowel (prepared in a manner similar to the bowl) until the sample is well combined. Then a sample will be split into halves and a portion of each half placed into a sample container. The sample then will be remixed, split again, and portions placed into the containers. This procedure will be followed until the sample containers are filled.

Groundwater. A properly prepared bailer will be used to obtain a sample. If the sample is to be tested for volatile organic compounds (VOA), the VOA vials will be placed into a properly cleaned beaker whose depth is greater than the height of the vials. Water from the bailer will be care fully poured into the beaker so that the level rises above the height of the opening on the VOA vials. Once the VOA vials are filled, they will be closed by stainless steel tongs and lifted from the beaker. For other parameters, one-half of the water in the bailer will be poured into one container and the other half into the other container. Additional bails will be obtained and split in a similar manner until a sufficient volume of sample is obtained.

11.2 Sample Containers

Glass jars for soil samples in borings will be provided by HART. HART will also supply VOA vials for on site OVA analysis. Water and soil samples for chemical analyses will be placed in glass jars or plastic containers supplied by the laboratory subcontracted by HART.

11.3 Sample Handling and Decontamination

The collected sample and its container represent on of the major avenues of personnel and environmental exposure. Precautions will be taken to ensure that all the samples removed from the site are within the sample container and that no residue remains on the outside of the container.

The procedure for collecting soil and sediment samples will be as follows:

- Identify and document sample collection point or points, depth increment of samples collected, and sampling devices used (See Section 14.0, sample Custody and Documentation).

- Complete log book entries, sample tags, field record sheets with sample identification point, date, time and names or initials of all persons handling the sample in the field.

- Clean the outer surface of glass jars containing soil samples with paper towers and clean water.

- Place Sample Tags on sample containers.

- When filling jars, place small plastic bag around outside of sample container and hold in place with rubber band so that sample spilled outside of container will not contact jar.

- Sealed sample containers will be carried by the sampling team member to the packaging area. The outer plastic bag and rubber band should be removed by the sampler without touching the external surface of the jar any more than necessary. The volume level should then be placed by the sampler on a clean surface to be packaged for shipment.

- The contaminated plastic bags, rubber bands, and residual soil from the mixing pan will be bulked in large plastic bags for disposal as garbage.

The procedures for collecting water samples are generally the same as for soil and sediment, except that the water is discharged directly from the bailer to the sample container(s), following filtration if necessary, and appropriate preservatives are added to the containers prior to capping.

11.4 Procedures for Packing Samples

Most samples collected during this investigation are expected to contain low concentrations (less than 10 ppm) of organic and inorganic chemical compounds and will, therefore, be considered environmental samples. Procedures for packing low-concentration soil and water samples for shipment will be as follows:

- Determine maximum weight allowed per package from your shipper (140 pounds for Federal Express shipment).

- Secure sample bottle lids or plastic caps on brass tubes with stripping tape or evidence tape.

- Mark volume level on bottles with grease pencil.

- Place about three inches of inert cushioning material, such as vermiculite or zonolite in bottom of cooler.

- Labels/Sample Tags. Numbered sample tags should be used on all samples. Cover the labels with clear plastic tape.

- Place containers in cooler in such a way that they do not touch.

- Put VOA vials in Ziploc plastic bags and place them in the center of the cooler.

- Pack bottles, especially VOA vials, in inert cushioning material.

- Fill cooler with inert cushioning material and blue ice if sample refrigeration is required.

- Put paperwork, chain-of-custody and Form 2752 (for OEHL), in plastic bags and tape with masking tape to inside lid of cooler.

- Tape cooler drain shut.

- After acceptance by Federal Express or shipper, wrap cooler completely with strapping tape at two locations. Secure lid by taping. Do not cover any labels.

- Place lab address on top of cooler.

- Put "THIS SIDE UP" labels on all four sides and "FRAGILE" labels on at least two sides.

- Affix numbered custody seals on front right and back left of cooler. Cover seals with wide, clear tape.

12.0 SAMPLE CUSTODY AND DOCUMENTATION

Sample custody and documentation procedures described in this section will be followed throughout all sample collection at AFP. See Section 7.0 for the Sample Numbering System to be used by HART.

12.1 Sample Identification Documents

All samples will be labelled for identification by the Sample Numbering System described in Section 7.0.

Sample Tags. Samples will be removed from the sample location and transferred to Princeton Testing Laboratory. Split samples will be sent to the OEHL. Before removal, however, samples will be separated as necessary into fractions depending on the analysis to be performed. Each portion will be preserved in accordance with prescribed procedures. Each portion will be identified with separate identification tag. Each tag should indicate in the "Remarks" section that it is a split sample. The information recorded on the tag will include:

- Purpose of the sample (analyte)
- Installation name (location)
- Sample number
- Source/location of sample
- Contract Task Number and Title of Project
- Method of collection (split spoon, bailer, etc.)
- Volumes removed before sample taken
- Preservatives used, especially any non-standard types
- Project code (an HART project number)
- Date
- Time (a four-digit number indicating the 24-hour clock time of collection; for example: 1430 for 2:30 pm)

- Type of sample (grab or composite)
- Sampler's name
- Special conditions/remarks (for example, use of filtering)

Custody Seals. When samples are shipped to a laboratory or returned to a HART office, they must be placed in padlocked containers or containers sealed with custody seals. Two seals must be placed on each shipped container (cooler), one at the front and one at the back. Clear tape should be placed over the seals to ensure that seals are not accidentally broken during shipment.

12.2 Chain-of-Custody Records

All samples will be accompanied by a Chain-of-Custody Record, examples of which are shown on Figure 5. When transferring samples, the individuals relinquishing and receiving should sign, date and note the time on the record. This record will be used to document sample custody transfer from the sampler, to another HART team member, to a shipper, to a laboratory or to a HART office. Sample splits made for OEHL will be transferred with Chain-of-Custody Record and Environmental Sampling Data Form 2752 (Figure 6).

Samples will be packaged properly for shipment and dispatched to the appropriate laboratory for analysis, with a separate Chain-of-Custody Record accompanying each shipment. The method of shipment, courier name(s), and other pertinent information should be entered in the "Remarks" section of the Chain-of-Custody Record.

All shipments will be accompanied by the Chain-of-Custody Record identifying its contents. The original record accompanies the shipment, and the yellow copy should be given to the HART field team leader.

Shipments will be sent by common carrier and a bill of lading will be used. Air freight shipments will be sent collect. Bills of lading will be retained as part of the permanent documentation.

FORM : ML 10/12

Date Rec'd: ______

CHAIN OF CUSTODY
Abbreviated Form

RED C. HART ASSOCIATES, INC.
530 FIFTH AVENUE
NEW YORK, N.Y. 10036

Client Name: ______ Client No: ______

Sampled by: ______ Sample Group ID or site name: ______ ID or Permit No.: ______

Sample Name	Outfall No.	Date Sampled	Field pH	Field Cond.	Temp.	Flow (gpm)	Notes	ML No.

Analysis Requested:

- ___ pH, Alkalinity, Conductivity
- ___ Acidity (Mineral or Total)
- ___ NH_3, NO_3, NO_2, TKN, Org. N
- ___ CN, CN-free, F
- ___ SO_4
- ___ As, Ba, Cd, Cr, Pb, Hg, Se, Ag
- ___ Sb, Be, Sr, Ti, Tl, V
- ___ Sus. Solids
- ___ Dis. Solids
- ___ Total Solids
- ___ Turbidity
- ___ PO_4
- ___ Al, Co, Cu, Mo, Ni
- ___ Ca, Hg, Na, K
- ___ Oil & Grease
- ___ Dis. O_2
- ___ Coli - Fecal
- ___ Coli - Total
- ___ BOD_5, COD, TOC
- ___ Zinc
- ___ Chromium (Hex.)
- ___ Iron (Fe)
- ___ Manganese (Mn)

Shipment Method & Carrier (if applicable): ______ Date sent: ______

Requested by: ______ Received by: ______ Date/Time: ______

Final Disposition of Sample(s) ______ Date: ______ By (Init.): ______

FIGURE 5

ENVIRONMENTAL SAMPLING DATA

OEHL USE ONLY

(Use this space for mechanical imprint)

SAMPLING SITE IDENTIFIER *(AFR 19-7)*

BASE WHERE SAMPLE COLLECTED

SAMPLING SITE DESCRIPTION

DATE COLLECTION BEGAN *(YYMMDD)*

TIME COLLECTION BEGAN *(24 hour clock)*

COLLECTION METHOD ☐ GRAB ☐ COMPOSITE ______ HOURS

MAIL REPORTS TO *(circle if changed)*: ORIGINAL / COPY 1 / COPY 2

SAMPLE COLLECTED BY *(Name, Grade, AFSC)*

SIGNATURE

AUTOVON

REASON FOR SUBMISSION: A-ACCIDENT/INCIDENT; R-ROUTINE/PERIODIC; C-COMPLAINT; N-NPDES; F-FOLLOWUP/CLEANUP; O-OTHER *(specify)*

BASE SAMPLE NUMBER

OEHL PID

ANALYSES REQUESTED *(check appropriate blocks)*

GROUP A	
Ammonia	00610
Chemical Oxygen Demand	00340
Kjeldahl Nitrogen	00625
Nitrate	00620
Nitrite	00615
Oil & Grease	00560
Organic Carbon	00680
Orthophosphate	00671
Phosphorus, Total	00665

GROUP D	
Cyanide, Total	00720
Cyanide, Free	00722

GROUP E	
Phenols	32730

GROUP F	
Antimony	01097
Arsenic	01002
Barium	01007
Beryllium	01012
Boron	01022
Cadmium	01027
Calcium	00916
Chromium, Total	01034
Chromium VI	01032
Copper	01042
Hardness	00900
Iron	01045
Lead	01051
Magnesium	00927
Manganese	01055
Mercury	71900
Nickel	01067
Potassium	00937
Selenium	01147
Silver	01077
Sodium	00929
Thallium	01059
Zinc	01092

GROUP G	
Acidity, Total	70508
Alkalinity, Total	00410
Alkalinity, Bicarbonate	00425
Bromide	71870
Carbon Dioxide	00405
Chloride	00940
Color	00080
Fluoride	00951
Iodide	71865
Odor	00086
Residue, Total	00500
Residue, Filterable (TDS)	70300
Residue, Nonfilterable	00530
Residue, Settleable	50086
Residue, Volatile	00505
Silica	00955
Specific Conductance	00095
Sulfate	00945
Sulfite	00740
Surfactants -MBAS	38260
Turbidity	00076

GROUP H	
BHC Isomers	39340
Chlordane	39350
DDT Isomers	39370
Dieldrin	39380
Endrin	39390
Heptachlor	39410
Heptachlor Epoxide	39420
Lindane	39782
Methoxychlor	39480
Toxaphene	39400
2,4-D	39730
2,4,5-TP-Silvex	39760
2,4,5-T	39740

GROUP J	
Sulfides	00745

GROUP T	
Bromoform	32104
Bromodichloromethane	32101
Carbon Tetrachloride	32102
Chloroform	32106
Chloromethane	34418
Dibromochloromethane	32105
Methylene Chloride	34423
Tetrachloroethylene	34475
1,1,1-Trichloroethane	34506
Trichloroethylene	39180
Trihalomethanes	82080
PCBs	39516

ON SITE ANALYSES

Parameter		Value
Flow	50050	mgd
Chlorine, Total	50060	mg/l
Dissolved Oxygen	00300	mg/l
pH	00400	units
Temperature	00010	°C

COMMENTS

AF FORM JAN 81 2752

FIGURE 6

12.3 Field Log Books

Bound Field Log Books will be maintained by the HART field team leader and other team members to provide a daily record of significant events, observations and measurement during the field investigation. All entries must be signed and dated.

All information, except drill logs, pertinent to the field survey and/or sampling will be recorded in the log books. These must be bound books, preferably with consecutively numbered pages that are at least 41/2 inches by 7 inches in size. Waterproof ink will be used in making all entries. Entries in the log book must include at least the following

- Name and title of author, date and time of entry, and physical/environmental conditions during field activity.
- Purpose of sampling activity
- Location of sampling activity
- Name and address of field contact
- Name and title of field crew
- Name and title of any site visitors
- Type of sampled media (e.g., soil, sediment, groundwater, etc.)
- Sample collection method
- Number and volume of sample(s) taken
- Description of sampling point(s)
- Date and time of collection
- Sample identification number(s)
- Sample distribution (e.g., laboratory)
- References for all maps and photographs of the sampling site(s)

- Field observations
- Any field measurements made, such as pH, water level, etc. All sample documentation such as:
- \- Bottle lot numbers
- \- Custody seal numbers
- \- Dates and method of sample shipments
- \- Chain of Custody Records
- All documentation for drums or other containers generated
  - Contents and approximate volume
  - Type and predicted level of contamination
  - Custody seal numbers
- Summary of daily tasks (including costs) and documentation on any cost or scope of work changes required by field conditions.

12.4 Corrections to Documentation

Unless prohibited by weather conditions, all original data recorded in Field Log Books, Sample Tags, and Chain-of-Custody Records, will be written with waterproof ink. None of these accountable serialized documents are to be destroyed or thrown away, even if they are illegible or contain inaccuracies that require a replacement document.

If an error is made on an accountable document assigned to one individual, that individual should make all corrections simply by crossing a line through the error and entering the correct information. The erroneous information should not be obliterated. Any subsequent error discovered on an accountable document should be corrected by the person who made the entry. All subsequent corrections must be initialed and dated.

12.6 Shipping of Samples

Samples will be delivered to the Princeton Testing Laboratory or to a OEHL for analysis as soon as practical after the number of samples and number of coolers is sufficient to comprise a shipment, preferably the same day the sample was taken. The sample will be accompanied by the Chain-of-Custody Record to Princeton Testing Laboratory and Chain-of-Custody Record and Form 2752 to OEHL.

13.0 SITE CLEAN-UP

Following the completion of the on-site remedial investigation at AFP, all sampling sites will be restored within reason to their preactivity condition. All well and boring cuttings will be removed and the general area, following the completion of each well and boring, will be cleaned. New groundwater monitoring wells will be locked. Only those drill cuttings suspected of being hazardous waste (based on discoloration, odor and organic vapor detection instruments) will be properly containerized by HART for eventual disposal by AFP. The suspected hazardous waste shall be tested by HART for EP Toxicity and Ignitability.

HART will repair asphalt surfaces that are damaged due to various field activities using a quick fix concrete or cold asphalt patch.

All sampling and testing equipment will be decontaminated and removed from the site following completion of work.

14.0 FIELD TEAM ORGANIZATION AND RESPONSIBILITIES

14.1 Organization

The HART project field team will be organized according to the sampling activity. For on-site sampling work, the actual sampling team makeup will be dependent on the type and extent of sampling and will consist of a combination of the following:

- Project Manager
- Site Safety Officer
- Field Team Leader
- Geologists (1)
- Technician
- OVA Operator

Subcontractors will be used to provide crews and equipment for drilling, final well development and pump testing, geophysical logging and waste hauling. One individual may perform more than one of the functions listed above.

14.2 Responsibilities

Specific responsibilities for field team members are described below:

Project Manager: The HART Project Manager will be present at the beginning of field operations. He will brief the field team on the objectives of the sampling program and general procedures to be followed. In his absence from the site, the Field Team Leader will be his representative.

In the absence of Air Force field personnel, the Project Manager (or Field Team Leader) will direct all inquiries to the Air Force Project officer.

Site Safety Officer: The Site Safety Officer will be responsible for the adherence to all site safety requirements by the team members. The Safety Officer will assist in conducting site briefing meetings and will perform the final safety check. Additional responsibilities are:

° Updating equipment or procedures based upon new information gathered during the site inspection.

° Upgrading the levels of protection based upon site observations. Enforcing the "buddy system" where appropriate.

° Determining and posting locations and routes to medical facilities, including poison control centers; arranging for emergency transportation to medical facilities.

° Notifying local public emergency officers, i.e., police and fire departments, of the nature of the team's operations and posting their telephone numbers.

° Entering exclusion areas in emergencies when at least one other member of the field team is available to stay behind and notify emergency services; or after he/she has notified emergency services.

° Examining work party members for symptoms of exposure or stress.

° Providing emergency medical care and first aid as necessary onsite. The Safety Officer has the ultimate responsibility to stop any operation that threatens the health or safety of the team or surrounding populace.

Field Team Leader: The Field Team Leader will be responsible for the coordination of all sampling efforts, will assure the availability and maintenance of all sampling equipment and materials, and provide for shipping and packing materials. He will supervise the completion of all Chain-of-Custody Records, the proper handling and shipping of the samples collected, be responsible for the accurate completion of Field Log Books and represent the Project Manager in his absence.

Geologist: The geologist will be responsible for directing drilling activities and installation of monitoring wells, including soil sampling, and initial development.

Technician: The Sample Preparation Technician will assume custody of samples to be shipped. He/she will be responsible for completing all Chain-of-Custody Forms. He/she will dispense sample containers, sample identification tags, etc., to the team members and retain records for control purposes.

OVA Operator: The OVA Operator will be responsible for performing all in-field OVA analyses of soil samples.

14.3 Training

Field personnel will be adequately trained with regard to hazardous waste site experience.

For site-specific training, field personnel will receive the Technical Operations Plan, Site Safety Plan and the Project Work Plan in a timely manner to allow for a sufficient review period. Prior to the initiation of site sampling, a field staff orientation and briefing will be held to acquaint personnel with the site, with the operation of any unfamiliar sampling equipment, and to assign field responsibilities.

All sampling activities will be based on, and will be in compliance with, the site Level of Protection classification, as described in the Site Safety Plan (Appendix A).

15.0 SCHEDULE

HART has scheduled the tasks described in this Technical Operations Plan to be completed as shown in Figure 7. While every reasonable effort will be made to meet these task deadlines, unexpected drilling conditions or weather events may require adjustment of this schedule.

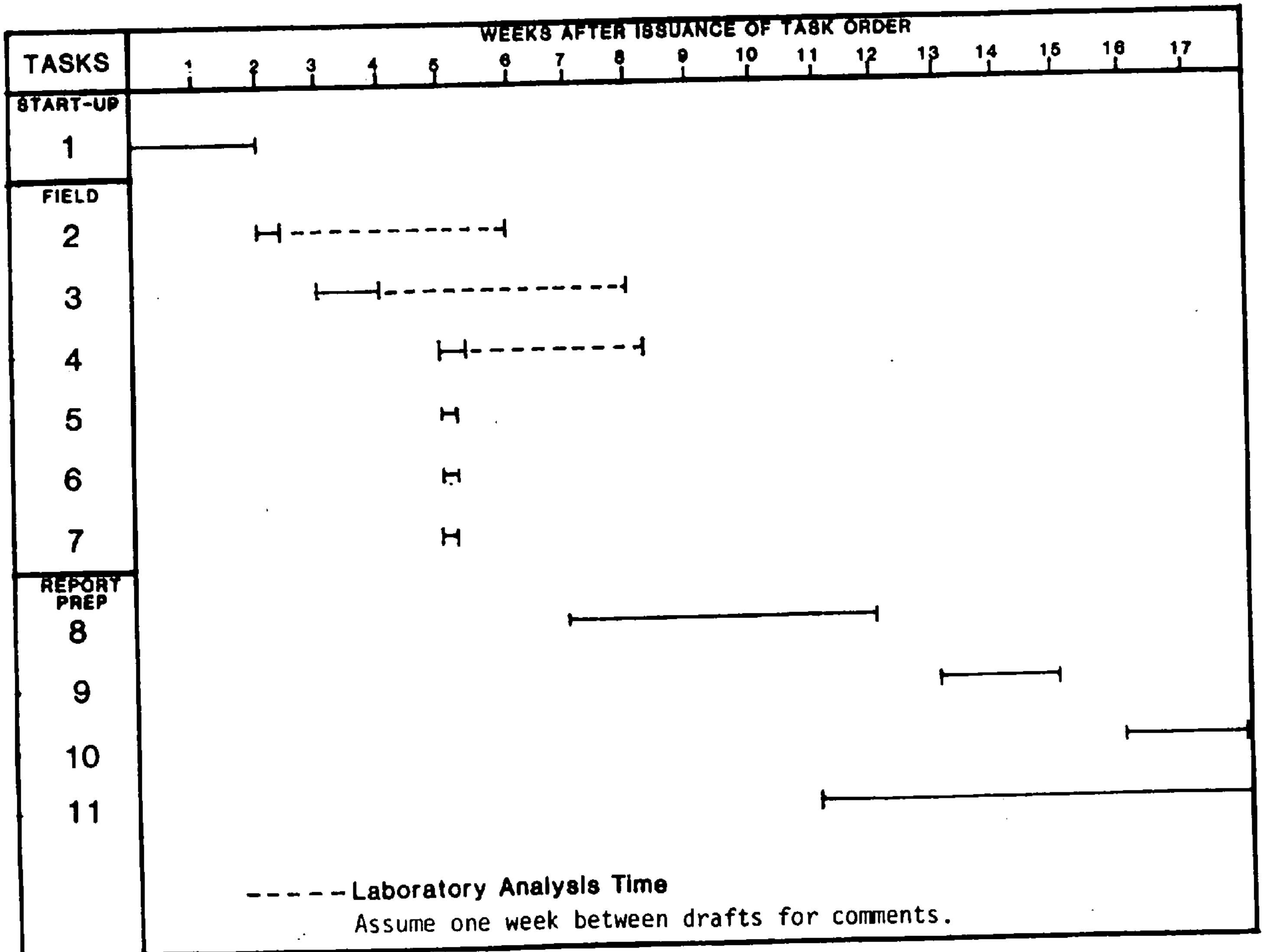


FIGURE 7 PROPOSED SCHEDULE

APPENDIX A

SITE SAFETY PLAN

SITE SAFETY PLAN

A. GENERAL INFORMATION

SITE: Air Force Plant 59 PROJECT NO.: G106

LOCATION: Johnson City, NY

PREPARED BY: Rebekah Dunn DATE: 12/3/85

APPROVED BY: Francie Barker DATE: 12/3/85

OBJECTIVE(S): Conduct sampling for remedial investigation to identify extent and magnitude of contaminated soil and groundwater.

PROPOSED DATE(S) OF INVESTIGATION: Summer 1986

BACKGROUND REVIEW: COMPLETE: X PRELIMINARY:

DOCUMENTATION/SUMMARY: OVERALL HAZARD: SERIOUS

MODERATE

LOW X

UNKNOWN

B. SITE/WASTE CHARACTERISTICS

WASTE TYPE(S): LIQUID X SOLID SLUDGE GAS

CHARACTERISTIC(S): CORROSIVE IGNITABLE X RADIOACTIVE

VOLATILE X TOXIC X REACTIVE UNKNOWN OTHER (NAME):

FACILITY DESCRIPTION: AF 59 is an Air Force owned electro-mechanical systems production facility operated by General Electric Company.

PRINCIPAL DISPOSAL METHOD (type and location):
Storage of hazardous waste off-site by contractors.

UNUSUAL FEATURES (dike integrity, power lines, terrain, etc.)
None presently known, will be determined on site.

STATUS (active, inactive, unknown): Active

HISTORY (worker or nonworker injury; compliants from public; previous agency action): No history

C. HAZARD EVALUATION

There is potential for dermal exposure to soils contaminated with waste oils, degreasers, process chemicals, and paint residues during soil sampling. In addition ambient air concentrations of volatile organics may be exacerberated during drilling if drilling occurs in contaminated areas.

D. SITE SAFETY WORK PLAN

PERIMETER ESTABLISHMENT: MAP/SKETCH ATTACHED See Fig. 2 Tech. Operation Plan SITE SECURED? Yes

PERIMETER IDENTIFIED ZONE(S) IF CONTAINMENT IDENTIFIED Yes

PERSONNEL PROTECTION

LEVEL OF PROTECTION: A B C D X

MODIFICATIONS:
During drilling, upgrade to Level C if non-methane hydrocarbons exceed 5-10 ppm above background.

SURVEILLANCE EQUIPMENT AND MATERIALS:

Organic Vapor Analyzer

DECONTAMINATION PROCEDURES: Washing boots, gloves, split spoons, all sampling equipment rinse with determent and water, rinse with clean water, methanol rinse, then distilled water. Steam cleaning of drilling equipment.

SPECIAL EQUIPMENT, FACILITIES, OR PROCEDURES:

Decon waste will be drummed for proper disposal.

SITE ENTRY PROCEDURES: N/A

TEAM MEMBER (Major)	RESPONSIBILITY
Jim Mack	Project Director
Robert Goldman	Field Team Leader/QA/QC/ Site Safety/Hydrogeology
Aaron Levy	Field Technician

WORK LIMITATIONS (time of day, etc.): Daylight hours

INVESTIGATION-DERIVED MATERIAL DISPOSAL: Disposable clothes and equipment to be bagged and disposed of as waste, unless contaminated, when it will be drummed and disposed of by AFB off-site.

E. EMERGENCY INFORMATION

LOCAL RESOURCES

AMBULANCE: (607) 772-1010

HOSPITAL EMERGENCY ROOM: (607) 770-6611

POISON CONTROL CENTER: (607) 770-6611

POLICE: (607) 729-9321

FIRE DEPARTMENT: (607) 729-9512

AIRPORT: (607) 798-7171

EXPLOSIVES UNIT: None

~~EPA~~ CONTACT: Mr. Patrick Gilligan (607) 770-2216
USAF

SITE RESOURCES

WATER SUPPLY: At Plant

TELEPHONE: (607) 770-2216

RADIO: N/A

OTHER: N/A

EMERGENCY CONTACTS

CORPORATE SAFETY DIRECTOR	Laurence Kaufman, Ph.D.	(202) 296-7902
PROJECT LEADER	Jim Mack	(212) 840-3990
FCHA OFFICE		(212) 840-3990

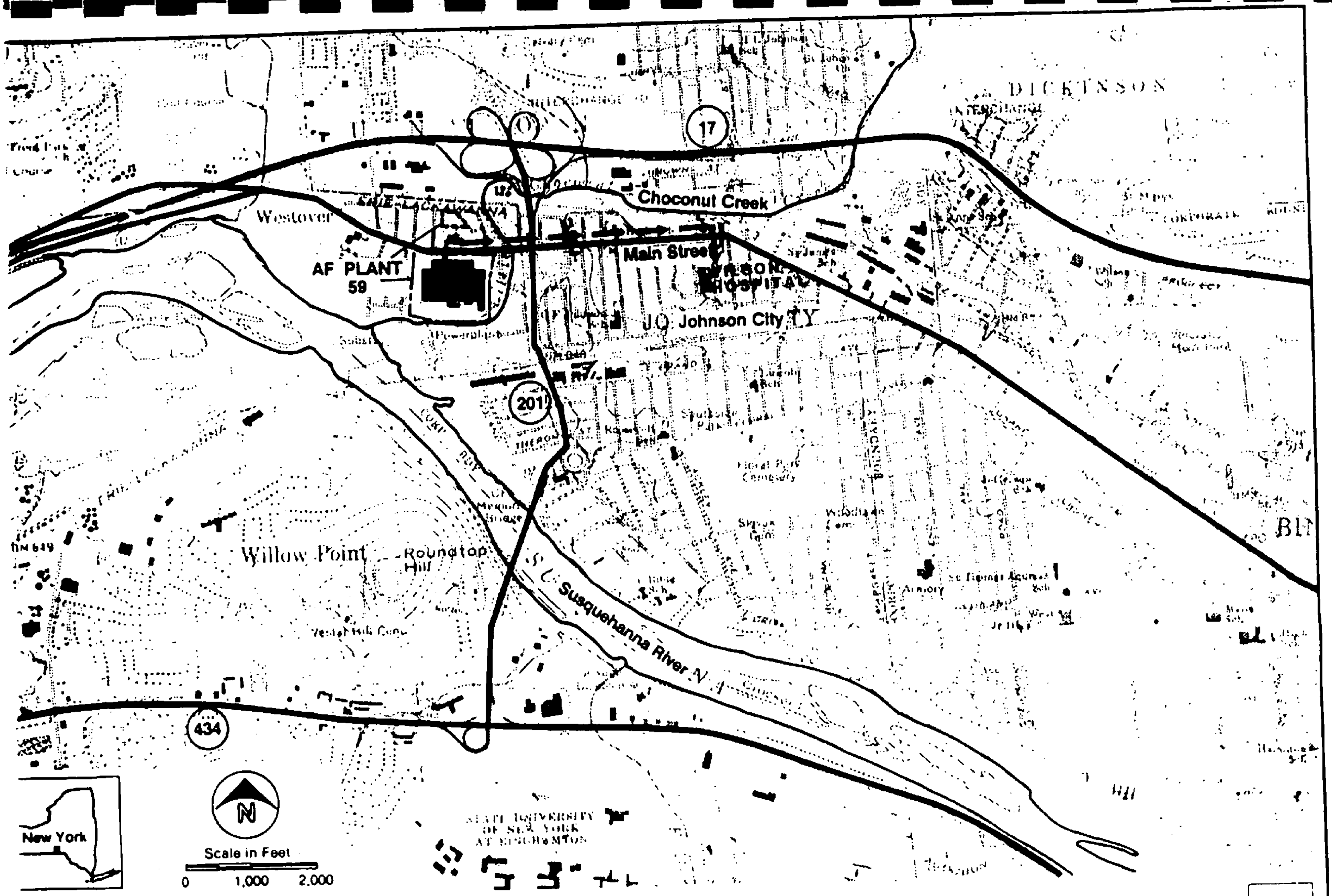
F. EMERGENCY ROUTES

(give road or other directions; attach map)

HOSPITAL:

Turn east on Main Street from plant exit, proceed 3/4 mile. Wilson Hospital is located on south side of road.

OTHER:



Location and Vicinity Map of AF Plant 59.

HART

Fred C. Hart Associates, Inc.