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PHASE I AND PHASE II
REMEDIAL INVESTIGATION FINAL REPORT
RECTICON/ALLIED STEEL SITE
PARKER FORD, PENNSYLVANIA

Prepared by:

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VOLUME 2 OF 4

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APPENDIX A

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APPENDIX A

FIELD SAMPLING PROCEDURES (REPRODUCED FROM DAMES & MOORE'S DECEMBER 3, 1990 PHASE I RI/FS WORK PLAN)

APPENDIX B

SOIL BORING PROCEDURES

A soil boring program will be conducted in order to provide data to:

- o Evaluate the degree and extent of soil contamination.
- o Evaluate contamination source areas.

Specification for materials and procedures for soil borings are described in this Appendix. Section 1 describes preparatory activities; Section 2 lists field equipment; Section 3 presents the site management responsibilities; and Section 4 gives the field activities.

1.0 PREPARATORY ACTIVITIES

The field geologist shall locate and stake all soil boring locations, at the area of the facility under investigation, prior to the commencement of boring activity. The boring locations shall be in accordance with locations presented in the RI/FS Workplan. If site conditions preclude boring placement, alternative locations will be proposed.

2.0 FIELD EQUIPMENT

Geological field equipment to be used for this task includes:

- o Organic vapor analyzer
- o Stainless steel trowel, spatula or spoon
- o Boring logs and sampling records
- o Decontamination detergents, and methanol
- o Tap water
- o Distilled water
- o Sample bottles
- o Cleaning brushes
- o Stakes, marking flags, and paint
- o Depth-sounding tape
- o Required health and safety clothing and equipment

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3.0 PROCEDURES AND SITE MANAGEMENT

The field geologist will supervise the soil borings, as discussed in Section 4.0. The field geologist will also be responsible for logging field notes, for obtaining a grab soil sample and for ensuring that both decontamination and health and safety procedures are observed in the field.

4.0 SOIL BORING PROCEDURES

Soil borings must be performed in accordance with the specifications given below.

4.1 CLEANING

The drilling contractor shall certify, and the project manager/geologist shall confirm, that the tools, and any downhole components or materials have been steam-cleaned immediately before work begins. An on-site controlled decontamination area will be selected for equipment cleaning. Rinse water from cleaning will be released to the ground surface at the decontamination area. Decontamination of the drill rig and drilling equipment will consist of:

- Steam-cleaning all equipment that will be introduced into the boreholes, including split-spoon sampling equipment and hollow-stem augers.
- Decontaminating all augers by steam cleaning followed by a spray rinse with deionized water.
- Decontaminating split-spoon samplers and related sampling equipment by rinsing them with the tap water, followed by a rinse with deionized water, methanol, and a final rinse of deionized water.
- Washing and decontaminating the split-spoon samplers in accordance with the procedures stated in step 3 after collection of each soil sample.
- Storing all augers, split-spoon samplers, and equipment used in drilling on clean plastic until they are required for use.
- Decontaminating and handling the boring and sampling equipment, as described in steps 2 through 5, prior to augering at each successive borehole.
- Using dedicated latex gloves when handling augers, split-spoon samplers, etc. Gloves will be collected in garbage bags and disposed of at the conclusion of daily operations.

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These cleaning and decontamination procedures will be employed for all drilling activities in potentially contaminated environments. Their purpose is to minimize the potential for transferring possible contaminants from one borehole to another.

4.2 BORING OPERATIONS

The use of hollow-stem augers for borehole development is expected. Stainless steel split spoons will be used to collect soil samples.

Split-spoon samples will be collected and described every two (2) feet, to the final depth of the boring. The samples will be described and logged by a qualified geologist. Additionally, OVA readings will be made of the sample immediately after collection.

Once the sample has been collected, blow counts recorded, sampled described, OVA reading measured and recorded, a grab/discrete sample will be obtained for sampling from a designated section of recovery. The designated sample intervals will be proposed at a future date. The sample(s) will be placed in jar(s) pre-supplied by a qualified laboratory. During this phase of the investigation, borehole depth will be approximately 24 feet, the top of bedrock.

After each use, split-spoon samplers and sampling spoons/trowels etc., will be cleaned as per Section 4.1.

At the conclusion of each boring, the borehole will be tremie grouted from the bottom to the ground surface.

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APPENDIX C

WELL INSTALLATION PROCEDURES

APPENDIX C

MONITORING WELL INSTALLATION PROCEDURES

New ground water monitoring wells will be installed in order to:

- Provide information of the hydrogeologic regime under the Recticon/Allied Steel site.
- Allow for the evaluation of the ground water quality at the Recticon/Allied Steel site.

Specifications for materials and procedures in monitoring well installation and development are described in this appendix. Section 1.0 describes preparatory activities, and Section 2.0 discusses field equipment. Section 3.0 presents site management responsibilities. Section 4.0 presents the field procedures for monitoring well construction, including decontamination procedures, and materials specifications. Section 5.0 describes monitoring well development techniques, and Section 6.0 addresses monitoring well surveying.

1.0 PREPARATORY ACTIVITIES

The drilling contractor shall be contacted prior to initiation of site work to review the scope of work. The scope is based on existing knowledge of site hydrogeology. All required permits, licenses, approvals, certificates, and authorizations must be obtained prior to initiation of field activities. The field geologist shall locate and stake all well locations prior to the commencement of drilling activities. These locations shall be consistent with locations presented in the RI/FS Workplan. If site conditions preclude well placement, alternative locations will be proposed.

2.0 FIELD EQUIPMENT

Field equipment to be used for this task includes:

- Organic vapor analyzer
- Boring logs and sampling records
- Decontamination detergents, nitric acid, and methanol
- Distilled water
- Sample bottles

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- Stakes and marking flags
- Depth-sounding tape (0.01-foot graduations)
- Required health and safety clothing and equipment

3.0 PROCEDURES AND SITE MANAGEMENT

The field geologist will supervise the installation of monitoring wells, as discussed in Section 4.0. The field geologist will also be responsible for maintaining field notes, for logging the boreholes, for accurately measuring the depth to ground water and recording this information, and for ensuring that decontamination and health and safety procedures are observed in the field.

4.0 MONITORING WELL INSTALLATION PROCEDURES

Monitoring wells must be installed in accordance with the specifications expressed below.

4.1 CLEANING

Prior to arriving on-site, the drilling contractor shall certify, and the project manager/geologist shall confirm, that the tools, and any downhole components or materials have been steam-cleaned immediately before work begins. An on-site controlled decontamination area will be selected for additional equipment cleaning. Rinse water from cleaning will be released to the ground surface at the decontamination area, if appropriate. Decontamination of the drill rig and drilling equipment will consist of:

- Steam-cleaning all equipment that will be introduced into the boreholes.
- Storing equipment used in drilling on clean plastic until it is required for use.
- Using dedicated, disposable Latex plastic gloves when handling drilling equipment and downhole tools. Gloves will be collected in garbage bags and disposed of upon completion of each borehole. Dedicated gloves and other handling materials will be used at each subsequent borehole location.

These cleaning and decontamination procedures will be employed for all drilling activities in potentially contaminated environments. Their purpose is to minimize the potential for transferring possible contaminants from one borehole to another.

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4.2 DRILLING OPERATIONS

The use of an air-rotary drill rig with augering and soil sampling capabilities is proposed. For the overburden wells, the augers will be used. For the "shallow" and "deep" bedrock wells, the air-rotary method will be utilized.

All boreholes for overburden monitoring wells will be sampled every five and/or ten feet (with the discretion of the field geologist) to the final depth of the borehole. These samples will be described and logged by a qualified and degreed geologist. Additionally, lithological changes and significant water entry zones will be noted for all well types.

During drilling, in-situ "return" air will be monitored with an OVA by field personnel.

4.3 MONITORING WELL CONSTRUCTION MATERIALS

Each well type (overburden, shallow bedrock, and deep bedrock) will require different well construction materials.

4.3.1 Overburden Well Construction Materials

Four-inch diameter schedule 40 flush-threaded PVC riser pipe and screen will be placed in the eight-inch diameter borehole. The borehole will be drilled from the ground surface to the top of bedrock. A well centering collar will be placed a few feet above the screened interval. The appropriate sandpack, No. 1 grade quartz sand, will be poured into the annular space between the borehole wall and the outside of the PVC casing to one foot above the screen. The appropriate screen size and filter pack for the wells will be selected on the basis of field observations of the overburden materials adjacent to the well bore. On top of the sand will be a two-foot thick bentonite pellet seal. Grout, which is cement with 3 to 5 percent bentonite, will be added on top of the seal to approximately three feet from ground surface. The PVC casing will be capped with a water-tight lid. To secure the PVC casing, a lockable six-inch diameter protective steel casing with a steel lid will be cemented in place to a depth of three feet. The protective steel casing will stand approximately two feet above the ground surface. Figure 14 depicts a general overburden well diagram.

4.3.2 "Shallow" Bedrock Well Construction Materials

Six-inch diameter steel casing will be used for well construction. The casing will be set from ground surface to five feet into competent bedrock in a ten-inch borehole. The grout (a mixture of cement with 3 to 5 percent bentonite) will be placed for the length of the boring by pressure grouting to ensure a bottom seal. Cement will be placed from the ground surface to a depth of

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three feet. Figure 15 illustrates a generalized construction diagram. The grout will be allowed to set for a period of not less than 24 hours before drilling.

A 5 7/8-inch diameter borehole will be drilled through the six-inch diameter steel casing to ten feet below the next water entry zone (or maximum depth of 70 feet). If the hole remains open, the well will be complete except for the installation of the protective steel casing.

If the hole does not remain open, four-inch diameter schedule 40 flush-threaded PVC riser pipe and screen (0.010 slotted) will be placed in the borehole. If the riser pipe and screen are necessary, a well centering collar will be placed a few feet above the screened interval. The accompanying sand pack will consist of #1 grade quartz sand. The length of screen and sand pack is contingent on well conditions encountered.

A bentonite seal, 5 feet thick, will be placed above the sand pack. Bentonite pellets will be used to create the seal.

The remaining annular space will be grouted with a tremie pipe. The grout will be comprised of a cement/bentonite mixture. Bentonite will be added to the cement such that the bentonite comprises 2 to 5 percent of the mixture.

A lockable, eight-inch diameter protective steel casing will be set in a cement collar placed above the grout.

4.3.3 "Deep" Bedrock Well Construction Materials

Eight-inch diameter steel casing will be used for well construction. The casing will be set in a ten-inch borehole. The grout (a mixture of cement with 3 to 5 percent bentonite) will be placed for the length of the boring by pressure grouting to ensure a bottom seal. Cement will be placed from the ground surface to a depth of three feet. Figure 16 illustrates a generalized construction diagram. The grout will be allowed to set for a period of not less than 24 hours before drilling.

A 7 7/8-inch diameter borehole will be drilled through the center of the eight-inch diameter steel casing to an undetermined depth. The depth is contingent upon the depth of the deepest "shallow" bedrock well and the locations of water bearing zones. Six-inch casing will be set from the ground surface to the depth of the 7 7/8-inch borehole. Grout (cement with 3 to 5 percent bentonite) will be pumped into the annular space from the depth of the borehole to ground surface. The grout will be allowed to set for a period of not less than 24 hours before drilling.

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A 5 7/8-inch diameter borehole will be drilled through the six-inch diameter steel casing to ten feet below the next water entry zone (maximum depth has not been determined). If the hole remains open, the well will be complete except for the installation of the protective steel casing.

If the hole does not remain open, four-inch diameter schedule 40 flush-threaded PVC riser pipe and screen (0.010 slotted) will be placed in the borehole. If the riser pipe and screen are necessary, a well centering collar will be placed a few feet above the screened interval. The accompanying sand pack will consist of #1 grade quartz sand. The length of screen and sand pack is contingent on well conditions encountered.

A bentonite seal, 5 feet thick, will be placed above the sand pack. Bentonite pellets will be used to create the seal.

The remaining annular space will be grouted with a tremie pipe. The grout will be comprised of a cement/bentonite mixture. Bentonite will be added to the cement such that the bentonite comprises 2 to 5 percent of the mixture.

A lockable, ten-inch diameter protective steel casing will be set in a cement collar placed above the grout.

5.0 MONITORING WELL DEVELOPMENT

After the installation of the monitoring wells, they will be developed to ensure a representative ground water sample of the aquifer can be obtained.

Development of the wells will consist of pumping and backwashing with a submersible pump. The pump will be positioned opposite the water-bearing fracture zone or 5 feet below the top of the screen. The pump will be started at a reduced capacity, and gradually increased to full capacity. The pump will be stopped after 15 minutes to allow a column of water to flow into the well. The procedure will be repeated at the discretion of the supervising geologist until turbidity readings in samples of the discharge water have stabilized.

The discharge rate during development should be estimated by timing the pump discharge fill rate of a 5-gallon bucket or other suitable container. The development water will be discharged to the ground surface as far as possible away from the pumping and observation wells, or, if the water exceeds PADER discharge limits, it will be contained and treated.

Equipment used to develop the wells will be thoroughly cleaned as specified in Section 4.3 of Appendix F before each well development program is begun.

APPENDIX D-1

SOIL SAMPLING PROCEDURES

APPENDIX D-1

SOIL SAMPLING PROCEDURES

1.0 SURFACE SOIL SAMPLING

The purpose of the surface soil sampling is to characterize topsoil quality. The following sections detail the appropriate sampling, decontamination, custody, and sample blank procedures for surface soil sampling.

Field personnel will chronologically record in the logbook information that relates to sampling, investigation, and collection of data. All site activities will be summarized in the logbook. Errors will be crossed out with a single line and initialed.

1.1 SOIL SAMPLING PROCEDURES

Soil sampling procedures will be as follows:

1. The laboratory "shuttle" will be opened and the sample bottles will be inspected to ensure that all of the required bottles are present and properly labeled.

2. Collection of soil samples will be performed using a clean stainless steel trowel. Each trowel will be cleaned using the procedures outlined in Section 1.2. At each sample location the soil will be placed into the sample vials or jars using the trowel.

3. For each sampling event, samples will be handled with a new pair of disposable plastic surgical gloves.

4. Three background surface soil samples will be collected at appropriate locations that are not affected by overland flow from either the former Recticon or Allied Steel facilities.

5. Upon the completion of sampling at each location, the sampler will be decontaminated in accordance with the procedures described in Section 1.2.

6. Each bottle will be labeled with the following information:

   a. Job number
   b. Owner/client
   c. Location
   d. Sample number or designation
   e. Date

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f. Time
g. Type of laboratory analysis (i.e., metals, pH, etc.)
h. Name of person collecting the sample

7. The sample bottles will be placed in the shuttle and packed with ice or chemical ice packs to maintain the temperature at 4°C.

8. The Chain-of-Custody and Field Parameter Forms from the analytical laboratory will be completed and signed. The Sampling Record will also be completed.

9. The shuttle will be sealed and stored.

10. If applicable, a field blank will be collected in accordance with procedures described above.

11. The shuttles will be transported by car to the laboratory within 24 hours of collection. The laboratory will be notified by the project manager in a timely manner of the impending arrival of the samples. The laboratory will be prepared to receive the samples and to perform preliminary extractions or analyses within the CLP-recommended holding times.

1.2 SAMPLING EQUIPMENT DECONTAMINATION PROCEDURES

All sampling equipment will be constructed of inert materials and will be decontaminated in the field prior to use. The sampling device and equipment decontamination method will involve a non-phosphate detergent, tap water, deionized water, methanol, and air drying.

Samplers and sample containers will be cleaned and prepared for field use according to the following procedures:

1. Non-phosphate detergent and tap water wash

2. Tap water rinse

3. Distilled/deionized water rinse

4. Methanol (reagent grade) rinse*

5. Total air dry or nitrogen blow out*

6. Distilled/deionized water rinse

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Note: * Methanol is an acceptable cleaning solvent provided that it is allowed to totally evaporate via air drying or a nitrogen blowout and if is followed by a distilled/deionized rinse.

1.3 SAMPLE CUSTODY PROCEDURES

Sample chain of custody is initiated by the laboratory with the selection and preparation of the sample containers. To reduce the chance for error, the number of personnel that assume custody of the sample will be held to a minimum.

In-situ or on-site monitoring and sampling data will be controlled and entered onto appropriate records. Personnel involved in the chain-of-custody and transfer of samples will be trained regarding the purpose and procedures prior to implementation.

1.3.1 Field Sample Custody

A Chain-of-Custody Form will accompany the samples from initial sample container selection and preparation at the laboratory to the field for sample containment and preservation, through its return to the laboratory. Under no circumstances will sample coolers and bottles be left unattended in the field unless stored in a secured area.

The project manager will notify the laboratory of upcoming field sampling activities and the subsequent transfer of samples to the laboratory. This notification will include information concerning the number and type of samples to be shipped and the samples' anticipated date of arrival. Insulated sample shipping containers (coolers) will be provided by the laboratory. All sample bottles within each shipping container will be individually labeled.

Dames & Moore personnel receiving the sample containers will check each cooler for the integrity of the seals. Coolers with broken seals will be returned to the laboratory with the containers unused. The receiving Dames & Moore personnel will break the seal, inspect the contents for breakage, sign the Chain-of-Custody Form as their receipt of the sample containers. A temporary seal will be affixed to each cooler until the sample containers are filled.

When the sample containers have been filled, they will immediately be placed in the cooler with sealed bags of ice or chemical ice to maintain the samples at 4°C. The field sampler will indicate the sample designation/location number in the space provided on the appropriate Chain-of-Custody Form for each sample of water or sediment. The Chain-of-Custody Forms will be signed

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and placed in the cooler. The completed shipping container will be closed and a seal will be affixed to the latch or lid. This seal must be broken to open the cooler, and will indicate tampering if the seal is broken before receipt at the laboratory. The samples will be delivered via car or Federal Express to the laboratory not later than one day after sample collection.

If samples are split and sent to different laboratories, a copy of the Chain-of-custody Form will be sent with the replicate sample. The original Chain-of-Custody Form will accompany the sample to the primary laboratory. The "remarks" column of the Chain-of-Custody Form will be used to record specific considerations associated with the samples, such as sample type, container type, sample preservation methods, and analyses to be performed. The laboratory will maintain the completed original forms on file. Copies will be submitted as part of the final analytical report.

1.3.2 Laboratory Sample Custody

Receipt, storage, and tracking of samples submitted to the laboratory is conducted according to strict protocol in order to prevent sample contamination or loss, and to avoid the production of invalid laboratory data as a result of sample deterioration or tampering. As such, information concerning internal laboratory procedures, QA/QC controls, etc. are on file with USEPA.

1.4 SAMPLE BLANKS

For quality assurance, blanks will be prepared or collected and analyzed in order to:

1. Provide a check on sample bottle preparation
2. Evaluate the effectiveness of the field cleaning procedures

Field blanks will be collected at the discretion of the sampling team during the course of the project. The blank will be analyzed as another sample for the same test parameters as the soil samples where the blank was collected. The blanks will consist of water.

A field blank consists of two sets of laboratory-cleaned sample containers. One set of containers is empty and serves as the sample containers that will be analyzed. The second set of containers are filled at the laboratory with laboratory-demonstrated analyte-free water. At the field location, this analyte-free water is passed through the sampling device, after the device has been cleaned with solvent and water, and is placed in the empty set of sample containers for analysis. This sample will

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be labeled as a unique individual sample and packaged with the other samples for analysis. The field blank will evaluate the effectiveness of the field cleaning procedures for sampling equipment.

Trip blanks will be submitted periodically for laboratory analysis of VOCs. Trip blanks will be submitted at the discretion of the sampling team.

2.0 SUBSURFACE SOIL SAMPLING

The purpose of the subsurface soil sampling plan is to characterize the soil quality with depth. The following sections detail the appropriate sampling, decontamination, custody, and sample blank procedures.

2.1 SUBSURFACE SOIL SAMPLING PROCEDURES

The subsurface soils will be retrieved from below ground in accordance with the procedures outlined in Appendix B, Chapter 4.0. The soil samples will be collected and containerized for laboratory analysis as per the procedures of subchapter 1.1 in this appendix, except for step 2. Since the subsurface soils will be collected from a split-spoon by a (latex) gloved hand, no trowels will be needed.

2.2 SAMPLING EQUIPMENT DECONTAMINATION PROCEDURES

Subsurface equipment will be decontaminated in accordance with Appendix B, Chapter 4.0.

2.3 CUSTODY PROCEDURES

Applicable custody procedures are included as subchapter 1.3 of this appendix.

2.4 SAMPLE BLANKS

The procedures included as subchapter 1.4 of this appendix are also appropriate for subsurface soil sampling.

3.0 QUALITY ASSURANCE PROCEDURES

The quality assurance procedures for soil sampling and analyses described in this plan are provided in Dames & Moore's Quality Assurance Project Plan dated November 1990 (Appendix E).

APPENDIX D-2

WELL SAMPLING PROCEDURES

APPENDIX D-2

WELL SAMPLING PROCEDURES

1.0 INTRODUCTION

This section contains procedures for the collection, preservation, field analysis, shipment, and chain-of-custody of ground water samples. The goal of these procedures is to collect representative ground water samples in a credible, uniform, and well-documented manner.

Section 2.0 discusses personnel requirements. Section 3.0 addresses materials requirements. Section 4.0 presents the ground water collection procedures, and Section 5.0 discusses the procedures for sample shipment. Section 6.0 addresses the requirements for field equipment calibration.

2.0 PERSONNEL REQUIREMENTS

Ground water sampling will be conducted by personnel knowledgeable and trained in procedures necessary for the proper collection of ground water samples and the proper operation of field analytical and sampling equipment. Also, personnel will have completed the 40-hour 29 CFR 1910.12 Health and Safety Training course.

3.0 MATERIALS

Materials used for ground water sampling will include pumps and associated supplies, ground water sample collection devices and associated supplies, sample bottles and preservatives, and sample shuttles. The materials associated with the various elements of ground water sampling are listed in their respective sections below.

4.0 GROUND WATER COLLECTION PROCEDURES

Ground water collection procedures include depth to ground water measurements, well evacuation, sample withdrawal, and sample placement into jars. Ground water collection will proceed from the upgradient wells to the downgradient wells or from the well of least suspected contamination to the well of greatest suspected contamination. Ground water collected from overburden and bedrock wells OB-1 and BR-1 will be used for background purposes, unless contaminants are detected. If contaminants are detected, then a different location for background ground water samples will be proposed to EPA for approval. The elements of ground water sampling are discussed in Sections 4.1, 4.2, 4.3, and 4.4, respectively. Figure D-2A is a sampling form which will be completed for each monitoring well sampled.

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4.1 DEPTH TO GROUND WATER MEASUREMENTS

Objective

The objective of this task is to provide data on water level elevations at the Recticon/Allied Steel site so that ground water gradients can be evaluated.

Materials

1. Electric ground water measuring device, or steel tape
2. Cleaning materials, including tap water, paper towels, and detergent
3. Spray bottle of deionized water

Activity

1. Before static water levels are measured, the steel tape or electric water level depth recorder, including any part of the device that will enter the well or be positioned over it, shall be cleaned using a detergent wash. Cleaning will be followed by a spray wash of deionized water.
2. Water levels will be measured and recorded to the nearest 0.01 foot relative to a datum marked on the casing or inner PVC well casing.
3. The total depth of the well will be measured and recorded from the datum.

Elevations of the static water levels will then be calculated with respect to a datum, such as mean sea level.

4.2 WELL EVACUATION

Objective

Following ground water level measurement, the wells will be evacuated. Evacuation is performed to remove standing water in the well and in the filter pack (if present) in order to enhance the likelihood that the ground water sampled is representative of the formation water.

Materials

1. Submersible pump and generator
2. PVC pipe to fit pump

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3. Decontamination materials, including non-phosphate detergent, tap water, deionized water, methanol, paper towels, and scrub brushes

4. 5-gallon buckets

5. Polypropylene or nylon rope, knife, and stopwatch

6. Latex gloves

7. pH meter, turbidimeter, specific conductance meter, and temperature meter

Activity

1. Prior to evacuation, a dedicated length of polypipe shall be sprayed with deionized water and wiped dry with clean paper towels. Submersible pumps will be decontaminated by washing with a detergent rinse, followed by a tap water rinse.

   The pump will be placed in a clean PVC vessel for further decontamination. Liquids (such as methanol) will be added and evacuated from the vessel and pump. Approximately two gallons of the following liquids will be sequentially pumped through the pump:

   - Distilled/deionized water
   - Methanol (10 to 20 percent)
   - Distilled/deionized water

   After the methanol rinse, equipment will be air-dried.

2. For a 6-inch diameter borehole, the minimum volume of water to be evacuated will be calculated by the formula:

   3 volumes = 4.41 x length of water column (well depth from top of casing in feet - depth to ground water from top of casing in feet) = volume in gallons.

   For 4-inch inner diameter pipe, the minimum volume of water to be evacuated will be calculated by the formula:

   3 volumes = 1.96 x length of water column (well depth from top of PVC casing in feet - depth to ground water from top of PVC casing in feet) = volume in gallons

3. The submersible pump, or the check valve associated with the centrifugal pump, will be lowered into the well by the dedicated polypipe until it is several feet below the water surface. If the water level should fall below the pump, the pump will be lowered.

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4. The discharge rate of well water into a 5-gallon container will be recorded using a stopwatch. Discharged water will be collected.

5. The pH, temperature, and specific conductance of the ground water will be measured during purging; one set of pH, temperature, and specific conductance measurements will be taken for each volume of water evacuated from the well. The pH, temperature, and specific conductance will be considered stable if they are within the following limits:

   - pH: ± 0.3 units
   - temperature: ± 1°C
   - specific conductance: ± 200 micromhos

   A minimum of three volumes of water will be purged from the well. If the parameters have not stabilized after three volumes have been purged from the well, then well purging will be continued until a total of five volumes have been purged. If the parameters have not stabilized after five volumes of water have been purged, the sample may then be collected.

Dedicated latex gloves will be worn at all times when personnel handle the sampling equipment. Before evacuation equipment is reused, it must be disassembled and decontaminated in accordance with the specifications of Step 1 above.

4.3 SAMPLE RECOVERY

Objective

Immediately following well evacuation, ground water samples will be collected for laboratory analysis. The goal of the procedures described below is to minimize the potential for altering the sample during the sample recovery process.

Materials

1. Decontaminated teflon or stainless steel bailers
2. Polypropylene or nylon rope
3. Clean plastic sheeting
4. Sample bottles and preservatives
5. Latex gloves
6. Paper towels
7. Decontaminating materials
8. First aid kit
9. Sample labels
10. Filters and filtering equipment

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Activity

1. Prior to sampling, the bailers will be decontaminated in laboratory space designated for ground water sampling equipment decontamination or in the field. Decontamination includes:

   - Wash with a detergent rinse
   - Rinse with deionized water
   - Rinse with methanol
   - Rinse with deionized water

   The bailers will be allowed to air dry after the methanol rinse. Following decontamination, the bailers will be wrapped in aluminum foil (shiny side out).

2. The field sample form and sample labels will be completed. A copy of the field sample form is included at the end of this appendix.

3. The bailers will be unwrapped at the sampling location and tied to dedicated plastic or nylon rope. The bailers will be slowly lowered into the wells; care will be taken to minimize agitation of the ground water.

4. Samples will be collected in the bailer. Samples collected for metals analyses will be filtered in the field. Filtering removes suspended solid materials in order to analyze dissolved ions or compounds. The filtering will be performed using a self-contained filter unit (one for each sampling location), tubing, and a portable pump. The advantage of the self-contained filter unit is that funnels do not need to be cleaned, the unit is disposable, and there is less chance of cross-contamination between samples. The high capacity filter (0.45 micron) is manufactured by QED Environmental Systems of Ann Arbor, Michigan, under the trade name Sample Pro.

5. Prior to being filled, sample containers will be rinsed one time with water bailed from the well where appropriate. Where appropriate, containers will be filled to overflowing, so that no head space remains. Containers with preservatives will not be filled to overflowing. Care will be taken to fill the sample bottles in a manner that does not aerate or agitate the sample.

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Since the samples will be analyzed for volatile organic compounds, care will be taken so that sampling does not degas the samples. The sample containers must be filled by allowing the sample to flow gently down the inside surface of the container, so that no bubbles are formed and the sample is not degassed by agitation. Each container must be filled so that a meniscus is formed over the container mouth. The container cap must be inverted and filled with sample. Then the container cap must be turned over onto the bottle mouth and tightened in a manner to ensure that no air is trapped inside the container. The sealed container must be sealed and shaken vigorously to verify that no air is trapped in the container. If visual inspection indicates that air is present, the container will be unsealed and emptied, and the collection process will be repeated.

Note that dedicated sampling materials, including bailers and rope, will be stored on dedicated clean plastic sheeting, as required to ensure that contaminants are not introduced into the well or the sample. All sampling equipment will be handled with dedicated, disposable Latex gloves. New plastic sheeting and gloves shall be used for each well sampled.

Samples must be maintained at 4°C from the time they are collected.

4.3.1 Trip Blanks and Equipment Blanks

Trip and equipment blanks will be prepared for each day of ground water sample collection.

Trip Blanks

Objective

Trip blanks will serve as quality control to identify sample contamination resulting from interaction between the sample and the container, impure decontamination materials, or laboratory handling procedures that alter the chemical nature of the samples.

Activity

The laboratory will provide trip blanks in sealed 40-milliliter vials, and in sealed bottles identical to those used for collection of the ground water samples to be analyzed for volatile organic compounds.

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Equipment Blanks

Objective

Equipment, or field blanks, are used to verify the effectiveness of sample handling procedures, and to establish the effectiveness of equipment decontamination procedures. Equipment blanks will be prepared for each set of parameters to be analyzed.

Activity

1. The laboratory will provide triple distilled or ultrapurified water for the preparation of equipment blanks.

2. The equipment blank will be prepared when half of the monitoring wells designated for sampling in one day have been successfully evacuated and sampled.

3. Triple distilled or ultrapurified water provided by the laboratory will be poured into a decontaminated bailer, and then into the designated sample bottles.

4.3.2 Field Logbook

Field personnel involved in ground water sampling will maintain field notes. The field notes may contain, but will not be limited to:

1. Well identification

2. Weather conditions

3. Static water level and depth of the well

4. Rate of well evacuation and volume of water purged

5. Notes on the physical appearance of the ground water, including unique or unexpected colors or odors

6. Ground water sampling equipment

7. Date and time of sample collection

8. Name of sample collector

9. Specific conductance, pH, temperature, and turbidity of the ground water after evacuation

10. Notes on unexpected or unique conditions or events related to evacuation of ground water or sample collection

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5.0 GROUND WATER COLLECTION PROCEDURES FOR POTABLE WELLS

Ground water samples will be obtained from selected potable and/or supply wells near the Recticon/Allied Steel site.

The water sample will be taken from a faucet as close to the well head as possible, by-passing any filtration or treatment system. The well should be allowed to run for the evacuation of two exchanges of water from the well.

The sampling spigot will be cracked to allow for a slow but steady stream of water flow. At this point, the sample containers will be filled. Care will be taken to completely fill each container, but not to overflow any containers with preservatives.

If the sampling spigot is equipped with an aerator, it will be removed by rubber jawed pliers prior to sample collection.

Samples collected in order to analyze dissolved ions or compounds will be filtered as described in Section 4.3 of this Appendix.

Figure D-2B is a sampling checklist which will be completed for each domestic potable well sampled.

6.0 SAMPLE SHIPMENT PROCEDURES

Sample shipment procedures include chain-of-custody protocols and procedures for storing and shipping collected samples. These procedures are discussed in Sections 6.1 and 6.2, respectively.

6.1 SAMPLE CHAIN-OF-CUSTODY PROCEDURES

Objective

Sample chain-of-custody will be initiated by the analytical laboratory, with the selection and preparation of the sample containers. The goal of chain-of-custody procedures is to document possession and handling of the sample jars from the time of laboratory preparation through sample collection and laboratory analysis.

Materials

1. Sample labels
2. Chain-of-custody records
3. Coolers/ice

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Activities

1. Using indelible ink, labels on the sample bottles will be marked with information that will include:

   a. Site name
   b. A unique identification number
   c. Name of the collector
   d. Date and time of collection
   e. Place of collection
   f. Parameters for laboratory analysis
   g. Type of sample
   h. Volume of sample
   i. Preservative (when applicable)

2. A chain-of-custody record will be completed, which will include, but not be limited to:

   a. A unique identification number
   b. Signature and name of the collector
   c. Date and time of collection
   d. Place of collection
   e. Parameters for laboratory analysis
   f. Sample type
   g. Identification of the well
   h. Dates of possession

A chain-of-custody form (to be supplied by the selected laboratory) will accompany the sample from initial sample container selection and preparation at the laboratory, to the field for sample containment and preservation, through its return to the laboratory. The chain-of-custody form will trace the path of each individual sample container by means of a unique identification number. Any errors or discrepancies on the chain-of-custody form discovered while in the possession of the field personnel will be corrected by drawing a line through the error and initialed.

The Project Manager will notify the laboratory of upcoming field sampling activities and the subsequent transfer of samples to the laboratory. This notification will include information concerning the number and type of samples to be shipped and the anticipated date of arrival.

An example chain-of-custody form is found in Appendix E, Figure 2.

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6.2 STORAGE AND SHIPMENT OF COLLECTED SAMPLES

Objective

The goal of procedures described in this section is to ensure that ground water samples are not altered by handling or storage procedures after collection, and to provide documentation to trace potential sample alteration.

Materials

1. Chain-of-custody record
2. Sample seals
3. Refrigerated or insulated shipping containers
4. Frozen "blue ice" packs or ice
5. Packing materials

Activities

1. The full labeled sample bottles will be placed in plastic bags and packed in the shipping containers with frozen "blue ice" packs or ice. The bottles will be arranged and packed with suitable materials to minimize the potential for breakage.

2. The shipping container will be secured with "sample seals" in cases where the sample container will leave the immediate possession of the contractors. The shipping container will be secured with tape. The shipping container will be transported by car or Federal Express to the laboratory within 24 hours of collection.

3. The chain-of-custody record will accompany the shipping container at all times. Transfer of possession of the shipping container(s) will be accompanied by signatures of release and receipt on the chain-of-custody form. Notes pertaining to the condition of the sample container will be made on the chain-of-custody record at the time of transfer.

7.0 CALIBRATION PROCEDURES AND FREQUENCY

All instruments used in the field to gather information or to perform analytical tests should be calibrated prior to use in accordance with the manufacturer's instructions and recommended frequency.

The following steps should be observed by personnel engaged in ground water sampling for pH and specific conductance:

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- The pH meter should be calibrated with a fresh standard buffer solution (pH 7) prior to each field test.

- The operation of the instrument should be checked with fresh standard buffer solutions (pH 4 and pH 10) prior to each day's sampling.

The ph meter and specific conductance meter will be used in accordance with the manufacturer's instructions and will be calibrated before each sampling event using pH standards and a standard solution of known specific conductance.

More frequent calibrations may be performed as necessary to maintain analytical integrity. Calibration records for each field instrument used on the project should be maintained and a copy kept in the project files.

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APPENDIX D-3

SURFACE WATER SAMPLING PROCEDURES

APPENDIX D-3

SURFACE WATER SAMPLING PROCEDURES

1.0 INTRODUCTION

This section contains procedures for the collection, preservation, field analysis, shipment, and chain of custody of surface water samples. The goal of these procedures is to collect representative surface water samples in a credible, uniform, and well-documented manner. Personnel requirements are discussed in Appendix D-2, Chapter 2.

Chapter 2.0 discusses the material requirements. Chapter 3.0 addresses surface water collection procedures. Chapter 4.0 discusses the trip and equipment blanks that will be necessary, and Chapter 5.0 details the documentation of field activity.

2.0 MATERIALS

Materials used for surface water sampling will include sample bottles, shuttles, and latex gloves. The materials associated with surface water sampling are discussed further in Chapter 3.0.

3.0 SURFACE WATER COLLECTION PROCEDURES

Surface water sampling procedures will be as follows:

1. The laboratory "shuttle" will be opened and the sample bottles will be inspected to ensure that all of the required bottles are present and properly labeled.

2. Collection of water samples will be performed using the laboratory provided sample vials or appropriate sample container. At each sample location, the sample vial or appropriate sample container will be lowered directly into the surface water. The vials will be filled and capped so as not to allow headspace (see subsection 4.3, paragraph 3 of Appendix D-2).

3. For each sample collected, the sample will be handled with a new pair of disposable plastic surgical gloves.

4. Each bottle will be labeled with the following information:

   a. Job number
   b. Owner/client
   c. Location
   d. Sample number or designation

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e. Date
f. Time
g. Type of laboratory analysis (i.e., VOCs, etc.)
h. Name of person collecting the sample
i. Preservative, if any

5. The sample bottles will be placed in the shuttle and packed with ice or chemical ice packs to maintain the temperature at 4°C.

6. The Chain-of-Custody and Field Parameter Forms from the analytical laboratory and will be completed and signed. The Sampling Record will also be completed.

7. The shuttle will be sealed and stored.

8. If applicable, a field blank will be collected in accordance with procedures described above.

9. The shuttles will be transported by car or Federal Express to the laboratory within 24 hours of collection. The laboratory will be notified by the project manager in a timely manner of the impending arrival of the samples. The laboratory will be prepared to receive the samples and to perform preliminary extractions or analyses within the CLP-recommended holding times.

4.0 TRIP BLANKS AND EQUIPMENT BLANKS

Trip and equipment blanks will be prepared for each day of surface water sample collection.

Trip Blanks

Objective

Trip blanks will serve as quality control to identify sample contamination resulting from interaction between the sample and the container, impure decontamination materials, or laboratory handling procedures that alter the chemical nature of the samples.

Activity

The laboratory will provide trip blanks in sealed 40-milliliter vials, and in sealed bottles identical to those used for collection of the surface water samples to be analyzed for volatile organic compounds.

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Equipment Blanks

Objective

Equipment, or field blanks, are used to verify the effectiveness of sample handling procedures, and to establish the effectiveness of equipment decontamination procedures. Equipment blanks will be prepared for each set of parameters to be analyzed.

Activity

1. The laboratory will provide triple distilled or ultrapurified water for the preparation of equipment blanks.

2. The equipment blank will be prepared when half of the surface water sampling locations designated for sampling in one day have been successfully sampled.

3. Triple distilled or ultrapurified water provided by the laboratory will be poured into a designated laboratory sample bottle.

5.0 FIELD LOGBOOK

Field personnel involved in surface water sampling will maintain field notes. The field notes may contain, but will not be limited to:

1. Surface water sampling location

2. Weather conditions

3. Static depth of water at the sampling location

4. Notes on the physical appearance of the surface water, including unique or unexpected colors or odors

5. Date and time of sample collection

6. Name of sample collector

7. Specific conductance, pH, and temperature of the surface water

8. Notes on unexpected or unique conditions or events related to sample collection

GROUND WATER SAMPLING RECORD

CLIENT: Rockwell International Corporation JOB NO.: 10839-047

LOCATION: Recticon/Allied Steel, Parker Ford, PA SAMPLED BY: _____

SITE NO. AND NAME: _____

DATE: _____ TIME: _____

WELL TYPE: ___ Monitor ___ Potable ___ Supply ___ Other _____

WELL NO.: _____ WELL SIZE (I.D., inches): _____

TOP OF CASING (TOC) ELEVATION (ft. MSL): _____

DEPTH TO STATIC WATER LEVEL (ft. below TOC): _____

STATIC WATER LEVEL ELEVATION (ft. MSL): _____

DEPTH TO BOTTOM OF WELL (ft. below TOC): _____

SCREENED INTERVAL (ft. below TOC): _____

VOLUME OF WATER TO BE EVACUATED (gallons)*: _____

VOLUME OF WATER EVACUATED (gallons): _____

EVACUATION METHOD: Submersible Pump ___ Centrifugal Pump ___
Positive Displacement Pump ___ Bailer ___
Other _____

SAMPLING METHOD: Submersible Pump ___ Positive Displacement Pump ___
Stainless Steel Bailer (Bottom Fill) ___
Other _____

SAMPLE NO.: _____ SAMPLE DEPTH (ft. below TOC): _____

SAMPLE TREATMENT: Field Filtered ___ Preservative Added ___

SAMPLE APPEARANCE, ODOR, ETC.: _____

FIELD TESTS: SAMPLE TEMPERATURE (°C): _____ ph: _____
CONDUCTIVITY (mhos/cm): _____ PID (ppm): _____

LABORATORY ANALYSIS: _____

NO. OF CONTAINERS AND I.D.: _____

FIELD BLANK I.D. NO.: _____

TRIP BLANK I.D. NO.: _____

DUPLICATE SAMPLE I.D.: _____

COMMENTS: _____

*4-inch casing has 0.65 gallons/ft.
2-inch casing has 0.16 gallons/ft.

6786R

FIGURE D-2A

SUPPLY/POTABLE WELL SAMPLING CHECKLIST

☐ 1. Survey water supply system if possible. Locate line from well and pump. Samples should be taken directly from the well head whenever possible. A spigot is typically located near the pump or pressure tank. The spigot nearest the pump is desired for sampling.

- o If the system is equipped with an activated carbon or other type of filter, a sample should be taken on the discharge side prior to sampling from the intake side of the filter.
- o If the system is equipped with a water softener, the sample should be obtained prior to entering the softener or by adjusting the valves to bypass the softener.
- o If an infrequently used, or outside spigot is to be used for sampling, clean out any organic material, and rinse with chlorox bleach followed by distilled water.
- o Locate spigot that can be used to run water to drain supply lines and activate pump. This does not necessarily need to be the same spigot as the sampling spigot.
- o If any spigot is either badly corroded or calcified, do not use.

☐ 2. Open cooler or "shuttle" and inspect bottles. Make sure all required bottles, preservatives, labels, Chain-of-Custody Form, and Field Parameter Form are present.

☐ 3. Complete appropriate sections of "Ground Water Sampling Record."

☐ 4. Open drain spigot. Water should be run for a sufficient duration to drain the water in the pressure tank, the distribution piping, and pump at least two exchanges from the well. Record volume of water drained.

☐ 5. Remove aerator from sampling spigot with rubber-jawed pliers. DO NOT use bare steel jars against a chrome or brass surface. Connect adaptor with teflon tube to spigot.

☐ 6. Turn on spigot. If the sampling spigot is not the same as the spigot used to drain the water, let enough water drain so as to obtain fresh water through the unused pipes.

☐ 7. Adjust spigot until flow from teflon tube is laminar. Collect sample by inserting tube in container and withdrawing it ahead of the sample, minimizing aeration. Do not overflow containers with preservative.

☐ 8. Perform field tests on extra sample and record results.

☐ 9. Label each bottle and place in "shuttle" with ice packs.

☐ 10. Complete filling out Chain-of-Custody, Field Parameter and Sampling Record forms.

☐ 11. Seal "shuttle" and store in a cool place until transport to the laboratory.

☐ 12. Remove adaptor with teflon tube. Wash adaptor with rinses of acetone followed by distilled water. Discard teflon tube.

☐ 13. Replace aerator.

NOTE: For details on ground water sampling procedures, refer to Appendix D-2.

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FIGURE D-28

APPENDIX D-4

SOIL GAS SURVEY PROCEDURES

APPENDIX D-4

SOIL GAS SURVEY PROCEDURES

1.0 INTRODUCTION

The purpose of the soil gas survey is to evaluate the areal extent of VOC contamination in the vicinity of the site. The soil gas data will be used to identify potential hot spots and the data generated will be used for evaluation of the placement of soil borings at each facility.

1.1 PREPARATORY ACTIVITIES

Field personnel will locate and stake all planned soil gas survey locations in a grid pattern with 20- to 40-foot spacing prior to the commencement of the soil gas survey. Figures 11 and 12 show the location of the sampling locations at the former Recticon facility and the Allied Steel facility. All stakes for the soil gas grid will be demarcated with paint and numbered with the appropriate coordinates in accordance with the sampling locations presented in Figures 11 and 12. The planned soil gas survey grid has 110 sample points for both facilities. This survey may be expanded to include additional areas, should the data prove to be inconclusive. Any additional sampling locations would be proposed and analyzed with EPA approval and oversight.

1.2 SOIL GAS SAMPLING PROCEDURES

Field personnel will supervise the soil gas sampling by keeping field notes, identifying sampling points, and ensuring that decontamination and health and safety procedures are followed. The soil gas survey will be performed by personnel from Tracer Research Corporation of Princeton, New Jersey.

At each sampling location, a 3/4-inch diameter steel probe will be driven into the ground with a truck-mounted hydraulic apparatus, or by hand pounding with a slide hammer. A piece of 3/4-inch-diameter silicon tubing, connected by a steel reducer to a 1/4-inch-diameter tygon tubing (evacuation line) connected to an electric diaphragm pump, will be placed over the open end of the sample probe to facilitate sampling.

The probe will slowly be extracted from the soil while a vacuum gauge measuring negative pressure in the evacuation line is monitored. When the vacuum gauge indicates that soil gas flow is not inhibited by clayey or water saturated soils, the extraction of the probe from the soil will be discontinued. Soil gas will then be purged from the hollow probe until approximately 10 times the probe volume has been evacuated. A 10-milliliter (ml) glass syringe will be inserted through the tygon tubing into the steel

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probe. In this manner, soil gas samples will contact steel and glass surfaces, but they will not be exposed to potential sorbing materials.

The 10-ml soil gas samples will be subsampled according to analytical requirements. Replicates will be injected into the gas chromatograph (GC) for documentation of reproducibility. Samples will be analyzed for the following compounds:

- Trichloroethene (TCE)
- Tetrachloroethene (PCE)
- 1,1,1-Trichloroethane (TCA)
- Benzene
- Toluene
- Ethylbenzene
- Xylenes
- Carbon tetrachloride
- Chloroform
- Vinyl chloride (approximately every other sampling location)

If both vinyl chloride and either benzene, toluene, ethylbenzene, or xylene are present, the amount of time needed for the analysis of the soil gas samples will increase. This could result in an extended period necessary to complete the survey.

Soil gas samples containing compounds with concentrations greater than the highest calibration sample concentration will be reinjected into the GC at lower volumes.

1.3 SOIL GAS QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES

The following quality assurance procedures will be used in order to prevent any cross-contamination of soil gas samples.

Steel probes will be used only once during the day and then washed with high pressure soap and hot water spray or steam-cleaned to eliminate the possibility of cross-contamination. Probe adapters (steel reducer and tubing) will be cleaned at the end of each working day by baking in the GC oven.

Steel tubing will be replaced periodically as needed during the job to ensure cleanliness and good fit. Silicone tubing (connecting the adaptor to the vacuum pump) will be replaced as needed to ensure proper sealing around the syringe needle. This tubing does not directly contact soil gas samples.

Glass sampling syringes will be used for only one sample per day and will be washed and baked out at night. If they must be used twice, they will be purged with carrier gas (nitrogen) and baked out between probe samplings. Septa through which soil gas samples are injected into the chromatograph will be replaced on a daily basis to prevent possible gas leaks from the chromatographic column. Subsampling syringes will be checked for contamination prior to sampling each day by filling them with nitrogen carrier gas and injecting it into the gas chromatograph for analysis. All sampling and subsampling syringes will be decontaminated each day

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and no equipment will be reused before decontaminated. Microliter size subsampling syringes will be reused only after a nitrogen carrier gas blank is run to ensure it is not contaminated by the previous sample.

Analytical instruments will be calibrated each day and calibration checks will be run after approximately every five soil gas sampling locations. Prior to sampling each day, system blanks will be run to check the sampling apparatus (probe, adaptor, 10 cc syringe) for contamination by drawing ambient air from above ground through the system and comparing the analysis to a concurrently sampled air analysis.

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APPENDIX E

QUALITY ASSURANCE PROJECT PLAN
NOVEMBER 1990

CERCLA RI/FS
Recticon/Allied Steel Site
Parker Ford, Pennsylvania

Project Number: 10839-047

Prepared By: John Kearns, Quality Assurance Officer

Quality Assurance Project Plan
November 1990

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Project Manager

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Addendum: Laboratory Quality Assurance Plan of Enseco Incorporated

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INTRODUCTION

This Quality Assurance Project Plan (QAPP) addresses the program requirements to ensure that the data generated during the RI/FS at the Recticon/Allied Steel site in East Coventry Township, Pennsylvania, substantially conform to the specifications agreed to by the Recticon Corporation (Recticon), the Allied Steel Corporation (Allied Steel), and the United States Environmental Protection Agency (USEPA).

The QAPP addresses field and laboratory functions that may affect the quality of data generated in the course of the RI/FS so that all parties will be assured that the objectives of the RI/FS have been met upon completion.

1.0 PROJECT DESCRIPTION

The Recticon/Allied Steel site consists of two facilities: the former Recticon facility that produced silicon wafers and the Allied Steel facility where steel was formerly fabricated. Both facilities historically used trichloroethene, which was detected in residential well water by PADER in 1979. Each facility is considered a potential source area.

The purpose of the proposed study is to determine the source(s) and extent of the ground water contamination at the Recticon/Allied Steel properties, and to select the most feasible remedial action alternative.

2.0 PROJECT ORGANIZATION AND RESPONSIBILITY

A project organization chart is given as Figure 1. The responsibilities of the key personnel are as follows.

The Project Director provides administrative oversight of all aspects of the project. He ensures that necessary resources are committed and available for the successful execution of the QAPP.

The Project Manager has primary technical responsibility for project execution. He reviews all plans, specifications, schedules, and budgets, and directs the activities of all personnel toward timely and correct execution of tasks. The Project Manager is assisted in this function by the Site Coordinator.

The Health and Safety Officer is responsible for reviewing work plans to ensure that adequate provisions are in place for the health and safety of all persons working on-site. He is responsible for development, implementation, and management of health and safety-related procedures prior to and in the course of project execution.

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The Quality Assurance Manager is responsible for development, implementation, and management of procedures to ensure that all tasks associated with the project are carried out according to the specifications of the approved work plan. He is responsible for ensuring that any necessary deviations from that plan are appropriately reviewed and approved, and for the implementation of corrective actions if required. The Quality Assurance Manager often serves as the principal point of contact between the contract laboratory and project team. He is responsible for reviewing of analytical data for conformance to contract requirements and compliance with analytical protocols stipulated in the QAPP.

3.0 DATA QUALITY OBJECTIVES (DQOs)

DQOs for the project will be established in terms of precision, accuracy, comparability, representativeness, and completeness of the data sets generated.

"Precision" is defined as the degree of mutual agreement among individual measurements of the same property under similar conditions, and is expressed as relative percent difference (RPD).

$$RPD = \frac{[REP1 - REP\ 2]}{[(REP\ 1 + REP\ 2) \times 0.5} \times 100\%$$

"Accuracy" is defined as the degree of agreement between a known value and a measured value.

$$Accuracy = \frac{\text{Measured Value}}{\text{Known Value}} \times 100\%$$

"Comparability" of data is ensured through the consistent use of appropriate units of measure for all measurements of the same property under similar conditions.

"Representativeness" expresses the degree to which data reflect actual environmental or process conditions. It is determined, in large measure, by the degree to which appropriate sampling procedures are followed.

"Completeness" is a measure of the amount of valid data obtained compared to the ideally expected amount of data to be obtained.

Samples will be analyzed for volatile organic compounds (VOCs) by media-specific methods. Ground water samples will be analyzed by Test Method 524.2 using a wide bore capillary. This method was chosen by USEPA due to lower detection limits that can be achieved. Soil samples will be analyzed for VOCs by Contract

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Laboratory Program (CLP) methodology. Accuracy and precision objectives are detailed in the Laboratory QA Plan (LQAP) from the selected laboratory. The LQAP is presented in the Addendum to this appendix.

Surface water, surface sediment, and soil boring samples will be analyzed for semi-volatile organics, metals, and cyanide in addition to VOCs. Table E-2 summarizes the types of samples collected and the corresponding analytical methods. Surface water, surface sediment, and soil boring samples will be analyzed using CLP methodology detailed in USEPA Contract Laboratory Program, Multi-Media, Multi-Concentration, 2/88 (Organic Analysis) and USEPA Contract Laboratory Program, Multi-Media, Multi-Concentration, 7/88 (Inorganic Analysis).

The objective for completeness is greater than 95 percent. Each data point sampled is expected to generate acceptable data.

Approved sampling procedures will be used in order to ensure representativeness of the data set. Precision should be ±20 percent, or as stated in Table E-3 for each method.

In order to ensure comparability, consistent units of measure will be used throughout the three sampling events for all analyses of the same parameter on similar matrixes.

4.0 SAMPLING PROCEDURES

4.1 GROUND WATER - See Appendix D-2 for detailed sampling procedures.

4.2 SOIL - See Appendix B for soil boring procedures and Appendix D-1 for soil sampling procedures.

4.3 SOIL GAS - See Appendix D-4 for detailed sampling procedures.

4.4 SURFACE WATER - See Appendix D-3 for detailed sampling procedures.

4.5 SOIL (SURFACE) - See Appendix D-1 for detailed sampling procedures.

See Table E-2 for details of container, preservation, and holding time specifications. All sample containers related to laboratory analyses will be supplied by the contracted laboratory. Samples that require chemical preservation will be placed in prefixed containers provided by the contracted laboratory. All reagents will be analytical grade.

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5.0 SAMPLE CUSTODY

Detailed log entries, identification, and chain of custody procedures will be used in order to ensure the evidentiary validity of the data generated.

5.1 ON-SITE

Sample identification procedures are given in Appendix D-1, Section 1.1. This identification sequence will be used consistently in field notebooks and on chain of custody documentation.

When samples have been obtained for transport to the off-site laboratory for analysis, a chain of custody record will be generated by field personnel. The Site Coordinator will notify the laboratory in advance of a sampling event, providing the laboratory with a schedule and the approximate number of samples by type and parameter. Field personnel will release the samples to the laboratory courier by exchange of signatures on the chain of custody form, retaining one copy for field records. A sample chain of custody form is given as Figure 2. A sample identification label is given as Figure 3.

5.2 LABORATORY

Laboratory sample custody and internal chain of custody procedures are addressed in detail in the LQAP (see Addendum to Appendix E).

6.0 CALIBRATION

6.1 ON-SITE

A calibration program will be implemented to ensure that routine calibration is performed on all field instruments. Field team members familiar with the field calibration and operations of the equipment will maintain proficiency and perform the prescribed calibration procedures outlined in the Operation and Field Manuals accompanying the respective instruments.

Air monitoring instrumentation (OVA) used in the field to gather data for health and safety purposes, and for sample monitoring will be calibrated each day prior to the initiation of field work. The instrumentation will be calibrated using appropriate ultra-zero and indicator gases. Following calibration, each instrument will be tagged to identify the person who calibrated the instrument and the calibration date.

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The following procedures will be utilized to calibrate and operate the Century Systems OVA Model 128. These procedures will be followed when the OVA is used in the survey mode to obtain qualitative data.

The OVA will undergo routine maintenance and calibration by the manufacturer prior to shipment to the project.

Daily calibration and instrument checks will be performed by a trained team member at the start of each day. Daily calibrations will be performed as follows:

1) Turn on electronics and zero instrument on X-10 scale. Gas select dial to 300.
2) Turn on pump and hydrogen, and ignite flame.
3) Attach span gas standard (approximately 100 ppm of methane) to probe via Teflon tubing.
4) Adjust R-32 trim pot on circuit board to make meter read to standard.
5) Turn off flame and adjust meter needles to read 4 ppm.
6) Switch to X1 scale and adjust R-31 trim pot to make meter read 4 ppm.
7) Return to X10 scale and adjust to 40 ppm.
8) Switch to X100 scale and adjust R-33 trim pot to make meter read to 40 ppm.
9) Make sure with pump and OVA upright that ball level on pump is 2 or above.
10) If problems are encountered, go through system checks and perform routine maintenance.
11) If OVA fails calibration steps, notify Project Manager.

Furthermore, the instrumentation will be calibrated using indicator gas of 2-methylpropene (isobutylene) with an IP of 9.23.

Calibration records for each field instrument used on the project will be maintained on-site and a copy will be kept in the contractor's project files.

6.2 LABORATORY

Laboratory calibration procedures are addressed in detail in the LQAP, which is presented in the Addendum to Appendix E.

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7.0 ANALYTICAL PROCEDURES

7.1 ON-SITE

On-site procedures for soil gas analysis are addressed in detail in subsection 5.2.2.4 of the RI/FS Workplan.

7.2 LABORATORY

Laboratory analytical procedures will be taken from the U.S. EPA Statement of Work for Organic Analysis 2/88 as revised 9/88, U.S. EPA Statement of Work for Inorganic Analysis 7/88, and "Methods for the Determination of Organics in Finished Drinking Water and Raw Source Water," USEPA Environmental Monitoring and Support Laboratory - Cincinnati, September 1986 (Method 524.2) for VOC analysis of ground water samples. These methods will be used for all samples related to the site, including surface water. In certain circumstances, the compound list may be modified to meet work plan specifications. This will in no way alter the execution of the methods. Library search data may also be used. The laboratory will maintain and have available for the appropriate operators standard operating procedures related to sample preparation and analysis according to the stipulated methods. The LQAP provides additional information.

The laboratory will analyze samples undiluted in those cases where there is a nondetectable level of target compounds identified in the diluted sample. If possible, the laboratory will reanalyze samples within the indicated holding times if data are identified as rejected or estimated.

8.0 DATA REDUCTION, VALIDATION, AND REPORTING

8.1 DATA REDUCTION

The LQAP contains detailed information pertaining to data reduction. It is provided in the Addendum to this appendix.

8.2 DATA VALIDATION

The LQAP discusses information pertaining to data review and validation internal to the laboratory.

The Quality Assurance Manager will provide data validation upon receipt of the data from the laboratory by the consultant. This validation will include a check on completeness and an audit of associated quality control data to evaluate the overall data quality.

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8.3 DATA REPORTING

The LQAP details the data reporting requirements. The reporting format must present sufficient information to allow data validation. At a minimum, the reporting format will include:

a. Sample identification
b. Chronology
c. Analytical results/Detection limits
d. QA summary

    1. Tuning and calibration (as required)
    2. Surrogate recoveries
    3. MS/MSD summary
    4. Blank reported
    5. Narrative information
    6. LCS reported (as required)

e. Chain of custody
f. Library search information (as required)

    1. Tentative identification
    2. Approximate concentration
    3. Degree of purity

g. Labeled chromatograms/RICs

9.0 INTERNAL QC CHECKS/SYSTEM AUDITS

9.1 ON-SITE

The QA/QC officer assigned to the project will conduct periodic audits of operations at the site to ensure that work is being performed in accordance with the work plan and standard operating practice (see the appendices). A checklist appropriate to the activities scheduled during the audit will be used. An example checklist is provided as Figure 4. The audit will cover but not necessarily be limited to such areas as:

Conformance to SOPs
Completeness and Accuracy of Documentation
Chain of Custody Procedures
Compliance with HASP
Construction Specifications

These audits will occur during initial sampling activities. The field audit report will be submitted to the EPA Remedial Project Manager within 15 calendar days after the audit.

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9.2 Laboratory

The laboratory that analyzes the samples from the site is required to use the methods and to submit deliverables as stated in the current "Statement of Work of the EPA Contract Lab Program," and the methods and deliverables stated in Method 524.2. Dames & Moore will conduct a laboratory audit during the time the lab is conducting analyses on the first round of soil samples. This audit will be conducted in order to verify analytical capabilities. The audit shall be conducted in accordance with procedures outlined by the EPA's Environmental Services Division (ESD) Quality Assurance Section and as identified by the EPA Remedial Project Manager. Audit reports will be submitted to EPA within 15 calendar days of audit completion, as required by Section X, part 6, of the AOC. Data validation of analyses will also be provided to EPA that determines data usability.

10.0 PREVENTIVE MAINTENANCE

10.1 FIELD EQUIPMENT

The OVA (organic vapor analyzer) is the only piece of field equipment expected to require preventive maintenance. It will be maintained in accordance with the manufacturer's specifications.

10.2 LABORATORY

The LQAP discusses laboratory equipment maintenance in detail.

11.0 ASSESSING DATA QUALITY OBJECTIVES

11.1 FIELD

The impact of field activities on data quality relates primarily to sampling technique and sample point location. Audits as described in Section 9 of this document will provide the principal means of assessing the conformance of field personnel to SOPs. These will be reported as part of the QA reports to management.

11.2 LABORATORY

See the LQAP, the addendum to this appendix.

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12.0 CORRECTIVE ACTIONS

The following procedures have been established to ensure that conditions adverse to quality, such as malfunctions, deficiencies, deviations, and errors, are promptly investigated, documented, evaluated, and corrected.

When a significant non-conforming condition is noted at the site, or at laboratory or subcontractor locations, the cause of the condition will be determined and corrective action taken to preclude recurrence. Condition identification, cause, reference documents, and corrective actions planned to be taken will be documented and reported to the Project Manager, Quality Assurance Manager, and subcontractor management, at a minimum. Implementation of corrective action will be verified by documented follow up to the Quality Assurance Manager. All project personnel have the responsibility, as part of the normal work duties, to promptly identify, solicit approved correction, and report non-conforming conditions. Project management and staff, such as field investigation teams, remedial response planning personnel, quality assurance auditors, document and sample control personnel, and laboratory groups must monitor ongoing work performance in the normal course of daily responsibilities.

Work will be audited at the sites, laboratories, and subcontractor locations by the Quality Assurance Manager or designated auditors. Items, activities, or documents ascertained to be in noncompliance with quality assurance requirements will be documented and corrective actions will be mandated through audit finding sheets attached to the audit report. Audit findings will be logged, maintained, and controlled by the Quality Assurance Manager.

A Corrective Action Request (CAR), shown on Figure 5, should be used to identify the adverse condition, reference document(s), and recommended corrective action(s) to be administered. The issued CAR is directed to the responsible management in charge of the item or activity for action. The individual to whom the CAR is addressed returns the requested response promptly to the Quality Assurance Manager, affixing his signature and date to the corrective action block, after stating the cause of the conditions and the corrective action to be taken. The Quality Assurance Manager maintains the log for status control of CARs and responses, confirms the adequacy of the intended corrective action, and verifies its implementation. The Quality Assurance Manager will issue and distribute CAR's to specified personnel, including the originator, responsible project management involved with the condition, the Project Manager, and the involved subcontractor, at a minimum. CARs are transmitted to the project file for the records.

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13.0 QA REPORTS TO MANAGEMENT

Monthly reports from the QA/QC Coordinator will address:

1. Overview of activities and significant events related to QA/QC
2. Summary of audit results
3. Review of corrective action request status
4. Laboratory QA/QC report
5. Data validation QA/QC report
6. Summary of significant changes in SOPs or QA/QC programs
7. Recommendations

Reports will be submitted to the Project Manager for distribution no later than the fifth working day of each month.

Upon project completion, a Final QA Report will be issued, assessing the overall degree of project conformance to specifications and the impact of any non-conforming conditions on data quality that may affect management decisions.

TABLE E-1

SAMPLING SUMMARY
RECTICON/ALLIED STEEL SITE
PARKER FORD, PENNSYLVANIA

ACTIVITY	MEDIA	ESTIMATED NUMBER OF SAMPLES	ANALYSES	DUPLICATE	TRIP BLANK	FIELD BLANKS
Surface Water Sampling	Water Water Water	2 2 2	VOA SVA Metals	1 1 1	1/SDG - -	1 1 1
Surface Sediment Sampling	Sediment Sediment Sediment	7 7 7	VOA SVA Metals	1 1 1	1/SDG - -	1 1 1
Soil Boring Program Sampling	Soil	4	VOA SVA Metals	1	1/SDG	1
Hydrogeologic Investigation Monitoring Well Water Sampling (per each of four events)	Water	16	VOA SVA------First Metals---Round Only	1	1/SDG	3
Hydrologic Characteristics Test Sampling	Water	2	VOA	0	1/SDG	1

Explanation:

VOA = Volatile organic analysis for the EPA Contract Laboratory Program Target Compound List.
SVA = Semi-volatile organic analysis for the EPA Contract Laboratory Program Target Compound List.
Metals = Metals analyses for the EPA Contract Laboratory Program Target Analyte List.
SDG = Sample delivery group.

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TABLE E-2

ANALYTICAL PARAMETER SUMMARY
RECTICON/ALLIED STEEL SITE
PARKER FORD, PENNSYLVANIA

	No. Samples		No. QA Samples				Method	Preservative	Container	Holding Time
	H_2O	Soil	MS/ MSD	MS/MD/ LCS	TB	FB				
urface Water Sampling										
VOA	2	0	1	0	1	1	EPA/CLP/TCL	4°C, HCL to pH<2	3x40 ml glass vials	10 days from VTSR
SVA	2	0	1	0	0	1	EPA/CLP/TCL	4°C	2x1000 ml glass	Extraction within 5 days from VTSR and analyzed within 40 days of extraction
Metals, Filtered and Unfiltered	4	0	0	1	0	1	EPA/CLP/TAL	4°C	1x1000 ml poly	6 months (Mercury - 26 days)
Cyanide	2	0	1	0	0	1	EPA/CLP/TAL	HNO_3 to pH<2 NaOH to pH>12	1x1000 ml poly	14 days from VTSR
urface Sediment Sampling										
VOA	0	7	1	0	1	1	EPA/CLP/TCL	4°C	3x40 ml vials	10 days from VTSR
SVA	0	7	1	0	0	1	EPA/CLP/TCL	4°C	1x8 oz. glass	Extraction within 10 days from VTSR and analyzed within 40 days of extraction
Metals	0	7	0	1	0	1	EPA/CLP/TAL	4°C	1x8 oz. glass	6 months (Mercury - 26 days)
Cyanide	0	7	1	1	0	1	EPA/CLP/TAL	4°C	1x8 oz. glass	14 days from VTSR
oil Boring Program Sampling										
VOA	0	4	1	0	1	1	EPA/CLP/TCL	4°C	3x40 ml vials	10 days from VTSR
SVA	0	4	1	0	0	1	EPA/CLP/TCL	4°C	1x8 oz. glass	Extraction within 10 days from VTSR and analyzed within 40 days of extraction
Metals	0	4	0	1	0	1	EPA/CLP/TAL	4°C	1x8 oz. glass	6 months (Mercury - 26 days)
Cyanide	0	4	1	1	0	1	EPA/CLP/TAL	4°C	1x8 oz. glass	14 days from VTSR
ydrogeologic Investigation onitoring Well Water Sampling per each of four events)										
VOA	16	0	1	0	1	1	Method 524.2	4°C, HCL to pH<2	3x40 ml glass vials	14 days from date sampled
ydrogeologic Characteristics est Sampling										
VOA	2	0	0	0	1	1	EPA/CLP/TCL	4°C, HCL to pH<2	3x40 ml glass vials	10 days from VTSR

es:
- = Volatile Organic Analysis
- = Semi-Volatile Organic Analysis
/CLP/TCL = EPA Contract Laboratory Program Target Compound List of Volatile and Semi-volatile Organic Compounds (refer to Addendum, Sec. 9, Pages 4-7).
/CLP/TAL = EPA Contract Laboratory Program Target Analyte List of Metals (refer to Addendum, Sec. 9, Page 9).
MSD = Matrix Spike/Matrix Spike Duplicate
MD/LCS = Matrix Spike/Matrix Duplicate/Laboratory Control Spike
- = Trip blank
- = Field blank
- = Hydrochloric acid
- = Nitric acid
R = Verified time of sample receipt

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TABLE E-3

SUMMARY OF DATA QUALITY OBJECTIVES
RECTICON/ALLIED STEEL SITE
PARKER FORD, PENNSYLVANIA

Task	Objective	Data Use	Selected Analytical Options	Sensitivity	Analytical Method
Surface Water Sampling	Evaluate potential impact of contaminant migration via surface water	1,2,3	IV	CLP/RAS	EPA/CLP/TCL EPA/CLP/TAL
Surface Sediment Sampling	Evaluate potential impact of contaminant migration via surface water	1,2,3	IV	CLP/RAS	EPA/CLP/TCL EPA/CLP/TAL
Soil Gas Survey	Evaluate volatilizing gases present in the soil	1,5	I, II	Low ppm VOA	FID
Soil Boring Program	Characterize extent of soil contamination	1,2,3	IV	CLP/RAS	EPA/CLP/TCL
Hydrogeologic Investigation	Define ground water quality and the physical ground water flow system	1,2,3,4	IV	CLP/RAS	EPA/CLP/TCL
Air Monitoring for Health and Safety	Monitor air quality in and near the breathing zone	1,5	I	Low ppm VOA	Low ppm VOA PID/FID

TABLE E-3 (Continued)

SUMMARY OF DATA QUALITY OBJECTIVES
RECTICON/ALLIED STEEL SITE
PARKER FORD, PENNSYLVANIA

Task	Precision	Accuracy	Representativeness	Completeness	Comparability
Surface Water and Sediment Sampling	CLP/RAS	CLP/RAS	Based upon specific field conditions to evaluate all surface water and associated sediments.	CLP/RAS is 80-85% complete. This range is acceptable given the project goals.	The use of standard operating procedures should ensure comparability.
Soil Gas Survey	NA	NA	A sampling grid has been designed to obtain a representative picture.	Since this is a field technique, 100% can be achieved.	Use of standard soil sampling and recognized field analytical procedures assures comparability.
Soil Boring Program	CLP/RAS Precision	CLP/RAS Accuracy	Based upon specific field conditions to detect off-site migration.	CLP/RAS is 80-85% complete. This range is acceptable given the project goals.	The use of standard operating procedures should ensure comparability.
Hydrogeologic Investigation	CLP/RAS Precision	CLP/RAS Accuracy	3-5 well volumes or 10 min. purged before sampling occurs in wells.	Critical samples require 95% completeness.	Use of standard sampling and analytical methods will ensure comparability.
Air Monitoring for Health and Safety	NA	NA	Sampling will obtain site characterization and health and safety data.	Baseline and final round require 100% completeness.	The use of standard operating procedure manuals should ensure comparability.

Notes:

DATA USE:

1. Site Characterization
2. Risk Assessment
3. Evaluation of Alternatives
4. Contamination Transport Evaluation
5. Health and Site Safety

NA = Not Applicable
CLP = Contract Laboratory Program
RAS = Routine Analytical Services
FID = Flame Ionization Detector
PID = Photo Ionization Detector

ANALYTICAL OPTIONS:

Level I = Field screening analysis using portable instruments.
Level II = Field analysis using more sophisticated portable analytical instruments.
Level III = Analysis performed in an off-site laboratory which may not use CLP protocol. Level III does not require the extensive validation or documentation required for CLP Level IV.
Level IV = CLP routine analytical services. All analyses are performed in a CLP analytical laboratory following CLP protocols. Level IV is characterized by rigorous QA/QC protocols and documentation.
Level V = Analysis by non-standard methods. Method development or method modification may be required.

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PROJECT ORGANIZATION/ACTIVITY CHART
RI/FS WORKPLAN
ROCKWELL INTERNATIONAL
PARKER FORD, PENNSYLVANIA

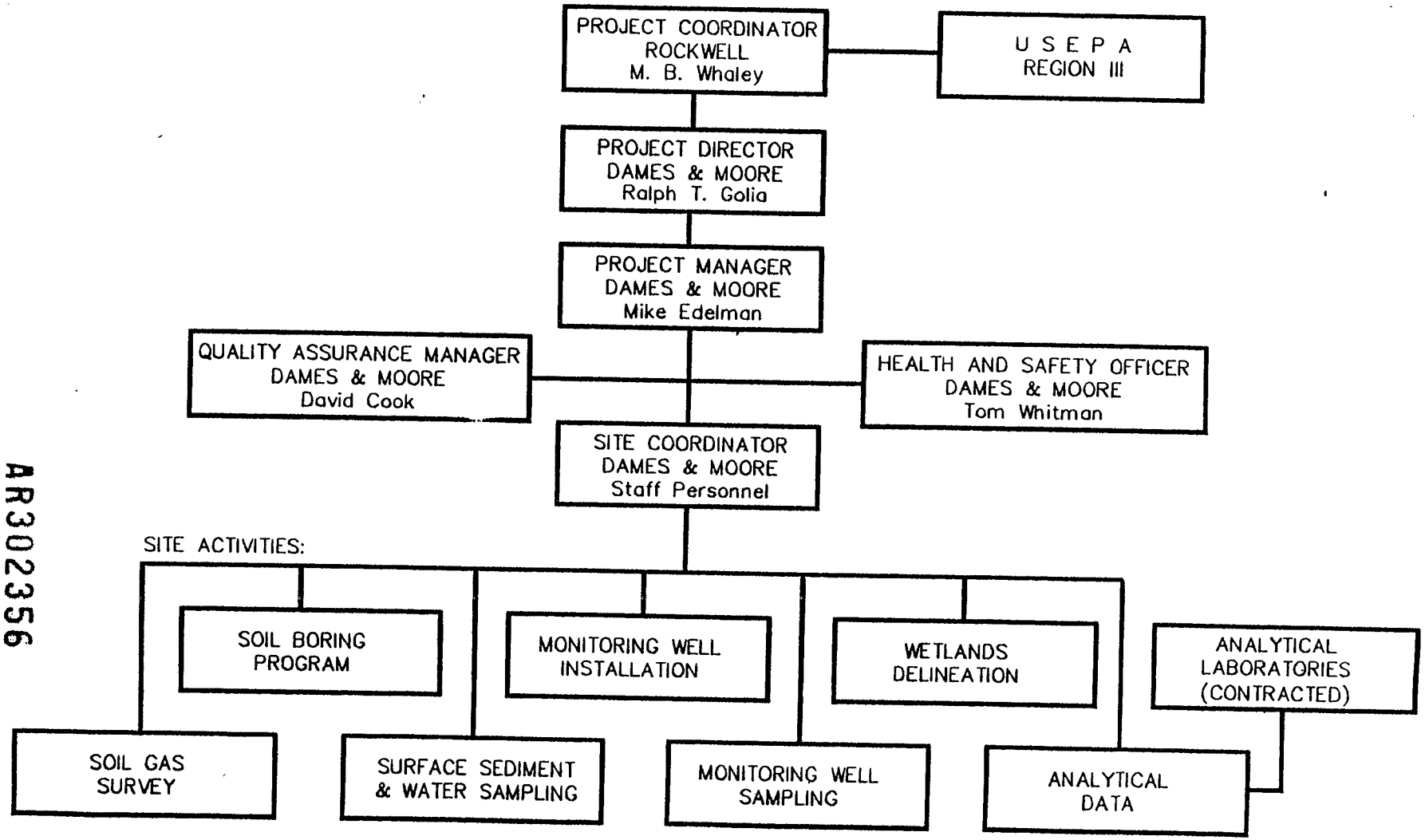

FIGURE 1
DAMES & MOORE

AR302356

'AIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE OF

ER (Signature)	DATE SHIPPED	CARRIER
PHONE	AIRBILL NO	COOLER NO

SHIP TO

Enseco East
2200 Cottontail Lane
Somerset, NJ 08873
(201) 469-5800
(201) 469-7516 Fax #.

ATTENTION

SEND RESULTS TO

CLIENT NAME
COMPANY
ADDRESS
PHONE NO

PROJECT NAME	PROJECT NO.	P O NO

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITIO UPON RECEIPT

EXAMPLE

SPECIAL INSTRUCTIONS / COMMENTS.

FIGURE 2

APPENDIX E

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	____ Immediate Attention (200% Surcharge)	____ RUSH (50-100% Surcharge)	____ Standard

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ENSECO EAST LOG NUMBER (lab use only)

I-CHEM RESEARCH

CHEM (800) 443-1689 (800) 553-3696

SITE NAME	DATE
ANALYSIS	TIME
	PRESERVATIVE

SPECIALTY CLEANED CONTAINER

I-CHEM RESEARCH

CHEM (800) 443-1689 (800) 553-3696

SITE NAME	DATE
ANALYSIS	TIME
	PRESERVATIVE

SPECIALTY CLEANED CONTAINER

I-CHEM RESEARCH

CHEM (800) 443-1689 (800) 553-3696

SITE NAME	DATE
ANALYSIS	TIME
	PRESERVATIVE

SPECIALTY CLEANED CONTAINER

I-CHEM RESEARCH

CHEM (800) 443-1689 (800) 553-3696

SITE NAME	DATE
ANALYSIS	TIME
	PRESERVATIVE

SPECIALTY CLEANED CONTAINER

I-CHEM RESEARCH

CHEM (800) 443-1689 (800) 553-3696

SITE NAME	DATE
ANALYSIS	TIME
	PRESERVATIVE

SPECIALTY CLEANED CONTAINER

I-CHEM RESEARCH

CHEM (800) 443-1689 (800) 553-3696

SITE NAME	DATE
ANALYSIS	TIME
	PRESERVATIVE

SPECIALTY CLEANED CONTAINER

FIGURE 3
APPENDIX E

QUALITY ASSURANCE
AUDIT CHECKLIST

Project _____ Project Manager _____

Site Location _____

Auditor _____ Date _____

Question	Yes	No	Comment/Documentation
FIELD:			
1. Was an on-site safety officer appointed?			
2. Did site personnel receive a copy of the site specific sampling and analytical plan in a timely manner to allow for sufficient review?			
3. Are copies available in the field during sampling?			
4. Was a briefing held off-site, before any site work was begun to acquaint personnel with sampling equipment, assign field responsibilities and review safety procedures?			
5. Do field personnel have a field notebook?			
6. Are the site survey grid stakes present?			
7. Are the number and location of samples collected following procedures as specified in the site specific sampling and analytical plan?			
8. Are samples labeled as described in the POP?			
9. Are samples being collected following the procedures specified in the POP?			
10. Was a chain of custody form filled out for all samples collected?			
11. Are samples preserved as specified in Appendix A of the POP?			

FIGURE 4

APPENDIX E

DAMES & MOORE
A PROFESSIONAL LIMITED PARTNERSHIP

FIGURE 5

APPENDIX E

CORRECTIVE ACTION REQUEST

NUMBER _____ DATE _____

TO _____

YOU ARE HEREBY REQUESTED TO TAKE CORRECTIVE ACTIONS INDICATED BELOW AND AS OTHERWISE DETERMINED BY YOU (A) TO RESOLVE THE NOTED CONDITION AND (B) TO PREVENT IT FROM RECURRING. YOUR WRITTEN RESPONSE IS TO BE RETURNED TO THE PROJECT QUALITY ASSURANCE MANAGER BY _____

CONDITION

REFERENCE DOCUMENTS

RECOMMENDED CORRECTIVE ACTION

ORIGINATOR	DATE	APPROVAL	DATE	APPROVAL	DATE

RESPONSE

CAUSE OF CONDITION

CORRECTIVE ACTION

(A) RESOLUTION

(B1) PREVENTION

(B2) AFFECTED DOCUMENTS

SIGNITURE _____ DATE _____

Q.A. FOLLOW-UP

CORRECTIVE ACTION VERIFIED: BY _____ DATE _____

APPENDIX B

APPENDIX B

SURFACE SOIL SAMPLE DATA

APPENDIX B-1

LABORATORY SUMMARY SHEETS AND DAMES & MOORE DATA VALIDATION FOR SURFACE SOIL SAMPLES

QUALITY ASSURANCE REVIEW

Recticon - Surface Soil Samples
Dames & Moore Job No. 10839-047

DATES COLLECTED: 2/14-19/91 and 4/4/91
DATES OF REVIEW: 4/26/91 - 5/2/91

SDGS #: 12206, 12268, and 13171

INTRODUCTION

This quality assurance review (QAR) is based upon a rigorous review of all data generated from the analysis of soil samples which were collected during February and April of 1991 from the referenced site. The samples which were reviewed are listed in Table 1.

This review has been performed in accordance with the "Functional Guidelines for Evaluating Organics Analyses" (USEPA, March 1990), "Functional Guidelines of Inorganic Analyses" (USEPA, March 1990), "Region III Modifications to the Organic Functional Guidelines (June 1988) and "Region III Modifications to the Inorganic Functional Guidelines" (June 1988).

The data was examined to determine usability as well as to determine contractual compliance relative to the requirements and deliverables specified in the approved workplan. Qualifier codes have been assigned to each analytical result, as appropriate, to facilitate data interpretation. The detailed findings of the QAR are provided in the narrative section of this report. The analytical results are presented in the attached sample data summary sheets.

This report provides a critical review of the laboratory performance and reported analytical results. Quality assurance reviews of laboratory generated data routinely identify problems associated with analytical measurements, even from the most experienced and capable laboratories. The nature and extent of discrepancies identified in this critical review should not be interpreted to mean that those results which are qualified are less than valid.

TABLE 1

SAMPLES INCLUDED IN THIS QAR

ENSECO LABORATORY NUMBER	DAMES & MOORE SAMPLE IDENTIFICATION	ROCKY MT. LABORATORY NUMBER (Inorganics)	ANALYTICAL PARAMETERS
12268-001	A/SS-6	1367301	V,S,M,CN
12268-002	A/SS-3	1367302	V,S,M,CN
12268-003	A/SS-4	1367303	V,S,M,CN
12268-004	A/SS-5	1367304	V,S,M,CN
12268-005	R/SS-7A	1367305	V,S,M,CN
12268-006	R/SS-7B	1367306	V,S,M,CN
12268-007	R/SS-7C	1367307	V,S,M,CN
12268-008	TB	-	V
12268-009	FB	1367101	V,S,M,CN
12206-001	FB	1361601/1361401	V,S,M,CN
12206-003	R/SS-2	1361801	V,S,M,CN
12206-004	TB	-	V
13171-003	A/SS-3	57716001	TOC, % Moisture
13171-004	A/SS-4	57716002	TOC, % Moisture
13171-005	A/SS-5	57716003	TOC, % Moisture
13171-006	A/SS-6	57716004	TOC, % Moisture
13171-007	R/SS-2	57716005	TOC, % Moisture
13171-008	R/SS-7A	57716006	TOC, % Moisture
13171-009	R/SS-7B	57716007	TOC, % Moisture
13171-010	R/SS-7C	57716008	TOC, % Moisture

V - Volatile
S - Semi-volatile
M - Metals
CN - Cyanide
TOC - Total Organic Carbon

SECTION 1 QUALITY ASSURANCE REVIEW

A. Organic Data

Eight (8) soil samples and four (4) quality control samples (field and trip blanks) were collected and analyzed by Enseco Corporation, Somerset, New Jersey. These samples were collectively analyzed for the volatile organic compounds and base/neutral/acid extractable semivolatile organic compounds.

The findings offered in this report are based upon a rigorous review of holding times, blank analysis results, surrogate and matrix spike recoveries, GC/MS tuning, and calibrations. The organic analytical results with appropriate qualifiers are attached in the data summary sheets.

Overall, the data quality for this data package was acceptable. With regard to the requirements as specified in the workplan, all deliverables and reporting requirements were met for this data package with the exception of the following.

Non-Correctable Deficiencies

- A/SS-4, A/SS-5 (and A/SS-5 matrix spike and duplicate), R/SS-7A, R/SS-7B, R/SS-7C, and FB (12268-009) were extracted within hold time, but were analyzed outside of hold (4,2,2,2,2, and 1 day respectively). These samples are technically non-compliant. Positive results are flagged "L" and non-detect "UL" as biased low.

- Samples R/SS2 was re-extracted one day out of hold for semi-volatiles. Although the sample is technically non-compliant, extractable compounds are extremely persistent in the environment and are not expected to significantly degrade during sample storage. In fact the re-extracted sample results were approximately 50 percent higher than the initial analysis, which had poor surrogate recoveries. This re-extracted data is determined to be acceptable.

With regard to data usability, principal areas of concern included surrogate recoveries and calibrations. Based upon a review of the raw data provided, the following organic qualifiers are offered. These issues should not necessarily be considered a reflection of the laboratory performance. Quite often occurrences which necessitate data qualification are attributable to sample matrix problems.

Organic Data Qualifiers

- Methylene chloride, acetone, and chloroform are present in field blanks, trip blanks and/or laboratory method blanks. The reported presence of these constituents in the following volatile samples are qualified questionable and have been flagged "B" on the data tables in Section 2.

Compound	Applicable Samples
Methylene Chloride	A/SS-7A, A/SS-7B, A/SS-7C
Acetone	A/SS-4, A/SS-7C

- The calibration criteria were met, however, the following semivolatile compounds have a percent difference between the initial and continuing calibration of greater than 25 percent. All positive results for these compounds are flagged "J" as estimated.

Compound	Applicable Samples
Acetone	TB (12268-008), FB (12268-009), A/SS7ARE, A/SS7BRE
Chloromethane	A/SS-2*

* The actual detection limit may be higher than reported and non-detect results have been flagged "UJ" on the data table.

- The calibration criteria were met, however, the following semivolatile organic compounds have a percent difference between the initial and continuing calibration of greater than 25 percent criteria. All positive results for these compounds have been flagged "J" as estimated.

Compound	Applicable Samples
Hexachloropentadiene	FB (12268-009)*

* The actual detection limit may be higher than reported and non-detect results have been flagged "UJ" on the data table.

- During the initial analysis and re-analysis of R/SS7B and R/SS7A, each had a volatile internal standard below the control limit. The lab attributes this to matrix interference. Positive compounds quantitated with the internal standard are flagged "J" estimated and "UJ" as non-detects.

- Per CLP protocol, all results obtained from diluted samples are flagged "D" on the data summary sheet.

- Per CLP protocol, all sample results detected at levels less than the quantitation limit should be considered estimated and have been flagged "J" on the sample data summary.

B. Inorganic Data

Sixteen (16) soil samples and two (2) quality control samples (field blanks) were collected and analyzed by Enseco, Inc. of Somerset, New Jersey. These samples were analyzed for metals, cyanide, TOC, and % moisture.

The findings offered in this report are based upon a rigorous review of holding times, blank analysis results, pre- and post-digestion spike recoveries, laboratory duplicate analysis, quantitation of positive results, instrument sensitivity, calibration, ICP interference checks, ICP serial dilutions, laboratory control standard recoveries, graphite furnace QC, and adherence to the protocol and requirements specified in EPA CLP SOW787. The inorganic analytical results with appropriate qualifiers are presented in Section 2, Part B of this report.

Overall, the quality of the inorganic data for this data package appears to be acceptable. With regard to the requirements as specified in the workplan, all deliverables and reporting requirements were met for this data package with the exception of the following.

Correctable Deficiencies

- Intra-laboratory chains-of-custody were not provided for metal and cyanide samples analyzed by Rocky Mountain Analytical, Denver, Colorado.

Inorganic Data Qualifiers

- Due to low spike recoveries of selenium, antimony, and arsenic all associated samples are qualified as biased low. Positive results are flagged "L" and non-detects are flagged "UL".

- The post-digestion spike for A/SS-6 and A/SS-5 were below control limits for thallium, and the post-digestion spikes for A/SS-4, A/SS-5, and R/SS-7C were below control limits for arsenic. All positive results are flagged "L" and non-detects "UL" as biased low.

- The post-digestion spike of A/SS-5 and A/SS-7B is biased high for selenium while the matrix spike is biased low. These samples are flagged "J" as estimated for selenium.

- Due to poor reproducibility of the duplicate analysis of copper, lead, manganese, and nickel, all associated positive results are qualified "J".

- The MSA of lead for R/SS-7C was repeated twice with both correlation <.995. These results are qualified as estimated and flagged "J".

- The ICP serial dilution recovery of magnesium for sample package 12668 was >10%. All associated samples are qualified as estimated and flagged "J".

- Zinc was detected in the field blank in package 12268. All results greater than the instrument detection limit and less than five times the field blank value are flagged "B" as questionable.

- The LCS for sample package 12268 was below the control limits for arsenic, selenium, and thallium. Positive results are flagged "L" and non-detects "UL" as biased low.

C. Conclusion

Based upon the data provided, the majority of the organic and inorganic data appears to be acceptable. Seven semi-volatile samples were analyzed out of hold and have been qualified as biased low. The data validation review has identified aspects of the analytical data that require qualification. To confidently use any of the data within the data set, the data user should understand the limitations and qualifications presented.

AAW014B1

‡4&óú+(0 1A

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

R-SS2

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12206 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 12206-0003

Sample wt/vol: 5.0 (g/mL) G Lab File ID: A2962

Level: (low/med) LOW Date Received: 02/15/91

% Moisture: not dec. 20 Date Analyzed: 02/25/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	13	U
74-83-9	Bromomethane	13	U
75-01-4	Vinyl Chloride	13	U
75-00-3	Chloroethane	13	U
75-09-2	Methylene Chloride	6	U
67-64-1	Acetone	140	
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-35-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	6	U
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	13	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	13	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	Trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-Pentanone	13	U
591-78-6	2-Hexanone	13	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	13	U
108-88-3	Toluene	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
1330-20-7	Total Xylenes	6	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

R-SS2

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12206 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 12206-0003

Sample wt/vol: 5.0 (g/mL) G Lab File ID: A2962

Level: (low/med) LOW Date Received: 02/15/91

% Moisture: not dec. Date Analyzed: 02/25/91

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 5

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75503	Methanamine, N,N-dimethyl- (	4.12	25	J
2.	Hydrocarbon	25.76	5.0	J
3. 541731	1,3-Dichlorobenzene	26.49	3.9	J
4. 106467	1,4-Dichlorobenzene	26.87	2.3	J
5. 95501	1,2-Dichlorobenzene	28.12	4.8	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

R-SS2RE

Lab Name: ENSECO-EAST Contract: _____

Lab Code: _____ Case No.: 12206 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12206-0003RX

Sample wt/vol: 30.2 (g/mL) G Lab File ID: F4252

Level: (low/med) LOW Date Received: 02/15/91

% Moisture: not dec. 20 dec. ____ Date Extracted: 04/02/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/19/91

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	410	U
111-44-4	bis(2-Chloroethyl)Ether	410	U
95-57-8	2-Chlorophenol	410	U
541-73-1	1,3-Dichlorobenzene	410	U
106-46-7	1,4-Dichlorobenzene	410	U
100-51-6	Benzyl Alcohol	410	U
95-50-1	1,2-Dichlorobenzene	410	U
95-48-7	2-Methylphenol	410	U
39638-32-9	bis(2-Chloroisopropyl)Ether	410	U
106-44-5	4-Methylphenol	410	U
621-64-7	N-Nitroso-Di-n-Propylamine	410	U
67-72-1	Hexachloroethane	410	U
98-95-3	Nitrobenzene	410	U
78-59-1	Isophorone	410	U
88-75-5	2-Nitrophenol	410	U
105-67-9	2,4-Dimethylphenol	410	U
65-85-0	Benzoic Acid	2000	U
111-91-1	bis(2-Chloroethoxy)Methane	410	U
120-83-2	2,4-Dichlorophenol	410	U
120-82-1	1,2,4-Trichlorobenzene	410	U
91-20-3	Naphthalene	410	U
106-47-8	4-Chloroaniline	410	U
87-68-3	Hexachlorobutadiene	410	U
59-50-7	4-Chloro-3-Methylphenol	410	U
91-57-6	2-Methylnaphthalene	410	U
77-47-4	Hexachlorocyclopentadiene	410	U
88-06-2	2,4,6-Trichlorophenol	410	U
95-95-4	2,4,5-Trichlorophenol	2000	U
91-58-7	2-Chloronaphthalene	410	U
88-74-4	2-Nitroaniline	2000	U
131-11-3	Dimethyl Phthalate	410	U
208-96-8	Acenaphthylene	350	J
606-20-2	2,6-Dinitrotoluene	410	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

R-SS2RE

Lab Name: ENSECO-EAST Contract: _____

Lab Code: _____ Case No.: 12206 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12206-0003RX

Sample wt/vol: 30.2 (g/mL) G Lab File ID: F4252

Level: (low/med) LOW Date Received: 02/15/91

% Moisture: not dec. 20 dec. ____ Date Extracted: 04/02/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/19/91

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	2000	U
83-32-9	Acenaphthene	410	U
51-28-5	2,4-Dinitrophenol	2000	U
100-02-7	4-Nitrophenol	2000	U
132-64-9	Dibenzofuran	410	U
121-14-2	2,4-Dinitrotoluene	410	U
84-66-2	Diethylphthalate	410	U
7005-72-3	4-Chlorophenyl-phenylether	410	U
86-73-7	Fluorene	410	U
100-10-6	4-Nitroaniline	2000	U
534-52-1	4,6-Dinitro-2-Methylphenol	2000	U
86-30-6	N-Nitrosodiphenylamine (1)	410	U
101-55-3	4-Bromophenyl-phenylether	410	U
118-74-1	Hexachlorobenzene	410	U
87-86-5	Pentachlorophenol	2000	U
85-01-8	Phenanthrene	330	J
120-12-7	Anthracene	210	J
84-74-2	Di-n-Butylphthalate	99	BJ
206-44-0	Fluoranthene	1300	
129-00-0	Pyrene	1200	
85-68-7	Butylbenzylphthalate	92	J
91-94-1	3,3'-Dichlorobenzidine	820	U
56-55-3	Benzo(a)Anthracene	1000	
218-01-9	Chrysene	1000	
117-81-7	bis(2-Ethylhexyl)Phthalate	560	
117-84-0	Di-n-Octyl Phthalate	410	U
205-99-2	Benzo(b)Fluoranthene	1400	
207-08-9	Benzo(k)Fluoranthene	950	
50-32-8	Benzo(a)Pyrene	1200	
193-39-5	Indeno(1,2,3-cd)Pyrene	410	U
53-70-3	Dibenz(a,h)Anthracene	410	U
191-24-2	Benzo(g,h,i)Perylene	690	

(1) - Cannot be separated from Diphenylamine

U.S. EPA - CLP

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

1361801

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): SOIL Lab Sample ID: R-SS-2

Level (low/med): LOW Date Received: 02/18/91

% Solids: 67.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8450			P
7440-36-0	Antimony	12.2	U		P
7440-38-2	Arsenic	2.1	B		F
7440-39-3	Barium	93.7			P
7440-41-7	Beryllium	0.77	B		P
7440-43-9	Cadmium	1.2	U		P
7440-70-2	Calcium	16100			P
7440-47-3	Chromium	75.4			P
7440-48-4	Cobalt	12.2	B		P
7440-50-8	Copper	92.1			P
7439-89-6	Iron	31000			P
7439-92-1	Lead	57.9		S	F
7439-95-4	Magnesium	5360			P
7439-96-5	Manganese	768			P
7439-97-6	Mercury	0.15	U		CV
7440-02-0	Nickel	18.4			P
7440-09-7	Potassium	1170	B		P
7482-49-2	Selenium	0.60	U	W	F
7440-22-4	Silver	1.8	U		P
7440-23-5	Sodium	460	U		P
7440-28-0	Thallium	0.30	U	W	F
7440-62-2	Vanadium	23.7			P
7440-66-6	Zinc	123			P
	Cyanide	0.75	U		AS

Color Before: BROWN Clarity Before: _____ Texture: COARSE
Color After: BROWN Clarity After: _____ Artifacts: _____

Comments:

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A-SS-3

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0002

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V2274

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 43 Date Analyzed: 03/01/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	18	U
74-83-9	Bromomethane	18	U
75-01-4	Vinyl Chloride	18	U
75-00-3	Chloroethane	18	U
75-09-2	Methylene Chloride	3	BJ
67-64-1	Acetone	18	U
75-15-0	Carbon Disulfide	9	U
75-35-4	1,1-Dichloroethene	9	U
75-35-3	1,1-Dichloroethane	9	U
540-59-0	1,2-Dichloroethene (total)	9	U
67-66-3	Chloroform	9	U
107-06-2	1,2-Dichloroethane	9	U
78-93-3	2-Butanone	18	U
71-55-6	1,1,1-Trichloroethane	9	U
56-23-5	Carbon Tetrachloride	9	U
108-05-4	Vinyl Acetate	18	U
75-27-4	Bromodichloromethane	9	U
78-87-5	1,2-Dichloropropane	9	U
10061-01-5	cis-1,3-Dichloropropene	9	U
79-01-6	Trichloroethene	2	J
124-48-1	Dibromochloromethane	9	U
79-00-5	1,1,2-Trichloroethane	9	U
71-43-2	Benzene	9	U
10061-02-6	Trans-1,3-Dichloropropene	9	U
75-25-2	Bromoform	9	U
108-10-1	4-Methyl-2-Pentanone	18	U
591-78-6	2-Hexanone	18	U
127-18-4	Tetrachloroethene	9	U
79-34-5	1,1,2,2-Tetrachloroethane	18	U
108-88-3	Toluene	9	U
108-90-7	Chlorobenzene	9	U
100-41-4	Ethylbenzene	9	U
100-42-5	Styrene	9	U
1330-20-7	Total Xylenes	9	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

A-SS-3

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0002

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V2274

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 43 Date Analyzed: 03/01/91

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A-SS-3

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12268 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0002

Sample wt/vol: 30.1 (g/mL) G Lab File ID: B0198

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 44 dec. ____ Date Extracted: 03/02/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/09/91

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	590	U
111-44-4	bis(2-Chloroethyl)Ether	590	U
95-57-8	2-Chlorophenol	590	U
541-73-1	1,3-Dichlorobenzene	590	U
106-46-7	1,4-Dichlorobenzene	590	U
100-51-6	Benzyl Alcohol	590	U
95-50-1	1,2-Dichlorobenzene	590	U
95-48-7	2-Methylphenol	590	U
39638-32-9	bis(2-Chloroisopropyl)Ether	590	U
106-44-5	4-Methylphenol	590	U
621-64-7	N-Nitroso-Di-n-Propylamine	590	U
67-72-1	Hexachloroethane	590	U
98-95-3	Nitrobenzene	590	U
78-59-1	Isophorone	590	U
88-75-5	2-Nitrophenol	590	U
105-67-9	2,4-Dimethylphenol	590	U
65-85-0	Benzoic Acid	2800	U
111-91-1	bis(2-Chloroethoxy)Methane	590	U
120-83-2	2,4-Dichlorophenol	590	U
120-82-1	1,2,4-Trichlorobenzene	590	U
91-20-3	Naphthalene	590	U
106-47-8	4-Chloroaniline	590	U
87-68-3	Hexachlorobutadiene	590	U
59-50-7	4-Chloro-3-Methylphenol	590	U
91-57-6	2-Methylnaphthalene	590	U
77-47-4	Hexachlorocyclopentadiene	590	U
88-06-2	2,4,6-Trichlorophenol	590	U
95-95-4	2,4,5-Trichlorophenol	2800	U
91-58-7	2-Chloronaphthalene	590	U
88-74-4	2-Nitroaniline	2800	U
131-11-3	Dimethyl Phthalate	590	U
208-96-8	Acenaphthylene	230	J
606-20-2	2,6-Dinitrotoluene	590	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A-SS-3

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12268 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0002

Sample wt/vol: 30.1 (g/mL) G Lab File ID: B0198

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 44 dec. ____ Date Extracted: 03/02/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/09/91

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	2800	U
83-32-9	Acenaphthene	590	U
51-28-5	2,4-Dinitrophenol	2800	U
100-02-7	4-Nitrophenol	2800	U
132-64-9	Dibenzofuran	590	U
121-14-2	2,4-Dinitrotoluene	590	U
84-66-2	Diethylphthalate	590	U
7005-72-3	4-Chlorophenyl-phenylether	590	U
86-73-7	Fluorene	590	U
100-10-6	4-Nitroaniline	2800	U
534-52-1	4,6-Dinitro-2-Methylphenol	2800	U
86-30-6	N-Nitrosodiphenylamine (1)	590	U
101-55-3	4-Bromophenyl-phenylether	590	U
118-74-1	Hexachlorobenzene	590	U
87-86-5	Pentachlorophenol	2800	U
85-01-8	Phenanthrene	290	J
120-12-7	Anthracene	150	J
84-74-2	Di-n-Butylphthalate	590	U
206-44-0	Fluoranthene	720	
129-00-0	Pyrene	680	
85-68-7	Butylbenzylphthalate	140	J
91-94-1	3,3'-Dichlorobenzidine	1200	U
56-55-3	Benzo(a)Anthracene	300	J
218-01-9	Chrysene	520	J
117-81-7	bis(2-Ethylhexyl)Phthalate	260	J
117-84-0	Di-n-Octyl Phthalate	590	U
205-99-2	Benzo(b)Fluoranthene	1200	
207-08-9	Benzo(k)Fluoranthene	590	U
50-32-8	Benzo(a)Pyrene	490	J
193-39-5	Indeno(1,2,3-cd)Pyrene	260	J
53-70-3	Dibenz(a,h)Anthracene	63	J
191-24-2	Benzo(g,h,i)Perylene	250	J

(1) - Cannot be separated from Diphenylamine

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

1367302

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): SOIL Lab Sample ID: A-SS-3

Level (low/med): LOW Date Received: 02/21/91

% Solids: 56.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11500			P
7440-36-0	Antimony	14.5	U	N	P
7440-38-2	Arsenic	2.5	B	N	F
7440-39-3	Barium	155			P
7440-41-7	Beryllium	1.0	B		P
7440-43-9	Cadmium	1.4	U		P
7440-70-2	Calcium	1920			P
7440-47-3	Chromium	19.9			P
7440-48-4	Cobalt	11.9	B		P
7440-50-8	Copper	43.3		*	P
7439-89-6	Iron	15800			P
7439-92-1	Lead	60.7		*	F
7439-95-4	Magnesium	2140		E	P
7439-96-5	Manganese	969		*	P
7439-97-6	Mercury	0.18	U		CV
7440-02-0	Nickel	15.9		*	P
7440-09-7	Potassium	999	B		P
7482-49-2	Selenium	0.71	U	N	F
7440-22-4	Silver	2.1	U		P
7440-23-5	Sodium	543	U		P
7440-28-0	Thallium	0.35	U		F
7440-62-2	Vanadium	24.9			P
7440-66-6	Zinc	111			P
	Cyanide	0.88	U		AS

Color Before: BROWN Clarity Before: _____ Texture: COARSE

Color After: BROWN Clarity After: _____ Artifacts: _____

Comments:

FORM I - IN 7/88

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A-SS-4

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0003

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V2283

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 44 Date Analyzed: 03/01/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	18	U
74-83-9	Bromomethane	18	U
75-01-4	Vinyl Chloride	18	U
75-00-3	Chloroethane	18	U
75-09-2	Methylene Chloride	9	U
67-64-1	Acetone	25	B
75-15-0	Carbon Disulfide	9	U
75-35-4	1,1-Dichloroethene	9	U
75-35-3	1,1-Dichloroethane	9	U
540-59-0	1,2-Dichloroethene (total)	9	U
67-66-3	Chloroform	9	U
107-06-2	1,2-Dichloroethane	9	U
78-93-3	2-Butanone	18	U
71-55-6	1,1,1-Trichloroethane	9	U
56-23-5	Carbon Tetrachloride	9	U
108-05-4	Vinyl Acetate	18	U
75-27-4	Bromodichloromethane	9	U
78-87-5	1,2-Dichloropropane	9	U
10061-01-5	cis-1,3-Dichloropropene	9	U
79-01-6	Trichloroethene	9	U
124-48-1	Dibromochloromethane	9	U
79-00-5	1,1,2-Trichloroethane	9	U
71-43-2	Benzene	9	U
10061-02-6	Trans-1,3-Dichloropropene	9	U
75-25-2	Bromoform	9	U
108-10-1	4-Methyl-2-Pentanone	18	U
591-78-6	2-Hexanone	18	U
127-18-4	Tetrachloroethene	9	U
79-34-5	1,1,2,2-Tetrachloroethane	18	U
108-88-3	Toluene	9	U
108-90-7	Chlorobenzene	9	U
100-41-4	Ethylbenzene	9	U
100-42-5	Styrene	9	U
1330-20-7	Total Xylenes	9	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

A-SS-4

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0003

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V2283

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 44 Date Analyzed: 03/01/91

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 541731	1,3-Dichlorobenzene	25.44	3.9	J
2. 106467	1,4-Dichlorobenzene	25.82	2.5	J
3. 95501	1,2-Dichlorobenzene	27.07	3.0	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A-SS-4

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12268 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0003

Sample wt/vol: 30.8 (g/mL) G Lab File ID: B0355

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 44 dec. ____ Date Extracted: 03/02/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/15/91

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 2.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	1100	U
111-44-4	bis(2-Chloroethyl)Ether	1100	U
95-57-8	2-Chlorophenol	1100	U
541-73-1	1,3-Dichlorobenzene	1100	U
106-46-7	1,4-Dichlorobenzene	1100	U
100-51-6	Benzyl Alcohol	1100	U
95-50-1	1,2-Dichlorobenzene	1100	U
95-48-7	2-Methylphenol	1100	U
39638-32-9	bis(2-Chloroisopropyl)Ether	1100	U
106-44-5	4-Methylphenol	1100	U
621-64-7	N-Nitroso-Di-n-Propylamine	1100	U
67-72-1	Hexachloroethane	1100	U
98-95-3	Nitrobenzene	1100	U
78-59-1	Isophorone	1100	U
88-75-5	2-Nitrophenol	1100	U
105-67-9	2,4-Dimethylphenol	1100	U
65-85-0	Benzoic Acid	5600	U
111-91-1	bis(2-Chloroethoxy)Methane	1100	U
120-83-2	2,4-Dichlorophenol	1100	U
120-82-1	1,2,4-Trichlorobenzene	1100	U
91-20-3	Naphthalene	1100	U
106-47-8	4-Chloroaniline	1100	U
87-68-3	Hexachlorobutadiene	1100	U
59-50-7	4-Chloro-3-Methylphenol	1100	U
91-57-6	2-Methylnaphthalene	1100	U
77-47-4	Hexachlorocyclopentadiene	1100	U
88-06-2	2,4,6-Trichlorophenol	1100	U
95-95-4	2,4,5-Trichlorophenol	5600	U
91-58-7	2-Chloronaphthalene	1100	U
88-74-4	2-Nitroaniline	5600	U
131-11-3	Dimethyl Phthalate	1100	U
208-96-8	Acenaphthylene	240	J
606-20-2	2,6-Dinitrotoluene	1100	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A-SS-4

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12268 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0003

Sample wt/vol: 30.8 (g/mL) G Lab File ID: B0355

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 44 dec. ____ Date Extracted: 03/02/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/15/91

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 2.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	5600	U
83-32-9	Acenaphthene	1100	U
51-28-5	2,4-Dinitrophenol	5600	U
100-02-7	4-Nitrophenol	5600	U
132-64-9	Dibenzofuran	1100	U
121-14-2	2,4-Dinitrotoluene	1100	U
84-66-2	Diethylphthalate	1100	U
7005-72-3	4-Chlorophenyl-phenylether	1100	U
86-73-7	Fluorene	1100	U
100-10-6	4-Nitroaniline	5600	U
534-52-1	4,6-Dinitro-2-Methylphenol	5600	U
86-30-6	N-Nitrosodiphenylamine (1)	1100	U
101-55-3	4-Bromophenyl-phenylether	1100	U
118-74-1	Hexachlorobenzene	1100	U
87-86-5	Pentachlorophenol	5600	U
85-01-8	Phenanthrene	650	J
120-12-7	Anthracene	220	J
84-74-2	Di-n-Butylphthalate	1100	U
206-44-0	Fluoranthene	1600	
129-00-0	Pyrene	1600	
85-68-7	Butylbenzylphthalate	170	J
91-94-1	3,3'-Dichlorobenzidine	2300	U
56-55-3	Benzo(a)Anthracene	770	J
218-01-9	Chrysene	990	J
117-81-7	bis(2-Ethylhexyl)Phthalate	930	J
117-84-0	Di-n-Octyl Phthalate	1100	U
205-99-2	Benzo(b)Fluoranthene	2000	
207-08-9	Benzo(k)Fluoranthene	1100	U
50-32-8	Benzo(a)Pyrene	900	J
193-39-5	Indeno(1,2,3-cd)Pyrene	1100	J
53-70-3	Dibenz(a,h)Anthracene	1100	U
191-24-2	Benzo(g,h,i)Perylene	810	J

(1) - Cannot be separated from Diphenylamine

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

1367303

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): SOIL Lab Sample ID: A-SS-4

Level (low/med): LOW Date Received: 02/21/91

% Solids: 60.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9870			P
7440-36-0	Antimony	13.5	U	N	P
7440-38-2	Arsenic	2.0	B	WN	F
7440-39-3	Barium	115			P
7440-41-7	Beryllium	0.66	U		P
7440-43-9	Cadmium	1.3	U		P
7440-70-2	Calcium	7410			P
7440-47-3	Chromium	32.1			P
7440-48-4	Cobalt	10.8	B		P
7440-50-8	Copper	211		*	P
7439-89-6	Iron	14300			P
7439-92-1	Lead	104		*	P
7439-95-4	Magnesium	5980		E	P
7439-96-5	Manganese	356		*	P
7439-97-6	Mercury	0.16	U		CV
7440-02-0	Nickel	19.8		*	P
7440-09-7	Potassium	1160	B		P
7482-49-2	Selenium	0.66	U	N	F
7440-22-4	Silver	2.0	U		P
7440-23-5	Sodium	507	U		P
7440-28-0	Thallium	0.33	U		F
7440-62-2	Vanadium	27.8			P
7440-66-6	Zinc	346			P
	Cyanide	0.82	U		AS

Color Before: BROWN Clarity Before: _____ Texture: COARSE

Color After: BROWN Clarity After: _____ Artifacts: _____

Comments:

FORM I - IN 7/88

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A-SS-5

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0004

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V2284

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 31 Date Analyzed: 03/01/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	14	U
74-83-9	Bromomethane	14	U
75-01-4	Vinyl Chloride	14	U
75-00-3	Chloroethane	14	U
75-09-2	Methylene Chloride	7	U
67-64-1	Acetone	14	U
75-15-0	Carbon Disulfide	7	U
75-35-4	1,1-Dichloroethene	7	U
75-35-3	1,1-Dichloroethane	7	U
540-59-0	1,2-Dichloroethene (total)	7	U
67-66-3	Chloroform	7	U
107-06-2	1,2-Dichloroethane	7	U
78-93-3	2-Butanone	14	U
71-55-6	1,1,1-Trichloroethane	7	U
56-23-5	Carbon Tetrachloride	7	U
108-05-4	Vinyl Acetate	14	U
75-27-4	Bromodichloromethane	7	U
78-87-5	1,2-Dichloropropane	7	U
10061-01-5	cis-1,3-Dichloropropene	7	U
79-01-6	Trichloroethene	7	U
124-48-1	Dibromochloromethane	7	U
79-00-5	1,1,2-Trichloroethane	7	U
71-43-2	Benzene	7	U
10061-02-6	Trans-1,3-Dichloropropene	7	U
75-25-2	Bromoform	7	U
108-10-1	4-Methyl-2-Pentanone	14	U
591-78-6	2-Hexanone	14	U
127-18-4	Tetrachloroethene	7	U
79-34-5	1,1,2,2-Tetrachloroethane	14	U
108-88-3	Toluene	7	U
108-90-7	Chlorobenzene	7	U
100-41-4	Ethylbenzene	7	U
100-42-5	Styrene	7	U
1330-20-7	Total Xylenes	7	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

A-SS-5

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0004

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V2284

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 31 Date Analyzed: 03/01/91

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A-SS-5

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12268 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0004

Sample wt/vol: 30.2 (g/mL) G Lab File ID: B0326

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 31 dec. ____ Date Extracted: 03/02/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/13/91

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 2.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	950	U
111-44-4	bis(2-Chloroethyl)Ether	950	U
95-57-8	2-Chlorophenol	950	U
541-73-1	1,3-Dichlorobenzene	950	U
106-46-7	1,4-Dichlorobenzene	950	U
100-51-6	Benzyl Alcohol	950	U
95-50-1	1,2-Dichlorobenzene	950	U
95-48-7	2-Methylphenol	950	U
39638-32-9	bis(2-Chloroisopropyl)Ether	950	U
106-44-5	4-Methylphenol	950	U
621-64-7	N-Nitroso-Di-n-Propylamine	950	U
67-72-1	Hexachloroethane	950	U
98-95-3	Nitrobenzene	950	U
78-59-1	Isophorone	950	U
88-75-5	2-Nitrophenol	950	U
105-67-9	2,4-Dimethylphenol	950	U
65-85-0	Benzoic Acid	260	J
111-91-1	bis(2-Chloroethoxy)Methane	950	U
120-83-2	2,4-Dichlorophenol	950	U
120-82-1	1,2,4-Trichlorobenzene	950	U
91-20-3	Naphthalene	400	J
106-47-8	4-Chloroaniline	950	U
87-68-3	Hexachlorobutadiene	950	U
59-50-7	4-Chloro-3-Methylphenol	950	U
91-57-6	2-Methylnaphthalene	700	J
77-47-4	Hexachlorocyclopentadiene	950	U
88-06-2	2,4,6-Trichlorophenol	950	U
95-95-4	2,4,5-Trichlorophenol	4600	U
91-58-7	2-Chloronaphthalene	950	U
88-74-4	2-Nitroaniline	4600	U
131-11-3	Dimethyl Phthalate	950	U
208-96-8	Acenaphthylene	260	J
606-20-2	2,6-Dinitrotoluene	950	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A-SS-5

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12268 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0004

Sample wt/vol: 30.2 (g/mL) G Lab File ID: B0326

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 31 dec. ____ Date Extracted: 03/02/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/13/91

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 2.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	4600	U
83-32-9	Acenaphthene	100	J
51-28-5	2,4-Dinitrophenol	4600	U
100-02-7	4-Nitrophenol	4600	U
132-64-9	Dibenzofuran	300	J
121-14-2	2,4-Dinitrotoluene	950	U
84-66-2	Diethylphthalate	950	U
7005-72-3	4-Chlorophenyl-phenylether	950	U
86-73-7	Fluorene	120	J
100-10-6	4-Nitroaniline	4600	U
534-52-1	4,6-Dinitro-2-Methylphenol	4600	U
86-30-6	N-Nitrosodiphenylamine (1)	950	U
101-55-3	4-Bromophenyl-phenylether	950	U
118-74-1	Hexachlorobenzene	950	U
87-86-5	Pentachlorophenol	4600	U
85-01-8	Phenanthrene	1600	
120-12-7	Anthracene	320	J
84-74-2	Di-n-Butylphthalate	950	U
206-44-0	Fluoranthene	1500	
129-00-0	Pyrene	100	J
85-68-7	Butylbenzylphthalate	950	U
91-94-1	3,3'-Dichlorobenzidine	1900	U
56-55-3	Benzo(a)Anthracene	900	J
218-01-9	Chrysene	1000	
117-81-7	bis(2-Ethylhexyl)Phthalate	540	J
117-84-0	Di-n-Octyl Phthalate	950	U
205-99-2	Benzo(b)Fluoranthene	1700	
207-08-9	Benzo(k)Fluoranthene	950	U
50-32-8	Benzo(a)Pyrene	770	J
193-39-5	Indeno(1,2,3-cd)Pyrene	480	J
53-70-3	Dibenz(a,h)Anthracene	230	J
191-24-2	Benzo(g,h,i)Perylene	560	J

(1) - Cannot be separated from Diphenylamine

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

1367304

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): SOIL Lab Sample ID: A-SS-5

Level (low/med): LOW Date Received: 02/21/91

% Solids: 64.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11400			P
7440-36-0	Antimony	12.7	U	N	P
7440-38-2	Arsenic	4.5		SN	F
7440-39-3	Barium	157			P
7440-41-7	Beryllium	1.8			P
7440-43-9	Cadmium	1.2	U		P
7440-70-2	Calcium	4520			P
7440-47-3	Chromium	47.6			P
7440-48-4	Cobalt	15.7			P
7440-50-8	Copper	124		*	P
7439-89-6	Iron	24400			P
7439-92-1	Lead	114		*	P
7439-95-4	Magnesium	3900		E	P
7439-96-5	Manganese	1500		*	P
7439-97-6	Mercury	0.15	U		CV
7440-02-0	Nickel	28.7		*	P
7440-09-7	Potassium	1180	B		P
7482-49-2	Selenium	0.62	U	WN	F
7440-22-4	Silver	1.9	U		P
7440-23-5	Sodium	476	U		P
7440-28-0	Thallium	0.31	U		F
7440-62-2	Vanadium	30.1			P
7440-66-6	Zinc	513			P
	Cyanide	0.77	U		AS

Color Before: BROWN Clarity Before: _____ Texture: COARSE

Color After: BROWN Clarity After: _____ Artifacts: _____

Comments:

FORM I - IN 7/88

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A-SS-6

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0001

Sample wt/vol: 2.5 (g/mL) G Lab File ID: V2291

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 39 Date Analyzed: 03/01/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	33	U
74-83-9	Bromomethane	33	U
75-01-4	Vinyl Chloride	33	U
75-00-3	Chloroethane	33	U
75-09-2	Methylene Chloride	11	J
67-64-1	Acetone	33	U
75-15-0	Carbon Disulfide	16	U
75-35-4	1,1-Dichloroethene	16	U
75-35-3	1,1-Dichloroethane	16	U
540-59-0	1,2-Dichloroethene (total)	16	U
67-66-3	Chloroform	16	U
107-06-2	1,2-Dichloroethane	16	U
78-93-3	2-Butanone	33	U
71-55-6	1,1,1-Trichloroethane	16	U
56-23-5	Carbon Tetrachloride	16	U
108-05-4	Vinyl Acetate	33	U
75-27-4	Bromodichloromethane	16	U
78-87-5	1,2-Dichloropropane	16	U
10061-01-5	cis-1,3-Dichloropropene	16	U
79-01-6	Trichloroethene	5	J
124-48-1	Dibromochloromethane	16	U
79-00-5	1,1,2-Trichloroethane	16	U
71-43-2	Benzene	16	U
10061-02-6	Trans-1,3-Dichloropropene	16	U
75-25-2	Bromoform	16	U
108-10-1	4-Methyl-2-Pentanone	33	U
591-78-6	2-Hexanone	33	U
127-18-4	Tetrachloroethene	16	U
79-34-5	1,1,2,2-Tetrachloroethane	33	U
108-88-3	Toluene	16	U
108-90-7	Chlorobenzene	16	U
100-41-4	Ethylbenzene	16	U
100-42-5	Styrene	16	U
1330-20-7	Total Xylenes	16	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

A-SS-6

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0001

Sample wt/vol: 2.5 (g/mL) G Lab File ID: V2291

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 39 Date Analyzed: 03/01/91

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A-SS-6

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12268 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0001

Sample wt/vol: 30.1 (g/mL) G Lab File ID: B0197

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 40 dec. ____ Date Extracted: 03/02/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/09/91

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	550	U
111-44-4	bis(2-Chloroethyl)Ether	550	U
95-57-8	2-Chlorophenol	550	U
541-73-1	1,3-Dichlorobenzene	550	U
106-46-7	1,4-Dichlorobenzene	550	U
100-51-6	Benzyl Alcohol	550	U
95-50-1	1,2-Dichlorobenzene	550	U
95-48-7	2-Methylphenol	550	U
39638-32-9	bis(2-Chloroisopropyl)Ether	550	U
106-44-5	4-Methylphenol	550	U
621-64-7	N-Nitroso-Di-n-Propylamine	550	U
67-72-1	Hexachloroethane	550	U
98-95-3	Nitrobenzene	550	U
78-59-1	Isophorone	550	U
88-75-5	2-Nitrophenol	550	U
105-67-9	2,4-Dimethylphenol	550	U
65-85-0	Benzoic Acid	2700	U
111-91-1	bis(2-Chloroethoxy)Methane	550	U
120-83-2	2,4-Dichlorophenol	550	U
120-82-1	1,2,4-Trichlorobenzene	550	U
91-20-3	Naphthalene	110	J
106-47-8	4-Chloroaniline	550	U
87-68-3	Hexachlorobutadiene	550	U
59-50-7	4-Chloro-3-Methylphenol	550	U
91-57-6	2-Methylnaphthalene	250	J
77-47-4	Hexachlorocyclopentadiene	550	U
88-06-2	2,4,6-Trichlorophenol	550	U
95-95-4	2,4,5-Trichlorophenol	2700	U
91-58-7	2-Chloronaphthalene	550	U
88-74-4	2-Nitroaniline	2700	U
131-11-3	Dimethyl Phthalate	550	U
208-96-8	Acenaphthylene	330	J
606-20-2	2,6-Dinitrotoluene	550	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A-SS-6

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12268 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0001

Sample wt/vol: 30.1 (g/mL) G Lab File ID: B0197

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 40 dec. ____ Date Extracted: 03/02/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/09/91

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	2700	U
83-32-9	Acenaphthene	550	U
51-28-5	2,4-Dinitrophenol	2700	U
100-02-7	4-Nitrophenol	2700	U
132-64-9	Dibenzofuran	110	J
121-14-2	2,4-Dinitrotoluene	550	U
84-66-2	Diethylphthalate	550	U
7005-72-3	4-Chlorophenyl-phenylether	550	U
86-73-7	Fluorene	550	U
100-10-6	4-Nitroaniline	2700	U
534-52-1	4,6-Dinitro-2-Methylphenol	2700	U
86-30-6	N-Nitrosodiphenylamine (1)	550	U
101-55-3	4-Bromophenyl-phenylether	550	U
118-74-1	Hexachlorobenzene	550	U
87-86-5	Pentachlorophenol	2700	U
85-01-8	Phenanthrene	610	
120-12-7	Anthracene	270	J
84-74-2	Di-n-Butylphthalate	73	J
206-44-0	Fluoranthene	930	
129-00-0	Pyrene	1000	
85-68-7	Butylbenzylphthalate	390	J
91-94-1	3,3'-Dichlorobenzidine	1100	U
56-55-3	Benzo(a)Anthracene	410	J
218-01-9	Chrysene	710	
117-81-7	bis(2-Ethylhexyl)Phthalate	220	J
117-84-0	Di-n-Octyl Phthalate	550	U
205-99-2	Benzo(b)Fluoranthene	1600	
207-08-9	Benzo(k)Fluoranthene	550	U
50-32-8	Benzo(a)Pyrene	660	
193-39-5	Indeno(1,2,3-cd)Pyrene	380	J
53-70-3	Dibenz(a,h)Anthracene	550	U
191-24-2	Benzo(g,h,i)Perylene	420	J

(1) - Cannot be separated from Diphenylamine

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

1367301

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): SOIL Lab Sample ID: A-SS-6

Level (low/med): LOW Date Received: 02/21/91

% Solids: 60.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10800			P
7440-36-0	Antimony	13.6	U	N	P
7440-38-2	Arsenic	6.0		SN	F
7440-39-3	Barium	178			P
7440-41-7	Beryllium	2.8			P
7440-43-9	Cadmium	1.4	B		P
7440-70-2	Calcium	4240			P
7440-47-3	Chromium	80.7			P
7440-48-4	Cobalt	15.3	B		P
7440-50-8	Copper	183		*	P
7439-89-6	Iron	19600			P
7439-92-1	Lead	151		*	P
7439-95-4	Magnesium	2900		E	P
7439-96-5	Manganese	1210		*	P
7439-97-6	Mercury	0.17	U		CV
7440-02-0	Nickel	25.1		*	P
7440-09-7	Potassium	1120	B		P
7482-49-2	Selenium	0.66	U	N	F
7440-22-4	Silver	2.0	U		P
7440-23-5	Sodium	509	U		P
7440-28-0	Thallium	0.33	U	W	F
7440-62-2	Vanadium	30.2			P
7440-66-6	Zinc	772			P
	Cyanide	0.83	U		AS

Color Before: BROWN Clarity Before: _____ Texture: COARSE

Color After: BROWN Clarity After: _____ Artifacts: _____

Comments:

FORM I - IN 7/88

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A-SS-7A

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0005

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V2292

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 24 Date Analyzed: 03/01/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	13	U
74-83-9	Bromomethane	13	U
75-01-4	Vinyl Chloride	13	U
75-00-3	Chloroethane	13	U
75-09-2	Methylene Chloride	6	J
67-64-1	Acetone	13	U
75-15-0	Carbon Disulfide	7	U
75-35-4	1,1-Dichloroethene	7	U
75-35-3	1,1-Dichloroethane	7	U
540-59-0	1,2-Dichloroethene (total)	7	U
67-66-3	Chloroform	7	U
107-06-2	1,2-Dichloroethane	7	U
78-93-3	2-Butanone	13	U
71-55-6	1,1,1-Trichloroethane	7	U
56-23-5	Carbon Tetrachloride	7	U
108-05-4	Vinyl Acetate	13	U
75-27-4	Bromodichloromethane	7	U
78-87-5	1,2-Dichloropropane	7	U
10061-01-5	cis-1,3-Dichloropropene	7	U
79-01-6	Trichloroethene	7	U
124-48-1	Dibromochloromethane	7	U
79-00-5	1,1,2-Trichloroethane	7	U
71-43-2	Benzene	7	U
10061-02-6	Trans-1,3-Dichloropropene	7	U
75-25-2	Bromoform	7	U
108-10-1	4-Methyl-2-Pentanone	13	U
591-78-6	2-Hexanone	13	U
127-18-4	Tetrachloroethene	7	U
79-34-5	1,1,2,2-Tetrachloroethane	13	U
108-88-3	Toluene	7	U
108-90-7	Chlorobenzene	7	U
100-41-4	Ethylbenzene	7	U
100-42-5	Styrene	7	U
1330-20-7	Total Xylenes	7	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

A-SS-7A

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0005

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V2292

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 24 Date Analyzed: 03/01/91

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown	28.52	14	BJ

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A-SS-7ARE

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0005RE

Sample wt/vol: 5.0 (g/mL) G Lab File ID: A3102

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 24 Date Analyzed: 03/02/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	13	U
74-83-9	Bromomethane	13	U
75-01-4	Vinyl Chloride	13	U
75-00-3	Chloroethane	13	U
75-09-2	Methylene Chloride	7	U
67-64-1	Acetone	13	U
75-15-0	Carbon Disulfide	7	U
75-35-4	1,1-Dichloroethene	7	U
75-35-3	1,1-Dichloroethane	7	U
540-59-0	1,2-Dichloroethene (total)	7	U
67-66-3	Chloroform	7	U
107-06-2	1,2-Dichloroethane	7	U
78-93-3	2-Butanone	13	U
71-55-6	1,1,1-Trichloroethane	7	U
56-23-5	Carbon Tetrachloride	7	U
108-05-4	Vinyl Acetate	13	U
75-27-4	Bromodichloromethane	7	U
78-87-5	1,2-Dichloropropane	7	U
10061-01-5	cis-1,3-Dichloropropene	7	U
79-01-6	Trichloroethene	7	U
124-48-1	Dibromochloromethane	7	U
79-00-5	1,1,2-Trichloroethane	7	U
71-43-2	Benzene	7	U
10061-02-6	Trans-1,3-Dichloropropene	7	U
75-25-2	Bromoform	7	U
108-10-1	4-Methyl-2-Pentanone	13	U
591-78-6	2-Hexanone	13	U
127-18-4	Tetrachloroethene	7	U
79-34-5	1,1,2,2-Tetrachloroethane	13	U
108-88-3	Toluene	7	U
108-90-7	Chlorobenzene	7	U
100-41-4	Ethylbenzene	7	U
100-42-5	Styrene	7	U
1330-20-7	Total Xylenes	7	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

A-SS-7ARE

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0005RE

Sample wt/vol: 5.0 (g/mL) G Lab File ID: A3102

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 24 Date Analyzed: 03/02/91

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A-SS-7A

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12268 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0005

Sample wt/vol: 30.6 (g/mL) G Lab File ID: B0329

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 25 dec. ____ Date Extracted: 03/02/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/13/91

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	430	U
111-44-4	bis(2-Chloroethyl)Ether	430	U
95-57-8	2-Chlorophenol	430	U
541-73-1	1,3-Dichlorobenzene	430	U
106-46-7	1,4-Dichlorobenzene	430	U
100-51-6	Benzyl Alcohol	430	U
95-50-1	1,2-Dichlorobenzene	430	U
95-48-7	2-Methylphenol	430	U
39638-32-9	bis(2-Chloroisopropyl)Ether	430	U
106-44-5	4-Methylphenol	430	U
621-64-7	N-Nitroso-Di-n-Propylamine	430	U
67-72-1	Hexachloroethane	430	U
98-95-3	Nitrobenzene	430	U
78-59-1	Isophorone	430	U
88-75-5	2-Nitrophenol	430	U
105-67-9	2,4-Dimethylphenol	430	U
65-85-0	Benzoic Acid	250	J
111-91-1	bis(2-Chloroethoxy)Methane	430	U
120-83-2	2,4-Dichlorophenol	430	U
120-82-1	1,2,4-Trichlorobenzene	430	U
91-20-3	Naphthalene	430	U
106-47-8	4-Chloroaniline	430	U
87-68-3	Hexachlorobutadiene	430	U
59-50-7	4-Chloro-3-Methylphenol	430	U
91-57-6	2-Methylnaphthalene	430	U
77-47-4	Hexachlorocyclopentadiene	430	U
88-06-2	2,4,6-Trichlorophenol	430	U
95-95-4	2,4,5-Trichlorophenol	2100	U
91-58-7	2-Chloronaphthalene	430	U
88-74-4	2-Nitroaniline	2100	U
131-11-3	Dimethyl Phthalate	430	U
208-96-8	Acenaphthylene	140	J
606-20-2	2,6-Dinitrotoluene	430	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A-SS-7A

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12268 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0005

Sample wt/vol: 30.6 (g/mL) G Lab File ID: B0329

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 25 dec. ____ Date Extracted: 03/02/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/13/91

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	2100	U
83-32-9	Acenaphthene	430	U
51-28-5	2,4-Dinitrophenol	2100	U
100-02-7	4-Nitrophenol	2100	U
132-64-9	Dibenzofuran	430	U
121-14-2	2,4-Dinitrotoluene	430	U
84-66-2	Diethylphthalate	430	U
7005-72-3	4-Chlorophenyl-phenylether	430	U
86-73-7	Fluorene	430	U
100-10-6	4-Nitroaniline	2100	U
534-52-1	4,6-Dinitro-2-Methylphenol	2100	U
86-30-6	N-Nitrosodiphenylamine (1)	430	U
101-55-3	4-Bromophenyl-phenylether	430	U
118-74-1	Hexachlorobenzene	430	U
87-86-5	Pentachlorophenol	2100	U
85-01-8	Phenanthrene	94	J
120-12-7	Anthracene	77	J
84-74-2	Di-n-Butylphthalate	430	U
206-44-0	Fluoranthene	270	J
129-00-0	Pyrene	430	U
85-68-7	Butylbenzylphthalate	430	U
91-94-1	3,3'-Dichlorobenzidine	860	U
56-55-3	Benzo(a)Anthracene	200	J
218-01-9	Chrysene	250	J
117-81-7	bis(2-Ethylhexyl)Phthalate	72	J
117-84-0	Di-n-Octyl Phthalate	430	U
205-99-2	Benzo(b)Fluoranthene	560	
207-08-9	Benzo(k)Fluoranthene	430	U
50-32-8	Benzo(a)Pyrene	250	J
193-39-5	Indeno(1,2,3-cd)Pyrene	430	U
53-70-3	Dibenz(a,h)Anthracene	430	U
191-24-2	Benzo(g,h,i)Perylene	430	U

(1) - Cannot be separated from Diphenylamine

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

1367305

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): SOIL Lab Sample ID: A-SS-7A

Level (low/med): LOW Date Received: 02/21/91

% Solids: 82.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9500			P
7440-36-0	Antimony	9.9	U	N	P
7440-38-2	Arsenic	0.48	U	N	F
7440-39-3	Barium	93.5			P
7440-41-7	Beryllium	0.68	B		P
7440-43-9	Cadmium	0.97	U		P
7440-70-2	Calcium	3620			P
7440-47-3	Chromium	14.8			P
7440-48-4	Cobalt	9.9	B		P
7440-50-8	Copper	20.8		*	P
7439-89-6	Iron	15700			P
7439-92-1	Lead	74.0		*	P
7439-95-4	Magnesium	3390		E	P
7439-96-5	Manganese	642		*	P
7439-97-6	Mercury	0.12	U		CV
7440-02-0	Nickel	11.6		*	P
7440-09-7	Potassium	1070	B		P
7482-49-2	Selenium	0.48	U	N	F
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	372	U		P
7440-28-0	Thallium	0.24	U		F
7440-62-2	Vanadium	27.1			P
7440-66-6	Zinc	83.7			P
	Cyanide	0.60	U		AS

Color Before: BROWN Clarity Before: _____ Texture: COARSE

Color After: BROWN Clarity After: _____ Artifacts: _____

Comments:

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A-SS-7B

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0006

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V2293

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 24 Date Analyzed: 03/01/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	13	U
74-83-9	Bromomethane	13	U
75-01-4	Vinyl Chloride	13	U
75-00-3	Chloroethane	13	U
75-09-2	Methylene Chloride	5	J
67-64-1	Acetone	13	U
75-15-0	Carbon Disulfide	7	U
75-35-4	1,1-Dichloroethene	7	U
75-35-3	1,1-Dichloroethane	7	U
540-59-0	1,2-Dichloroethene (total)	7	U
67-66-3	Chloroform	7	U
107-06-2	1,2-Dichloroethane	7	U
78-93-3	2-Butanone	13	U
71-55-6	1,1,1-Trichloroethane	7	U
56-23-5	Carbon Tetrachloride	7	U
108-05-4	Vinyl Acetate	13	U
75-27-4	Bromodichloromethane	7	U
78-87-5	1,2-Dichloropropane	7	U
10061-01-5	cis-1,3-Dichloropropene	7	U
79-01-6	Trichloroethene	7	U
124-48-1	Dibromochloromethane	7	U
79-00-5	1,1,2-Trichloroethane	7	U
71-43-2	Benzene	7	U
10061-02-6	Trans-1,3-Dichloropropene	7	U
75-25-2	Bromoform	7	U
108-10-1	4-Methyl-2-Pentanone	13	U
591-78-6	2-Hexanone	13	U
127-18-4	Tetrachloroethene	7	U
79-34-5	1,1,2,2-Tetrachloroethane	13	U
108-88-3	Toluene	7	U
108-90-7	Chlorobenzene	7	U
100-41-4	Ethylbenzene	7	U
100-42-5	Styrene	7	U
1330-20-7	Total Xylenes	7	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

A-SS-7B

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0006

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V2293

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 24 Date Analyzed: 03/01/91

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown	28.52	16	BJ

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A-SS-7BRE

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0006RE

Sample wt/vol: 5.0 (g/mL) G Lab File ID: A3103

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 24 Date Analyzed: 03/02/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	13	U
74-83-9	Bromomethane	13	U
75-01-4	Vinyl Chloride	13	U
75-00-3	Chloroethane	13	U
75-09-2	Methylene Chloride	7	U
67-64-1	Acetone	13	U
75-15-0	Carbon Disulfide	7	U
75-35-4	1,1-Dichloroethene	7	U
75-35-3	1,1-Dichloroethane	7	U
540-59-0	1,2-Dichloroethene (total)	7	U
67-66-3	Chloroform	7	U
107-06-2	1,2-Dichloroethane	7	U
78-93-3	2-Butanone	13	U
71-55-6	1,1,1-Trichloroethane	7	U
56-23-5	Carbon Tetrachloride	7	U
108-05-4	Vinyl Acetate	13	U
75-27-4	Bromodichloromethane	7	U
78-87-5	1,2-Dichloropropane	7	U
10061-01-5	cis-1,3-Dichloropropene	7	U
79-01-6	Trichloroethene	7	U
124-48-1	Dibromochloromethane	7	U
79-00-5	1,1,2-Trichloroethane	7	U
71-43-2	Benzene	7	U
10061-02-6	Trans-1,3-Dichloropropene	7	U
75-25-2	Bromoform	7	U
108-10-1	4-Methyl-2-Pentanone	13	U
591-78-6	2-Hexanone	13	U
127-18-4	Tetrachloroethene	7	U
79-34-5	1,1,2,2-Tetrachloroethane	13	U
108-88-3	Toluene	7	U
108-90-7	Chlorobenzene	7	U
100-41-4	Ethylbenzene	7	U
100-42-5	Styrene	7	U
1330-20-7	Total Xylenes	7	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

A-SS-7BRE

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0006RE

Sample wt/vol: 5.0 (g/mL) G Lab File ID: A3103

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 24 Date Analyzed: 03/02/91

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A-SS-7B

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12268 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0006

Sample wt/vol: 30.0 (g/mL) G Lab File ID: B0330

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 25 dec. ____ Date Extracted: 03/02/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/13/91

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	440	U
111-44-4	bis(2-Chloroethyl)Ether	440	U
95-57-8	2-Chlorophenol	440	U
541-73-1	1,3-Dichlorobenzene	440	U
106-46-7	1,4-Dichlorobenzene	440	U
100-51-6	Benzyl Alcohol	440	U
95-50-1	1,2-Dichlorobenzene	440	U
95-48-7	2-Methylphenol	440	U
39638-32-9	bis(2-Chloroisopropyl)Ether	440	U
106-44-5	4-Methylphenol	440	U
621-64-7	N-Nitroso-Di-n-Propylamine	440	U
67-72-1	Hexachloroethane	440	U
98-95-3	Nitrobenzene	440	U
78-59-1	Isophorone	440	U
88-75-5	2-Nitrophenol	440	U
105-67-9	2,4-Dimethylphenol	440	U
65-85-0	Benzoic Acid	2100	U
111-91-1	bis(2-Chloroethoxy)Methane	440	U
120-83-2	2,4-Dichlorophenol	440	U
120-82-1	1,2,4-Trichlorobenzene	440	U
91-20-3	Naphthalene	440	U
106-47-8	4-Chloroaniline	440	U
87-68-3	Hexachlorobutadiene	440	U
59-50-7	4-Chloro-3-Methylphenol	440	U
91-57-6	2-Methylnaphthalene	440	U
77-47-4	Hexachlorocyclopentadiene	440	U
88-06-2	2,4,6-Trichlorophenol	440	U
95-95-4	2,4,5-Trichlorophenol	2100	U
91-58-7	2-Chloronaphthalene	440	U
88-74-4	2-Nitroaniline	2100	U
131-11-3	Dimethyl Phthalate	440	U
208-96-8	Acenaphthylene	440	U
606-20-2	2,6-Dinitrotoluene	440	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A-SS-7B

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12268 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0006

Sample wt/vol: 30.0 (g/mL) G Lab File ID: B0330

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 25 dec. ____ Date Extracted: 03/02/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/13/91

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	2100	U
83-32-9	Acenaphthene	440	U
51-28-5	2,4-Dinitrophenol	2100	U
100-02-7	4-Nitrophenol	2100	U
132-64-9	Dibenzofuran	440	U
121-14-2	2,4-Dinitrotoluene	440	U
84-66-2	Diethylphthalate	440	U
7005-72-3	4-Chlorophenyl-phenylether	440	U
86-73-7	Fluorene	440	U
100-10-6	4-Nitroaniline	2100	U
534-52-1	4,6-Dinitro-2-Methylphenol	2100	U
86-30-6	N-Nitrosodiphenylamine (1)	440	U
101-55-3	4-Bromophenyl-phenylether	440	U
118-74-1	Hexachlorobenzene	440	U
87-86-5	Pentachlorophenol	2100	U
85-01-8	Phenanthrene	440	U
120-12-7	Anthracene	440	U
84-74-2	Di-n-Butylphthalate	440	U
206-44-0	Fluoranthene	68	J
129-00-0	Pyrene	99	J
85-68-7	Butylbenzylphthalate	440	U
91-94-1	3,3'-Dichlorobenzidine	880	U
56-55-3	Benzo(a)Anthracene	440	U
218-01-9	Chrysene	60	J
117-81-7	bis(2-Ethylhexyl)Phthalate	46	J
117-84-0	Di-n-Octyl Phthalate	440	U
205-99-2	Benzo(b)Fluoranthene	110	J
207-08-9	Benzo(k)Fluoranthene	440	U
50-32-8	Benzo(a)Pyrene	440	U
193-39-5	Indeno(1,2,3-cd)Pyrene	440	U
53-70-3	Dibenz(a,h)Anthracene	440	U
191-24-2	Benzo(g,h,i)Perylene	440	U

(1) - Cannot be separated from Diphenylamine

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

1367306

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): SOIL Lab Sample ID: A-SS-7B

Level (low/med): LOW Date Received: 02/21/91

% Solids: 77.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11600			P
7440-36-0	Antimony	10.5	U	N	P
7440-38-2	Arsenic	2.6		N	F
7440-39-3	Barium	139			P
7440-41-7	Beryllium	0.83	B		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	1500			P
7440-47-3	Chromium	14.5			P
7440-48-4	Cobalt	14.1			P
7440-50-8	Copper	16.4		*	P
7439-89-6	Iron	17000			P
7439-92-1	Lead	37.0		*	F
7439-95-4	Magnesium	1830		E	P
7439-96-5	Manganese	1310		*	P
7439-97-6	Mercury	0.13	U		CV
7440-02-0	Nickel	15.1		*	P
7440-09-7	Potassium	1280	B		P
7482-49-2	Selenium	0.51	U	WN	F
7440-22-4	Silver	1.5	U		P
7440-23-5	Sodium	396	U		P
7440-28-0	Thallium	0.26	U		F
7440-62-2	Vanadium	25.0			P
7440-66-6	Zinc	92.1			P
	Cyanide	0.64	U		AS

Color Before: BROWN Clarity Before: _____ Texture: COARSE

Color After: BROWN Clarity After: _____ Artifacts: _____

Comments:

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000100

AR302408

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A-SS-7C

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0007

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V2294

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 23 Date Analyzed: 03/01/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	13	U
74-83-9	Bromomethane	13	U
75-01-4	Vinyl Chloride	13	U
75-00-3	Chloroethane	13	U
75-09-2	Methylene Chloride	5	J
67-64-1	Acetone	18	B
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-35-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	6	U
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	13	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	13	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	Trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-Pentanone	13	U
591-78-6	2-Hexanone	13	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	13	U
108-88-3	Toluene	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
1330-20-7	Total Xylenes	6	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

A-SS-7C

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0007

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V2294

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 23 Date Analyzed: 03/01/91

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A-SS-7C

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12268 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0007

Sample wt/vol: 30.5 (g/mL) G Lab File ID: B0331

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 24 dec. ____ Date Extracted: 03/02/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/13/91

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	430	U
111-44-4	bis(2-Chloroethyl)Ether	430	U
95-57-8	2-Chlorophenol	430	U
541-73-1	1,3-Dichlorobenzene	430	U
106-46-7	1,4-Dichlorobenzene	430	U
100-51-6	Benzyl Alcohol	430	U
95-50-1	1,2-Dichlorobenzene	430	U
95-48-7	2-Methylphenol	430	U
39638-32-9	bis(2-Chloroisopropyl)Ether	430	U
106-44-5	4-Methylphenol	430	U
621-64-7	N-Nitroso-Di-n-Propylamine	430	U
67-72-1	Hexachloroethane	430	U
98-95-3	Nitrobenzene	430	U
78-59-1	Isophorone	430	U
88-75-5	2-Nitrophenol	430	U
105-67-9	2,4-Dimethylphenol	430	U
65-85-0	Benzoic Acid	2100	U
111-91-1	bis(2-Chloroethoxy)Methane	430	U
120-83-2	2,4-Dichlorophenol	430	U
120-82-1	1,2,4-Trichlorobenzene	430	U
91-20-3	Naphthalene	430	U
106-47-8	4-Chloroaniline	430	U
87-68-3	Hexachlorobutadiene	430	U
59-50-7	4-Chloro-3-Methylphenol	430	U
91-57-6	2-Methylnaphthalene	430	U
77-47-4	Hexachlorocyclopentadiene	430	U
88-06-2	2,4,6-Trichlorophenol	430	U
95-95-4	2,4,5-Trichlorophenol	2100	U
91-58-7	2-Chloronaphthalene	430	U
88-74-4	2-Nitroaniline	2100	U
131-11-3	Dimethyl Phthalate	430	U
208-96-8	Acenaphthylene	430	U
606-20-2	2,6-Dinitrotoluene	430	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A-SS-7C

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12268 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12268-0007

Sample wt/vol: 30.5 (g/mL) G Lab File ID: B0331

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. 24 dec. ____ Date Extracted: 03/02/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/13/91

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	2100	U
83-32-9	Acenaphthene	430	U
51-28-5	2,4-Dinitrophenol	2100	U
100-02-7	4-Nitrophenol	2100	U
132-64-9	Dibenzofuran	430	U
121-14-2	2,4-Dinitrotoluene	430	U
84-66-2	Diethylphthalate	430	U
7005-72-3	4-Chlorophenyl-phenylether	430	U
86-73-7	Fluorene	430	U
100-10-6	4-Nitroaniline	2100	U
534-52-1	4,6-Dinitro-2-Methylphenol	2100	U
86-30-6	N-Nitrosodiphenylamine (1)	430	U
101-55-3	4-Bromophenyl-phenylether	430	U
118-74-1	Hexachlorobenzene	430	U
87-86-5	Pentachlorophenol	2100	U
85-01-8	Phenanthrene	430	U
120-12-7	Anthracene	430	U
84-74-2	Di-n-Butylphthalate	430	U
206-44-0	Fluoranthene	430	U
129-00-0	Pyrene	430	U
85-68-7	Butylbenzylphthalate	430	U
91-94-1	3,3'-Dichlorobenzidine	860	U
56-55-3	Benzo(a)Anthracene	430	U
218-01-9	Chrysene	430	U
117-81-7	bis(2-Ethylhexyl)Phthalate	430	U
117-84-0	Di-n-Octyl Phthalate	430	U
205-99-2	Benzo(b)Fluoranthene	430	U
207-08-9	Benzo(k)Fluoranthene	430	U
50-32-8	Benzo(a)Pyrene	430	U
193-39-5	Indeno(1,2,3-cd)Pyrene	430	U
53-70-3	Dibenz(a,h)Anthracene	430	U
191-24-2	Benzo(g,h,i)Perylene	430	U

(1) - Cannot be separated from Diphenylamine

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

1367307

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): SOIL Lab Sample ID: A-SS-7C

Level (low/med): LOW Date Received: 02/21/91

% Solids: 76.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6290			P
7440-36-0	Antimony	10.7	U	N	P
7440-38-2	Arsenic	1.4	B	WN	F
7440-39-3	Barium	92.5			P
7440-41-7	Beryllium	0.52	U		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	630	B		P
7440-47-3	Chromium	9.5			P
7440-48-4	Cobalt	9.8	B		P
7440-50-8	Copper	4.3	B	*	P
7439-89-6	Iron	11600			P
7439-92-1	Lead	30.2		+*	F
7439-95-4	Magnesium	1070	B	E	P
7439-96-5	Manganese	857		*	P
7439-97-6	Mercury	0.13	U		CV
7440-02-0	Nickel	10.5		*	P
7440-09-7	Potassium	639	B		P
7482-49-2	Selenium	0.52	U	N	F
7440-22-4	Silver	1.6	U		P
7440-23-5	Sodium	402	U		P
7440-28-0	Thallium	0.26	U		F
7440-62-2	Vanadium	16.9			P
7440-66-6	Zinc	38.0			P
	Cyanide	0.65	U		AS

Color Before: BROWN Clarity Before: _____ Texture: COARSE

Color After: BROWN Clarity After: _____ Artifacts: _____

Comments:

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FIELD_BLANK

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12206 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 12206-0001

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C0188

Level: (low/med) LOW Date Received: 02/15/91

% Moisture: not dec. Date Analyzed: 02/23/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	2	J
67-64-1	Acetone	3	J
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-35-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	2	J
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FIELD_BLANK

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12206 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 12206-0001

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C0188

Level: (low/med) LOW Date Received: 02/15/91

% Moisture: not dec. Date Analyzed: 02/23/91

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FIELD_BLA

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12206 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 12206-0001

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B9499

Level: (low/med) LOW Date Received: 02/15/91

% Moisture: not dec. ____ dec. ____ Date Extracted: 02/18/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/15/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
39638-32-9	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FIELD_BLANK

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12206 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 12206-0001

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B9499

Level: (low/med) LOW Date Received: 02/15/91

% Moisture: not dec. ____ dec. ____ Date Extracted: 02/18/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/15/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-10-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

U.S. EPA - CLP

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

1361601

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: FIELD BLANK

Level (low/med): LOW Date Received: 02/15/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	33.0	U		P
7440-36-0	Antimony	41.0	U		P
7440-38-2	Arsenic	2.0	U		F
7440-39-3	Barium	3.0	U		P
7440-41-7	Beryllium	2.0	U		P
7440-43-9	Cadmium	4.0	U		P
7440-70-2	Calcium	159	B	E	P
7440-47-3	Chromium	5.0	U		P
7440-48-4	Cobalt	8.0	U		P
7440-50-8	Copper	10.0	U		P
7439-89-6	Iron	30.6	B	E	P
7439-92-1	Lead	1.0	U		F
7439-95-4	Magnesium	74.0	U		P
7439-96-5	Manganese	7.0	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	13.0	U		P
7440-09-7	Potassium	174	U		P
7482-49-2	Selenium	2.0	U		F
7440-22-4	Silver	6.0	U		P
7440-23-5	Sodium	1540	U		P
7440-28-0	Thallium	1.0	U		F
7440-62-2	Vanadium	5.0	U		P
7440-66-6	Zinc	19.5	B		P
	Cyanide	10.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____
Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:
THIS SAMPLE IS A FIELD BLANK.

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U.S. EPA - CLP

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

1361401

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: FIELDBLANK

Level (low/med): LOW Date Received: 02/18/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	33.0	U		P
7440-36-0	Antimony	41.0	U		P
7440-38-2	Arsenic	2.0	U		F
7440-39-3	Barium	3.9	B		P
7440-41-7	Beryllium	2.0	U		P
7440-43-9	Cadmium	4.0	U		P
7440-70-2	Calcium	327	B		P
7440-47-3	Chromium	5.0	U		P
7440-48-4	Cobalt	8.0	U		P
7440-50-8	Copper	10.0	U		P
7439-89-6	Iron	24.0	U		P
7439-92-1	Lead	1.0	U		F
7439-95-4	Magnesium	74.0	U		P
7439-96-5	Manganese	7.0	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	13.0	U		P
7440-09-7	Potassium	246	B		P
7482-49-2	Selenium	2.0	U		F
7440-22-4	Silver	6.0	U		P
7440-23-5	Sodium	1540	U		P
7440-28-0	Thallium	1.0	U		F
7440-62-2	Vanadium	5.0	U		P
7440-66-6	Zinc	4.0	U		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____
Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
THIS SAMPLE IS A FIELD BLANK.

FORM I - IN 7/88

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TRIP_BLAN

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12206 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 12206-0004

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C0190

Level: (low/med) LOW Date Received: 02/15/91

% Moisture: not dec. Date Analyzed: 02/23/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-35-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	19	
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TRIP_BLANK

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12206 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 12206-0004

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C0190

Level: (low/med) LOW Date Received: 02/15/91

% Moisture: not dec. Date Analyzed: 02/23/91

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK-01

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12206 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: MB_25FEB91-A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: A2959

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 02/25/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-35-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK-01

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12206 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: MB_25FEB91-A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: A2959

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 02/25/91

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown	29.37	12	J

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK_01

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12206 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 18FEB91BWB

Sample wt/vol: 1000 (g/mL) ML Lab File ID: F3210

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ dec. ____ Date Extracted: 02/18/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/04/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
39638-32-9	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK_01

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12206 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 18FEB91BWB

Sample wt/vol: 1000 (g/mL) ML Lab File ID: F3210

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ dec. ____ Date Extracted: 02/18/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/04/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-10-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLK_01

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12206 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 18FEB91BWB

Sample wt/vol: 1000 (g/mL) ML Lab File ID: F3210

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ dec. ____ Date Extracted: 02/18/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/04/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN AMIDE	31.11	46	J
2.	UNKNOWN AMIDE	35.33	25	J

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK-02

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12206 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: MB_22FEB91-B

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C0177

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 02/22/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-35-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK-02

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12206 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: MB_22FEB91-B

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C0177

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 02/22/91

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK02

Lab Name: ENSECO-EAST Contract: _____

Lab Code: _____ Case No.: 12206 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12206-SB

Sample wt/vol: 30.0 (g/mL) G Lab File ID: F4251

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ dec. ____ Date Extracted: 04/02/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/19/91

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
100-51-6	Benzyl Alcohol	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
39638-32-9	bis(2-Chloroisopropyl)Ether	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
65-85-0	Benzoic Acid	1600	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	1600	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	1600	U
131-11-3	Dimethyl Phthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U

AD3024290000031

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK02

Lab Name: ENSECO-EAST Contract: _____

Lab Code: _____ Case No.: 12206 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12206-SB

Sample wt/vol: 30.0 (g/mL) G Lab File ID: F4251

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ dec. ____ Date Extracted: 04/02/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/19/91

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	1600	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	1600	U
100-02-7	4-Nitrophenol	1600	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-10-6	4-Nitroaniline	1600	U
534-52-1	4,6-Dinitro-2-Methylphenol	1600	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	1600	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
84-74-2	Di-n-Butylphthalate	57	J
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	660	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLK02

Lab Name: ENSECO-EAST Contract: _____

Lab Code: _____ Case No.: 12206 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12206-SB

Sample wt/vol: 30.0 (g/mL) G Lab File ID: F4251

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ dec. ____ Date Extracted: 04/02/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/19/91

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.00

Number TICs found: 10

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123422	2-PENTANONE, 4-HYDROXY-4-MET	6.37	18000	AJ
2.	UNKNOWN	8.06	780	AJ
3.	UNKNOWN	9.18	140	J
4.	UNKNOWN	27.01	200	J
5.	UNKNOWN	31.02	200	J
6.	OXYGENATED HYDROCARBON	31.51	250	J
7.	UNKNOWN	34.92	130	J
8.	UNKNOWN AMIDE	35.21	220	J
9.	UNKNOWN	40.50	460	J
10.	UNKNOWN	40.69	200	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A-FIELD_B

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12261 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 12261-0001

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C0343

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. Date Analyzed: 03/01/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	15	
67-64-1	Acetone	5	J
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-35-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A-FIELD_BLANK

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12261 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 12261-0001

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B9552

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. ____ dec. ____ Date Extracted: 02/25/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/17/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
39638-32-9	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A-FIELD_B[redacted]K

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12261 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 12261-0001

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B9552

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. ____ dec. ____ Date Extracted: 02/25/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/17/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-10-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

1366801

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: A-FIELDBLANK

Level (low/med): LOW Date Received: 02/21/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	33.0	U		P
7440-36-0	Antimony	41.0	U		P
7440-38-2	Arsenic	2.0	U		F
7440-39-3	Barium	3.0	U		P
7440-41-7	Beryllium	2.0	U		P
7440-43-9	Cadmium	4.0	U		P
7440-70-2	Calcium	111	U		P
7440-47-3	Chromium	5.0	U		P
7440-48-4	Cobalt	8.0	U		P
7440-50-8	Copper	10.0	U		P
7439-89-6	Iron	24.0	U		P
7439-92-1	Lead	1.0	U		F
7439-95-4	Magnesium	74.0	U		P
7439-96-5	Manganese	7.0	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	13.0	U		P
7440-09-7	Potassium	174	U		P
7482-49-2	Selenium	2.0	U	N	F
7440-22-4	Silver	6.0	U		P
7440-23-5	Sodium	1540	U		P
7440-28-0	Thallium	1.0	U	N	F
7440-62-2	Vanadium	5.0	U		P
7440-66-6	Zinc	4.0	U		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

THIS SAMPLE IS A FIELD BLANK.

U.S. EPA - CLP

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

1366901

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: A-FIELD BLANK

Level (low/med): LOW Date Received: 02/21/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	33.0	U	E	P
7440-36-0	Antimony	41.0	U		P
7440-38-2	Arsenic	2.0	U		F
7440-39-3	Barium	3.0	U		P
7440-41-7	Beryllium	2.0	U		P
7440-43-9	Cadmium	4.0	U		P
7440-70-2	Calcium	111	U		P
7440-47-3	Chromium	5.0	U		P
7440-48-4	Cobalt	8.0	U		P
7440-50-8	Copper	10.0	U		P
7439-89-6	Iron	24.0	U	N	P
7439-92-1	Lead	1.0	U	N	F
7439-95-4	Magnesium	74.0	U		P
7439-96-5	Manganese	7.0	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	13.0	U		P
7440-09-7	Potassium	174	U		P
7482-49-2	Selenium	2.0	U	N	F
7440-22-4	Silver	6.0	U		P
7440-23-5	Sodium	1540	U		P
7440-28-0	Thallium	1.0	U	N	F
7440-62-2	Vanadium	5.0	U		P
7440-66-6	Zinc	4.0	U		P
	Cyanide	10.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____
Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:
THIS SAMPLE IS A FIELD BLANK.

FORM I - IN 7/88

AR302436

000375

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TRIP_BLANK

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12261 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 12261-0003

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C0344

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. Date Analyzed: 03/01/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	6	J
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-35-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK-01

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12261 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: MB_01MAR91-B

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C0340

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 03/01/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-35-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK_01

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12261 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 12261-MB

Sample wt/vol: 1000 (g/mL) ML Lab File ID: P0520

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 02/25/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/05/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
39638-32-9	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK_01

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12261 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 12261-MB

Sample wt/vol: 1000 (g/mL) ML Lab File ID: P0520

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ dec. ____ Date Extracted: 02/25/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/05/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-10-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK-02

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12261 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: MB_02MAR91-A

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C0358

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 03/02/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	7	J
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-35-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

R-FIELD_BL[illegible]

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 12268-0009

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C0336

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. Date Analyzed: 03/01/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	1	J
67-64-1	Acetone	7	J
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-35-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	2	J
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

R-FIELD_BLANK

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 12268-0009

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C0336

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. Date Analyzed: 03/01/91

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

R-FIELD_BL

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12268 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 12268-0009

Sample wt/vol: 1000 (g/mL) ML Lab File ID: G0128

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. ____ dec. ____ Date Extracted: 02/25/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 04/07/91

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
39638-32-9	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

R-FIELD_BLK

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12268 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 12268-0009

Sample wt/vol: 1000 (g/mL) ML Lab File ID: G0128

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. ____ dec. ____ Date Extracted: 02/25/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 04/07/91

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-10-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

U.S. EPA - CLP

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

1367101

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: (7) R-FIELDBLAN SC

Level (low/med): LOW Date Received: 02/21/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	33.0	U		P
7440-36-0	Antimony	41.0	U		P
7440-38-2	Arsenic	2.0	U		F
7440-39-3	Barium	3.0	U		P
7440-41-7	Beryllium	2.0	U		P
7440-43-9	Cadmium	4.0	U		P
7440-70-2	Calcium	150	B		P
7440-47-3	Chromium	5.0	U		P
7440-48-4	Cobalt	8.0	U		P
7440-50-8	Copper	10.0	U		P
7439-89-6	Iron	36.6	B		P
7439-92-1	Lead	1.0	U		F
7439-95-4	Magnesium	74.0	U		P
7439-96-5	Manganese	7.0	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	13.0	U		P
7440-09-7	Potassium	174	U		P
7482-49-2	Selenium	2.0	U	W	F
7440-22-4	Silver	6.0	U		P
7440-23-5	Sodium	1540	U		P
7440-28-0	Thallium	1.0	U		F
7440-62-2	Vanadium	5.0	U		P
7440-66-6	Zinc	40.2			P
	Cyanide	10.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____
Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:
THIS SAMPLE IS A FIELD BLANK.

FORM I - IN 7/88

AR302446

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TRIP_BLANK

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 12268-0008

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C0335

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. Date Analyzed: 03/01/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	7	J
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-35-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TRIP_BLANK

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 12268-0008

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C0335

Level: (low/med) LOW Date Received: 02/20/91

% Moisture: not dec. Date Analyzed: 03/01/91

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK-01

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: MB_28FEB91-B

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V2261

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 02/28/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	2	J
67-64-1	Acetone	5	J
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-35-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	1	J
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK-01

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: MB_28FEB91-B

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V2261

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 02/28/91

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK_01

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12268 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12296-SB

Sample wt/vol: 30.0 (g/mL) G Lab File ID: G0262

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 03/02/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/13/91

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
100-51-6	Benzyl Alcohol	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
39638-32-9	bis(2-Chloroisopropyl)Ether	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
65-85-0	Benzoic Acid	1600	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	1600	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	1600	U
131-11-3	Dimethyl Phthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK_01

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12268 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12296-SB

Sample wt/vol: 30.0 (g/mL) G Lab File ID: G0262

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ dec. ____ Date Extracted: 03/02/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/13/91

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	1600	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	1600	U
100-02-7	4-Nitrophenol	1600	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-10-6	4-Nitroaniline	1600	U
534-52-1	4,6-Dinitro-2-Methylphenol	1600	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	1600	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	660	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLK_01

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12268 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12296-SB

Sample wt/vol: 30.0 (g/mL) G Lab File ID: G0262

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ dec. ____ Date Extracted: 03/02/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/13/91

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.00

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123422	2-PENTANONE, 4-HYDROXY-4-MET	6.11	6100	AJ
2.	UNKNOWN	7.73	400	AJ
3.	SUBSTITUTED HEXANEDIOIC ACID	31.03	160	J

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK-02

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: MB_01MAR91-A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V2280

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 03/01/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	4	J
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-35-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK-02

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: MB_01MAR91-A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V2280

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 03/01/91

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK_02

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12268 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 12261-MB

Sample wt/vol: 1000 (g/mL) ML Lab File ID: P0520

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ dec. ____ Date Extracted: 02/25/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/05/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-10-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK_02

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12268 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 12261-MB

Sample wt/vol: 1000 (g/mL) ML Lab File ID: P0520

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ dec. ____ Date Extracted: 02/25/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/05/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
39638-32-9	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLK_02

Lab Name: ENSECO-EAST Contract: _____

Lab Code: EEAST Case No.: 12268 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 12261-MB

Sample wt/vol: 1000 (g/mL) ML Lab File ID: P0520

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ dec. ____ Date Extracted: 02/25/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/05/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK-03

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: MB_01MAR91-B

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V2289

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 03/01/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	5	J
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-35-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK-03

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: MB_01MAR91-B

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V2289

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 03/01/91

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown	28.52	10	J

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK-04

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: MB_02MAR91-A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V2309

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 03/02/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	6	J
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-35-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK-04

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: MB_02MAR91-A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V2309

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 03/02/91

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK-05

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: MB_02MAR91-A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: A3089

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 03/02/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-35-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK-05

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: MB_02MAR91-A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: A3089

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 03/02/91

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK-06

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: MB_01MAR91-A

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C0330

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 03/01/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-35-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK-06

Lab Name: ENSECO EAST Contract: 68-W8-0069

Lab Code: Case No.: 12268 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: MB_01MAR91-A

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C0330

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 03/01/91

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

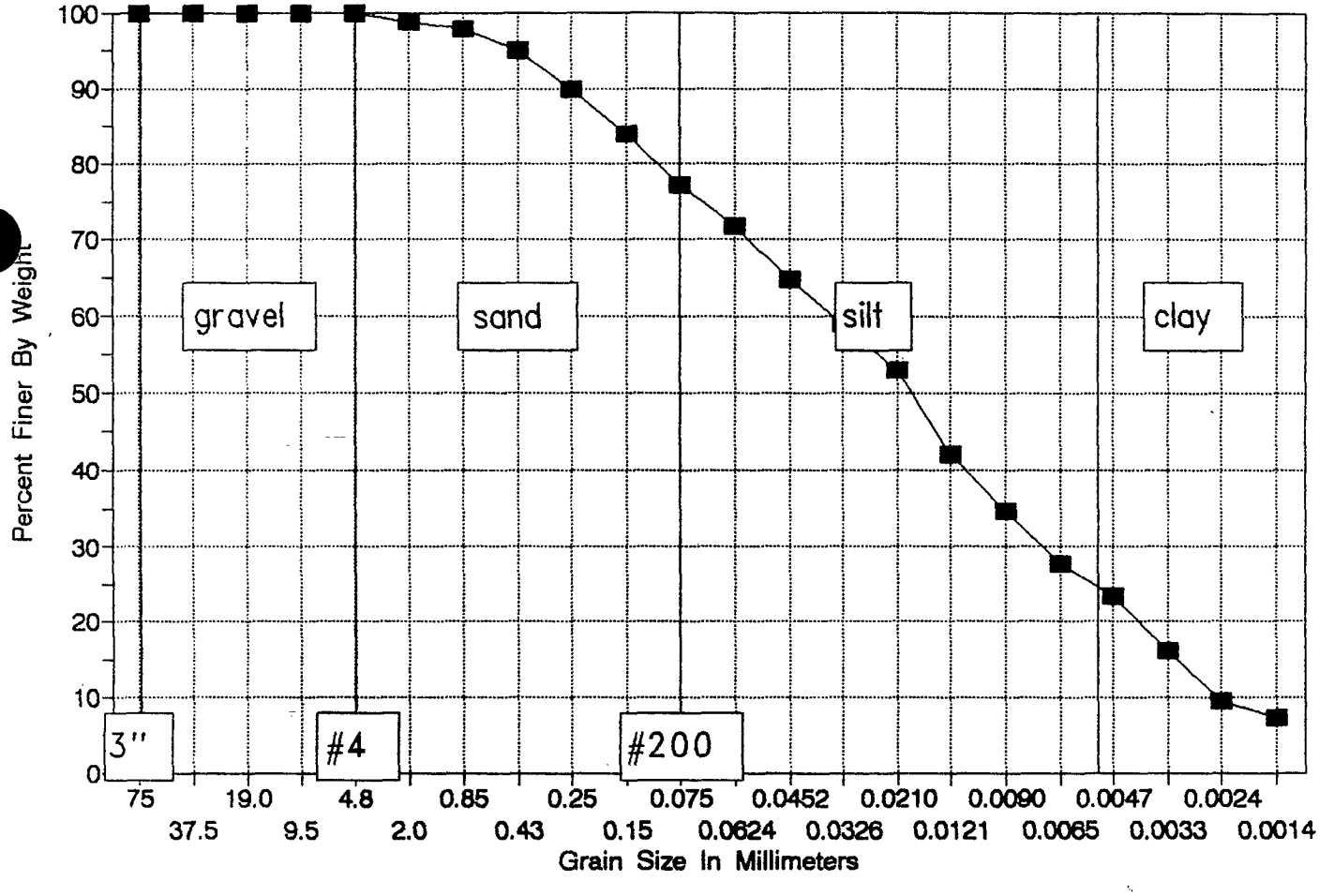
FORM I VOA-TIC 1/87 Rev.

APPENDIX B-2

GEOTECHNICAL ANALYTICAL DATA FOR SURFACE SOIL SAMPLES

GRADATION CURVE

Sample R-SS-7B, at 0-4 inches



Reticon/Allied Steel
Parkerford, Pa

Wt soil and dish	343.1
Dry soil & dish	283
Dish	104.7

Sample R-SS-7B 0-4 Inches
Moisture Content = 33.7

SIEVE & HYDROMETER ANALYSIS

SIEVE PORTION

Dry weight of TOTAL sample= 178.3
sample split -#10 sieve = 42.76

Sieve #	Weight Retained	Total Percent Finer
1.5 inch		100.00%
3/4 inch	0	100.00%
3/8 inch	0	100.00%
# 4	0	100.00%
# 10	2.1	98.82%
# 20	0.45	97.78%
# 40	1.62	95.08%
# 60	3.9	89.81%
# 100	6.45	83.92%
# 200	9.35	77.21%

Constants this test
Gs= 2.65 20c=.01365 21c=.01348 22c=.01332
18c=.01399 19c=.01382
When 5 grams of Sodium
Hexametaphosphate used correction
= 6

HYDROMETER ANALYSIS

Elapsed time	Tc	R'	Zr	Particle Dia. mm	Percent Partial	Total Percent Finer
0.5	21	37	10.20	0.0624	72.50	71.64
1	21	34	10.69	0.0452	65.48	64.71
2	21	31.5	11.10	0.0326	59.64	58.93
5	21	28.9	11.53	0.0210	53.55	52.92
16	21	24.2	12.31	0.0121	42.56	42.06
30	21	21	12.84	0.0090	35.08	34.67
60	21	18	13.33	0.0065	28.06	27.73
120	21	16.1	13.64	0.0047	23.62	23.34
250	22	13	14.16	0.0033	16.37	16.18
500	24	10.1	14.63	0.0024	9.59	9.48
1420	22	9.1	14.80	0.0014	7.25	7.16

HYDROMETER ANALYSIS

DATE 5/3/91

OWNER U. S. STEEL JOB NO. 10839-047

BORING NO. R-SS-7B 3-4"

SAMPLE SPECIMEN NO.	CLASSIFICATION	
DISH NO. -6	GRADUATE NO. 5	HYDROMETER NO.

DISPERSING AGENT USED Sodium H-MPH ; QUANITY 5g

DISPERSING AGENT CORRECTION, C_D .5 ; MENISCUS CORRECTION, C_M= .1

	TIME	ELAPSED TIME	TEMP °C	HYDRO READING (R')	CORRECTED READING $R+C_M-C_D$	HEIGHT Z_R	PARTICLE DIA. (MM)	PERCENT FINER PARTIAL	PERCENT FINER TOTAL
5/6	0831	0	21°						
		.5	21°	37					
	0832	1.	21°	34					
	0833	2.	21°	31.5					
	0836	5	21°	28.9					
	0846	15	21°	24.2					
	0901	30	21°	21					
	0931	60	21°	18					
	1031	120	21°	16'					
	1241	250	22°	13					
	1651	500	24°	10'					
5/7	0811	1420	22°	9'					

WEIGHT IN GRAMS			
	DISH PLUS DRY SOIL		
	DISH		
	DRY SOIL	W_O	

SPECIFIC GRAVITY OF SOLIDS, G_S =

CORRECTED HYDROMETER READING (R) = HYDROMETER READING (R') + C_M

639.34 — 596.58

THE PARTICLE DIAMETER (D) IS CALCULATED FROM STOKE'S EQUATION USING CORRECTED HYDROMETER READING. USE NOMOGRAPHIC CHART FOR SOLUTION OF STOKE'S EQUATION.

HYDROMETER GRADUATED IN SPECIFIC GRAVITY

$$\text{PARTIAL PERCENT FINER} = \frac{G_S}{G_S - 1} \times \frac{100}{W_O}(R - C_D + M)$$

HYDROMETER GRADUATED IN GRAMS PER LITER

$$\text{PARTIAL PERCENT FINER} = \frac{100}{W_O}(R - C_D + M)$$

W_S = TOTAL OVEN-DRY WT. OF SAMPLE USED FOR COMBINED ANALYSIS

W_O = OVEN-DRY WT. IN GRAMS OF SOIL USED FOR HYDROMETER ANALYSIS

W_1 = OVEN-DRY WT OF SAMPLE RETAINED ON NO. 200 SIEVE

$$\text{TOTAL PERCENT FINER} = \text{PARTIAL PERCENT FINER} \times \frac{W_S - W_1}{W_S}$$

REMARKS

TECHNICIAN [illegible] COMPUTED BY CHECKED BY [illegible]

AR302470

URAQT FORM 1040-A
2-31-75

MECHANICAL ANALYSIS

DATE 5/1/91 BY [illegible]

JOB NUMBER 10339-047 OWNER/CLIENT ALLIED STEEL

LOCATION PARKERFORD PA.

BORING R-SS-7B SAMPLE _____ DEPTH C-4"

NUMBER OF RINGS		DISH	#10 122	#10 -0
WT. OF RINGS & WET SOIL		WT. OF DISH & WET SOIL	343.1	
WT. OF RINGS		WT. OF DISH & DRY SOIL	333.0	
WT. OF WET SOIL		WT. OF MOISTURE		
FIELD DENSITY		WT. OF DISH	104.7	
DRY DENSITY		WT. OF DRY SOIL		
		FIELD MOISTURE CONTENT		

WASH SIEVE _____ DRY SIEVE _____ WEIGHT OF OVEN DRY SOIL _____ (grams)

DISH NUMBER	DISH WEIGHT	SIEVE NUMBER	WEIGHT RETAINED	ACCUMULATIVE WEIGHT RETAINED	ACCUMULATIVE PERCENT	
					RETAINED	FINER
		3"				
		1-1/2"				
		3/4"		0		
		3/8"		0		
		#4		0		
		PAN				
		TOTAL				

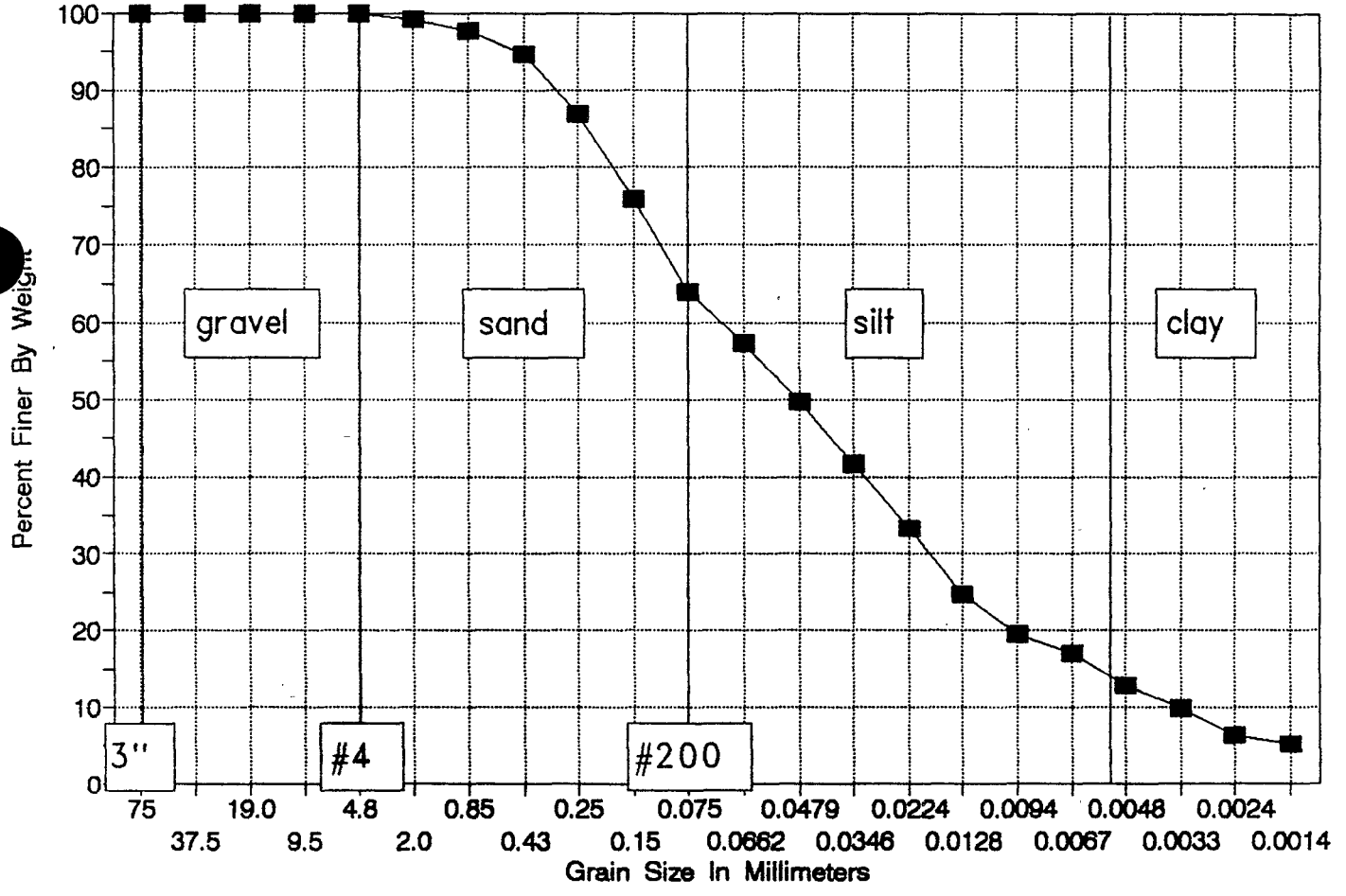
DISH NUMBER	DISH WEIGHT	SIEVE NUMBER	WEIGHT RETAINED	ACCUM. WEIGHT RETAINED	ACCUMULATIVE PERCENT		
					PARTIAL		TOTAL
					RETAINED	FINER	FINER
		#10		2.1			
93		#20		2.45			
		#40		1.62			
		#60		3.90			
		#100		6.45			
		#200		9.35			
		PAN					
		TOTAL					

AR302471

Dames & Moore

GRADATION CURVE

Sample R-SS-7C, at 0-4 inches



Reticon/Allied Steel
Parkerford, Pa

Wt soil and dish	352.9
Dry soil & dish	302.2
Dish	105.6

Sample R-SS-7C 0-4 Inches
Moisture Content = 25.8

SIEVE & HYDROMETER ANALYSIS

SIEVE PORTION

Dry weight of TOTAL sample= 196.6
sample split -#10 sieve = 40.09

Sieve #	Weight Retained	Total Percent Finer
1.5 inch		100.00%
3/4 inch	0	100.00%
3/8 inch	0	100.00%
# 4	0	100.00%
# 10	1.8	99.08%
# 20	0.56	97.70%
# 40	1.79	94.66%
# 60	4.93	86.90%
# 100	9.44	75.75%
# 200	14.27	63.82%

Constants this test
Gs= 2.65 20c=.01365 21c=.01348 22c=.01332
18c=.01399 19c=.01382
When 5 grams of Sodium
Hexametaphosphate used correction
= 6

HYDROMETER ANALYSIS

Elapsed time	Tc	R'	Zr	Particle Dia. mm	Percent Partial	Total Percent Finer
0.5	21	29.2	11.48	0.0662	57.87	57.34
1	21	26.1	11.99	0.0479	50.14	49.68
2	21	22.9	12.52	0.0346	42.16	41.77
5	21	19.5	13.08	0.0224	33.67	33.37
16	21	16	13.66	0.0128	24.94	24.72
30	21	13.9	14.01	0.0094	19.71	19.53
60	21	12.9	14.17	0.0067	17.21	17.05
120	21	11.2	14.45	0.0048	12.97	12.85
250	22	10	14.65	0.0033	9.98	9.89
500	24	8.5	14.90	0.0024	6.24	6.18
1421	22	8.1	14.96	0.0014	5.24	5.19

HYDROMETER ANALYSIS

DATE 5/3/91

OWNER ALLIED STEEL JOB NO. 10839-047

BORING NO. R-SS-7C C-4"

SAMPLE SPECIMEN NO.		CLASSIFICATION
DISH NO. E-10	GRADUATE NO. 4	HYDROMETER NO.

DISPERSING AGENT USED SODIUM H-MPH ; QUANITY 58

DISPERSING AGENT CORRECTION, C_D .5 ; MENISCUS CORRECTION, C_M= .1

	TIME	ELAPSED TIME	TEMP °C	HYDRO READING (R')	CORRECTED READING $R+C_M-C_D$	HEIGHT Z_R	PARTICLE DIA. (MM)	PERCENT FINER PARTIAL	PERCENT FINER TOTAL
5/6	0822	0	21°						
		.5	21°	29²					
	0829	1.	21°	26¹					
	0830	2.	21°	23⁹					
	0833	5.	21°	19⁵					
	0843	15	21°	16					
	0858	30	21°	13⁹					
	0928	60	21°	12⁹					
	1028	120	21°	11²					
	1238	350	22°	10					
	1648	500	24°	8⁵					
5/7	0809	1421	22°	8¹					

WEIGHT IN GRAMS		
DISH PLUS DRY SOIL		
DISH		
DRY SOIL	W_O	

SPECIFIC GRAVITY OF SOLIDS, G_S =

CORRECTED HYDROMETER READING (R) = HYDROMETER READING (R')+C_M

616.50 — 576.41

THE PARTICLE DIAMETER (D) IS CALCULATED FROM STOKE'S EQUATION USING CORRECTED HYDROMETER READING. USE NOMOGRAPHIC CHART FOR SOLUTION OF STOKE'S EQUATION.

HYDROMETER GRADUATED IN SPECIFIC GRAVITY

PARTIAL PERCENT FINER $= \frac{G_S}{G_S-1} \times \frac{100}{W_O}(R-C_D+M)$

HYDROMETER GRADUATED IN GRAMS PER LITER

PARTIAL PERCENT FINER $= \frac{100}{W_O}(R-C_D+M)$

W_S = TOTAL OVEN-DRY WT. OF SAMPLE USED FOR COMBINED ANALYSIS

W_O = OVEN-DRY WT. IN GRAMS OF SOIL USED FOR HYDROMETER ANALYSIS

W_1 = OVEN-DRY WT OF SAMPLE RETAINED ON NO. 200 SIEVE

TOTAL PERCENT FINER = PARTIAL PERCENT FINER X $\frac{W_S-W_1}{W_S}$

REMARKS

TECHNICIAN [signature] COMPUTED BY CHECKED BY

URAQT FORM 1040-A
2-31-75

AR302474

SA-HA

MECHANICAL ANALYSIS

DATE 5/1/91 BY [illegible]

JOB NUMBER 10839-047 OWNER/CLIENT ALLIED STEEL

LOCATION PARKERFORD, PA.

BORING R-SS-7C SAMPLE _____ DEPTH 0-4"

			#10	#10
NUMBER OF RINGS		DISH	121	E-6
WT. OF RINGS & WET SOIL		WT. OF DISH & WET SOIL	372.9	
WT. OF RINGS		WT. OF DISH & DRY SOIL	302.2	
WT. OF WET SOIL		WT. OF MOISTURE		
FIELD DENSITY		WT. OF DISH	105.6	
DRY DENSITY		WT. OF DRY SOIL		
		FIELD MOISTURE CONTENT		

WASH SIEVE _____ DRY SIEVE _____ WEIGHT OF OVEN DRY SOIL _____ (grams)

DISH NUMBER	DISH WEIGHT	SIEVE NUMBER	WEIGHT RETAINED	ACCUMULATIVE WEIGHT RETAINED	ACCUMULATIVE PERCENT	
					RETAINED	FINER
		3"				
		1-1/2"				
		3/4"		0		
		3/8"		0		
		#4		0		
		PAN				
		TOTAL				

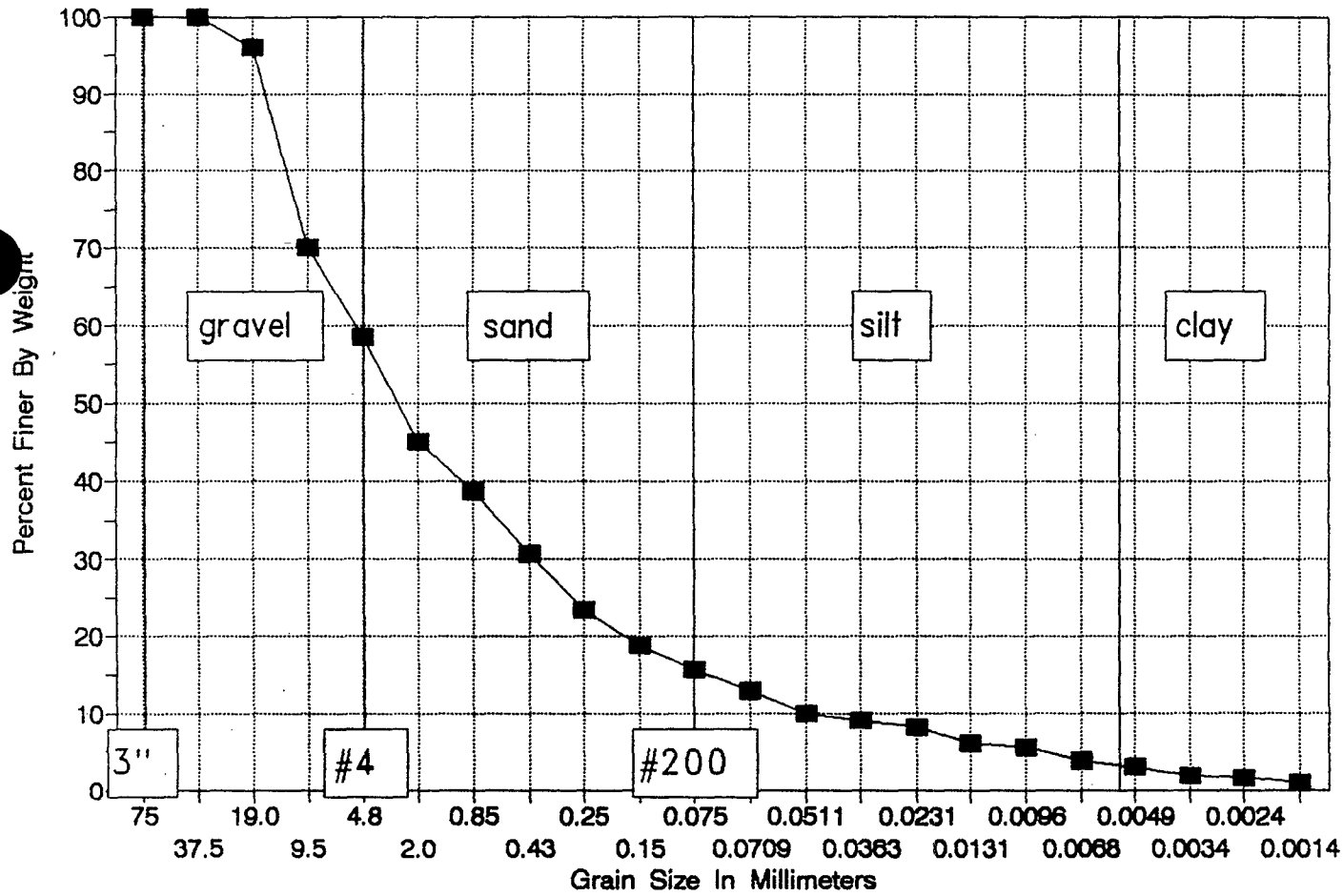
DISH NUMBER	DISH WEIGHT	SIEVE NUMBER	WEIGHT RETAINED	ACCUM. WEIGHT RETAINED	ACCUMULATIVE PERCENT		
					PARTIAL		TOTAL
					RETAINED	FINER	FINER
		#10		1.8			
99		#20		0.56			
		#40		1.79			
		#60		4.93			
		#100		9.44			
		#200		14.27			
		PAN					
		TOTAL					

AR302475

Dames & Moore

GRADATION CURVE

Sample R-SS-2, at 0-4 inches



Recticon/Allied Steel
Parkerford, Pa

Wt soil and dish	962
Dry soil & dish	850.4
Dish	107.4

Sample R-SS-2 at 0-4 Inches
Moisture Content = 15.0

SIEVE & HYDROMETER ANALYSIS

SIEVE PORTION

Dry weight of TOTAL sample= 743
sample split -#10 sieve = 44.88

Sieve #	Weight Retained	Total Percent Finer
1.5 inch		100.00%
3/4 inch	29.6	96.02%
3/8 inch	221.8	70.15%
# 4	309.1	58.40%
# 10	408.2	45.06%
# 20	6.36	38.67%
# 40	14.32	30.68%
# 60	21.65	23.32%
# 100	26.24	18.71%
# 200	29.29	15.65%

Constants this test
Gs= 2.65 20c=.01365 21c=.01348 22c=.01332
18c=.01399 19c=.01382
When 5 grams of Sodium
Hexametaphosphate used correction
= 6

HYDROMETER ANALYSIS

Elapsed time	Tc	R'	Zr	Particle Dia. mm	Percent Partial	Total Percent Finer
0.5	21	19	13.17	0.0709	28.97	13.05
1	21	16	13.66	0.0511	22.28	10.04
2	21	15	13.83	0.0363	20.05	9.04
5	21	14	13.99	0.0231	17.83	8.03
16	21	12.1	14.30	0.0131	13.59	6.12
30	21	11.5	14.40	0.0096	12.25	5.52
60	21	9.9	14.67	0.0068	8.69	3.92
120	21	9	14.82	0.0049	6.68	3.01
250	22	8	14.98	0.0034	4.46	2.01
496	24	7.5	15.06	0.0024	3.34	1.51
1413	22	7.1	15.13	0.0014	2.45	1.10

HYDROMETER ANALYSIS

DATE 5/2/91

OWNER Allied Steel JOB NO. 10239-047

BORING NO. R-55-7 0-4"

SAMPLE SPECIMEN NO.	CLASSIFICATION	
DISH NO. E-4	GRADUATE NO. 7	HYDROMETER NO.

DISPERSING AGENT USED Sodium H-MPH ; QUANITY 5g

DISPERSING AGENT CORRECTION, C_D .5 ; MENISCUS CORRECTION, C_M = .1

	TIME	ELAPSED TIME	TEMP °C	HYDRO READING (R')	CORRECTED READING $R+C_M-C_D$	HEIGHT Z_R	PARTICLE DIA. (MM)	PERCENT FINER PARTIAL	PERCENT FINER TOTAL
5/6	0840	0	21°						
		.5	21°	19					
	0841	1.	21°	16					
	0842	2.	21°	15					
	0845	5	21°	14					
	0855	15	21°	12'					
	0910	30	21°	11.5					
	0940	60	21°	9.9					
	1040	120	21°	9					
	1250	250	22°	8					
	1656	496	24°	7.5					
5/7	0813	1413	22°	7'					

WEIGHT IN GRAMS		
DISH PLUS DRY SOIL		
DISH		
DRY SOIL	W_O	

SPECIFIC GRAVITY OF SOLIDS, G_S =

CORRECTED HYDROMETER READING (R)

644.07 − 599.19 = HYDROMETER READING (R')+C_M

THE PARTICLE DIAMETER (D) IS CALCULATED FROM STOKE'S EQUATION USING CORRECTED HYDROMETER READING. USE NOMOGRAPHIC CHART FOR SOLUTION OF STOKE'S EQUATION.

HYDROMETER GRADUATED IN SPECIFIC GRAVITY

$$\text{PARTIAL PERCENT FINER} = \frac{G_S}{G_S-1} \times \frac{100}{W_O}(R-C_D+M)$$

HYDROMETER GRADUATED IN GRAMS PER LITER

$$\text{PARTIAL PERCENT FINER} = \frac{100}{W_O}(R-C_D+M)$$

W_S = TOTAL OVEN-DRY WT. OF SAMPLE USED FOR COMBINED ANALYSIS

W_O = OVEN-DRY WT. IN GRAMS OF SOIL USED FOR HYDROMETER ANALYSIS

W_1 = OVEN-DRY WT OF SAMPLE RETAINED ON NO. 200 SIEVE

$$\text{TOTAL PERCENT FINER} = \text{PARTIAL PERCENT FINER} \times \frac{W_S-W_1}{W_S}$$

REMARKS

TECHNICIAN Meusch COMPUTED BY CHECKED BY EEK

URAQT FORM 1040-A
2-31-75

AR302478

SA-H,

MECHANICAL ANALYSIS

DATE 5/1/91 BY [illegible]

JOB NUMBER 10839-047 OWNER/CLIENT ALLIED STEEL

LOCATION PARKERFORD, PA

BORING R-SS-2 SAMPLE _____ DEPTH 0-4"

			#10	#10
NUMBER OF RINGS		DISH	50	E-4
WT. OF RINGS & WET SOIL		WT. OF DISH & WET SOIL	962.0	
WT. OF RINGS		WT. OF DISH & DRY SOIL	350.4	
WT. OF WET SOIL		WT. OF MOISTURE		
FIELD DENSITY		WT. OF DISH	107.4	
DRY DENSITY		WT. OF DRY SOIL		
		FIELD MOISTURE CONTENT		

WASH SIEVE _____ DRY SIEVE _____ WEIGHT OF OVEN DRY SOIL _____ (grams)

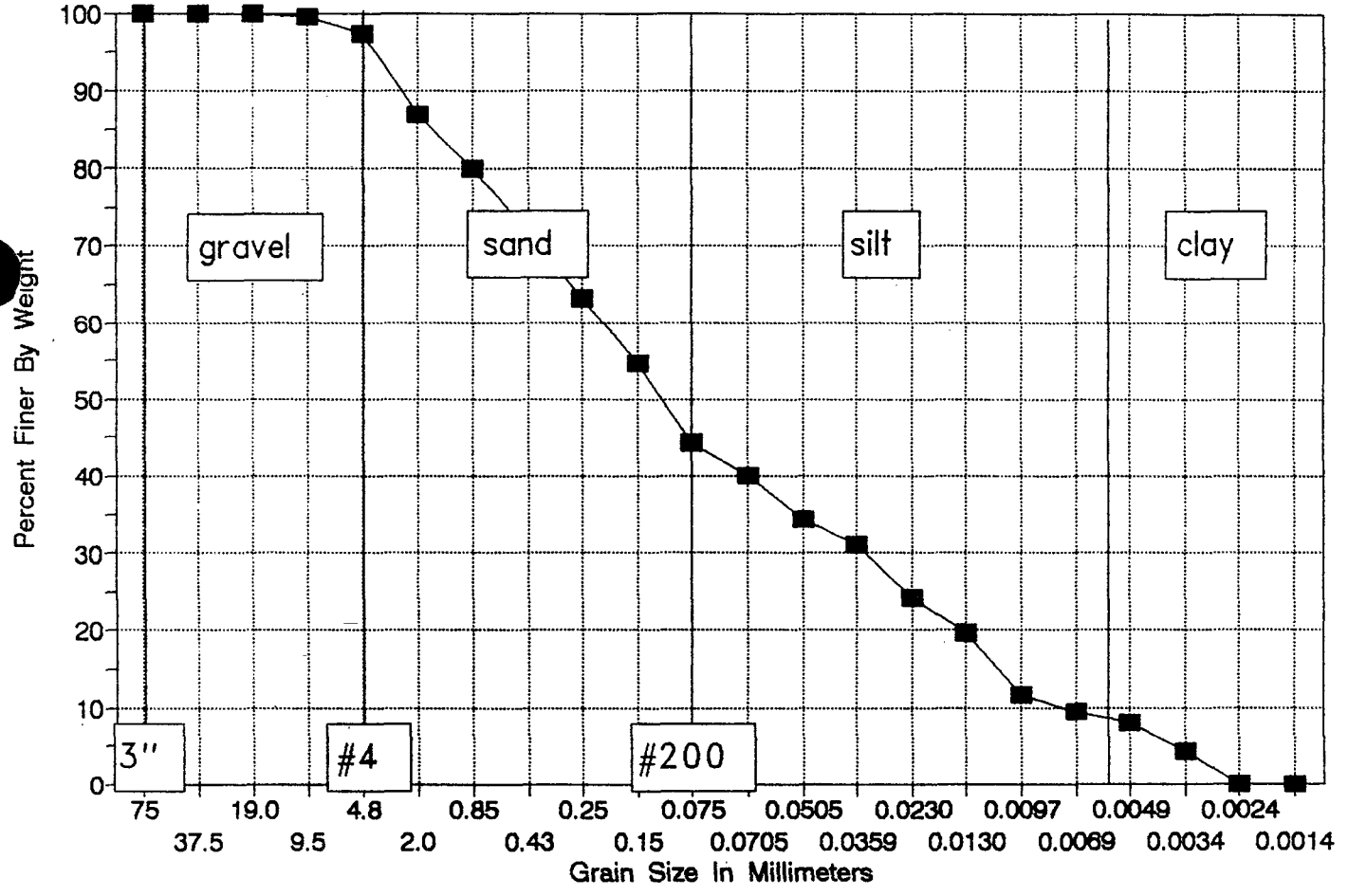
DISH NUMBER	DISH WEIGHT	SIEVE NUMBER	WEIGHT RETAINED	ACCUMULATIVE WEIGHT RETAINED	ACCUMULATIVE PERCENT	
					RETAINED	FINER
		3"				
		1-1/2"				
		3/4"		29.6		
		3/8"		221.8		
		#4		309.1		
		PAN				
		TOTAL				

DISH NUMBER	DISH WEIGHT	SIEVE NUMBER	WEIGHT RETAINED	ACCUM. WEIGHT RETAINED	ACCUMULATIVE PERCENT		
					PARTIAL		TOTAL
					RETAINED	FINER	FINER
		#10		104.2			
32		#20		[illegible]			
		#40		14.32			
		#60		21.35			
		#100		26.24			
		#200		29.29			
		PAN					
		TOTAL					

AR302479

GRADATION CURVE

Sample A-SS-4, at 0-4 inches



Recticon/Allied Steel
Parkerford, Pa

Wt soil and dish	443.7
Dry soil & dish	344.4
Dish	104.6

Sample A-SS-4 at 0-4 Inches
Moisture Content = 41.4

SIEVE & HYDROMETER ANALYSIS

SIEVE PORTION

Dry weight of TOTAL sample= 239.8
sample split -#10 sieve = 30.5

Sieve #	Weight Retained	Total Percent Finer
1.5 inch		100.00%
3/4 inch	0	100.00%
3/8 inch	1.1	99.54%
# 4	6.6	97.25%
# 10	31.2	86.99%
# 20	2.49	79.89%
# 40	5.34	71.76%
# 60	8.36	63.15%
# 100	11.39	54.50%
# 200	14.95	44.35%

Constants this test
Gs= 2.65 20c=.01365 21c=.01348 22c=.01332
18c=.01399 19c=.01382
When 5 grams of Sodium
Hexametaphosphate used correction
= 6

HYDROMETER ANALYSIS

Elapsed time	Tc	R'	Zr	Particle Dia. mm	Percent Partial	Total Percent Finer
0.5	21	20	13.00	0.0705	45.90	39.93
1	21	18	13.33	0.0505	39.34	34.23
2	21	16.9	13.51	0.0359	35.74	31.09
5	21	14.5	13.91	0.0230	27.87	24.24
16	21	12.9	14.17	0.0130	22.62	19.68
30	21	10.1	14.63	0.0097	13.44	11.69
60	21	9.3	14.77	0.0069	10.82	9.41
120	21	8.8	14.85	0.0049	9.18	7.99
250	22	7.5	15.06	0.0034	4.92	4.28
492	24	6	15.31	0.0024	0.00	0.00
1409	22	6	15.31	0.0014	0.00	0.00

HYDROMETER ANALYSIS

DATE 5/3/91

OWNER ALLIED STEEL JOB NO. 10230 047

BORING NO. A-SS-4 C-4"

SAMPLE SPECIMEN NO.	CLASSIFICATION	
DISH NO. E-3	GRADUATE NO. 8	HYDROMETER NO.

DISPERSING AGENT USED Sodium H-MPH ; QUANITY 5g

DISPERSING AGENT CORRECTION, C_D .5 ; MENISCUS CORRECTION, C_M= .1

	TIME	ELAPSED TIME	TEMP °C	HYDRO READING (R')	CORRECTED READING $R+C_M-C_D$	HEIGHT Z_R	PARTICLE DIA. (MM)	PERCENT FINER PARTIAL	PERCENT FINER TOTAL
5/6	0845	0	21°						
		.5	21°	20					
	0846	1.	21°	18					
	0847	2.	21°	16^9					
	0850	5	21°	14^5					
	0900	15	21°	12^9					
	0915	30	21°	10^1					
	0945	60	21°	9^3					
	1045	120	21°	8^8					
	1255	350	22°	7^5					
	1657	492	24°	6					
5/7	0814	1409	22°	6					

WEIGHT IN GRAMS			
	DISH PLUS DRY SOIL		
	DISH		
	DRY SOIL	W_O	

SPECIFIC GRAVITY OF SOLIDS, G_S =

CORRECTED HYDROMETER READING (R)

616.50 — 586.00 = HYDROMETER READING (R')+C_M

THE PARTICLE DIAMETER (D) IS CALCULATED FROM STOKE'S EQUATION USING CORRECTED HYDROMETER READING. USE NOMOGRAPHIC CHART FOR SOLUTION OF STOKE'S EQUATION.

HYDROMETER GRADUATED IN SPECIFIC GRAVITY

$$\text{PARTIAL PERCENT FINER} = \frac{G_S}{G_S-1} \times \frac{100}{W_O}(R-C_D+M)$$

HYDROMETER GRADUATED IN GRAMS PER LITER

$$\text{PARTIAL PERCENT FINER} = \frac{100}{W_O}(R-C_D+M)$$

W_S = TOTAL OVEN-DRY WT. OF SAMPLE USED FOR COMBINED ANALYSIS

W_O = OVEN-DRY WT. IN GRAMS OF SOIL USED FOR HYDROMETER ANALYSIS

W_1 = OVEN-DRY WT OF SAMPLE RETAINED ON NO. 200 SIEVE

$$\text{TOTAL PERCENT FINER} = \text{PARTIAL PERCENT FINER} \times \frac{W_S-W_1}{W_S}$$

REMARKS

TECHNICIAN [illegible] COMPUTED BY CHECKED BY [illegible]

URAQT FORM 1040-A
2-31-75

AR302482

SA-14

MECHANICAL ANALYSIS

DATE 5/1/91 BY [illegible]

JOB NUMBER 10839-047 OWNER/CLIENT ALLIED STEEL

LOCATION PARKERFORD, PA.

BORING A-SS-4 SAMPLE _____ DEPTH 2'-4"

NUMBER OF RINGS		DISH	61	E-3
WT. OF RINGS & WET SOIL		WT. OF DISH & WET SOIL	443.7	
WT. OF RINGS		WT. OF DISH & DRY SOIL	344.4	
WT. OF WET SOIL		WT. OF MOISTURE		
FIELD DENSITY		WT. OF DISH	104.6	
DRY DENSITY		WT. OF DRY SOIL		
		FIELD MOISTURE CONTENT		

WASH SIEVE _____ DRY SIEVE _____ WEIGHT OF OVEN DRY SOIL _____ (grams)

DISH NUMBER	DISH WEIGHT	SIEVE NUMBER	WEIGHT RETAINED	ACCUMULATIVE WEIGHT RETAINED	ACCUMULATIVE PERCENT	
					RETAINED	FINER
		3"				
		1-1/2"				
		3/4"		0		
		3/8"		1.1		
		#4		6.6		
		PAN				
		TOTAL				

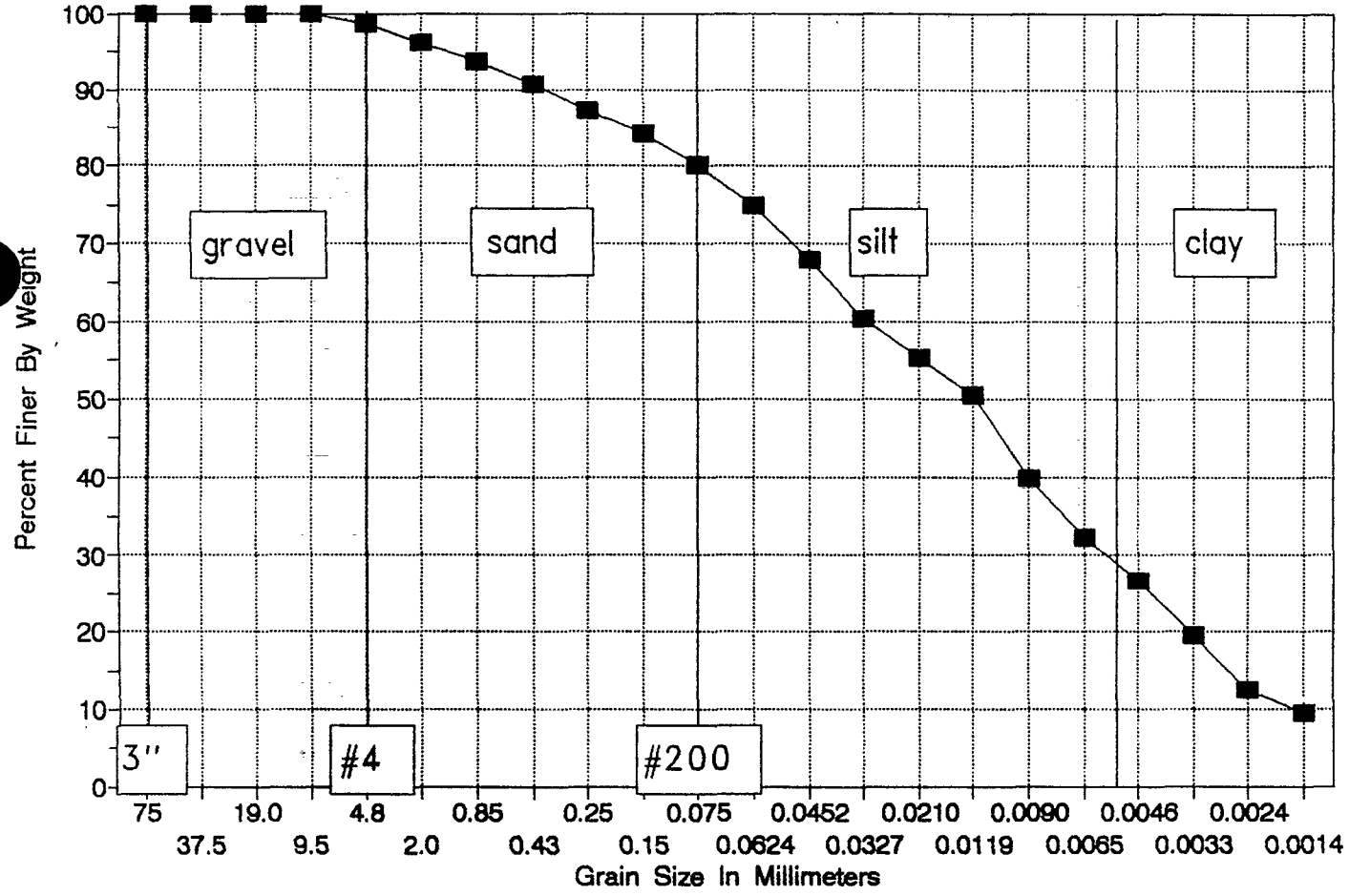
DISH NUMBER	DISH WEIGHT	SIEVE NUMBER	WEIGHT RETAINED	ACCUM. WEIGHT RETAINED	ACCUMULATIVE PERCENT		
					PARTIAL		TOTAL
					RETAINED	FINER	FINER
		#10		31.2			
4C		#20		2.49			
		#40		5.34			
		#60		8.33			
		#100		11.39			
		#200		14.95			
		PAN					
		TOTAL					

AR302483

Dames & Moore

GRADATION CURVE

Sample A-SS-6, at 0-4 inches



Recticon/Allied Steel
Parkerford, Pa

Wt soil and dish	444.2
Dry soil & dish	324.4
Dish	102.5

Sample A-SS-6 at 0-4 Inches
Moisture Content = 54.0

SIEVE & HYDROMETER ANALYSIS

SIEVE PORTION

Dry weight of TOTAL sample= 221.9
sample split -#10 sieve = 39.8

Sieve #	Weight Retained	Total Percent Finer
1.5 inch		100.00%
3/4 inch	0	100.00%
3/8 inch	0	100.00%
# 4	3	98.65%
# 10	8.4	96.21%
# 20	1.04	93.70%
# 40	2.28	90.70%
# 60	3.65	87.39%
# 100	4.99	84.15%
# 200	6.68	80.07%

Constants this test
Gs= 2.65 20c=.01365 21c=.01348 22c=.01332
18c=.01399 19c=.01382
When 5 grams of Sodium
Hexametaphosphate used correction
= 6

HYDROMETER ANALYSIS

Elapsed time	Tc	R'	Zr	Particle Dia. mm	Percent Partial	Total Percent Finer
0.5	21	37	10.20	0.0624	77.89	74.94
1	21	34.1	10.67	0.0452	70.60	67.93
2	21	31	11.19	0.0327	62.81	60.44
5	21	28.9	11.53	0.0210	57.54	55.36
16	21	26.9	11.86	0.0119	52.51	50.52
30	21	22.5	12.59	0.0090	41.46	39.89
60	21	19.3	13.12	0.0065	33.42	32.15
120	21	17	13.50	0.0046	27.64	26.59
250	22	14.1	13.97	0.0033	20.35	19.58
488	24	11.1	14.47	0.0024	12.81	12.33
1406	22	9.9	14.67	0.0014	9.80	9.43

HYDROMETER ANALYSIS

DATE 5/3/91

OWNER Allied Steel JOB NO. 10839-047

BORING NO. A-55-6 0-4"

SAMPLE SPECIMEN NO.		CLASSIFICATION
DISH NO. A-8	GRADUATE NO. 9	HYDROMETER NO.

DISPERSING AGENT USED Sodium H-MPH ; QUANITY 5g

DISPERSING AGENT CORRECTION, C_D .5 ; MENISCUS CORRECTION, C_M= .1

	TIME	ELAPSED TIME	TEMP °C	HYDRO READING (R')	CORRECTED READING $R+C_M-C_D$	HEIGHT Z_R	PARTICLE DIA. (MM)	PERCENT FINER PARTIAL	PERCENT FINER TOTAL
5/6	0850	0	21°						
		.5	21°	37					
	0851	1.	21°	34'					
	0852	2.	21°	31					
	0855	5	21°	28.9					
	0905	15	21°	26.9					
	0920	30	21°	22.5					
	0950	60	21°	19.3					
	1050	120	21°	17					
	1300	250	22°	14'					
	1658	488	24°	11'					
5/7	0816	1406	22°	9.9					

WEIGHT IN GRAMS		
DISH PLUS DRY SOIL		
DISH		
DRY SOIL	W_O	

SPECIFIC GRAVITY OF SOLIDS, G_S =

CORRECTED HYDROMETER READING (R) = HYDROMETER READING (R')+C_M

649.55 − 609.75

THE PARTICLE DIAMETER (D) IS CALCULATED FROM STOKE'S EQUATION USING CORRECTED HYDROMETER READING. USE NOMOGRAPHIC CHART FOR SOLUTION OF STOKE'S EQUATION.

HYDROMETER GRADUATED IN SPECIFIC GRAVITY

$$\text{PARTIAL PERCENT FINER} = \frac{G_S}{G_S-1} \times \frac{100}{W_O}(R-C_D+M)$$

HYDROMETER GRADUATED IN GRAMS PER LITER

$$\text{PARTIAL PERCENT FINER} = \frac{100}{W_O}(R-C_D+M)$$

W_S = TOTAL OVEN-DRY WT. OF SAMPLE USED FOR COMBINED ANALYSIS

W_O = OVEN-DRY WT. IN GRAMS OF SOIL USED FOR HYDROMETER ANALYSIS

W_1 = OVEN-DRY WT OF SAMPLE RETAINED ON NO. 200 SIEVE

$$\text{TOTAL PERCENT FINER} = \text{PARTIAL PERCENT FINER} \times \frac{W_S-W_1}{W_S}$$

REMARKS

TECHNICIAN [signature] COMPUTED BY COMPUTED BY CHECKED BY [signature]

URAQT FORM 1040-A
2-31-75

AR302486

MECHANICAL ANALYSIS

SA-HA

DATE 5/1/91 BY [illegible]

JOB NUMBER 10839-047 OWNER/CLIENT ALLIED STEEL

LOCATION PARKERFORD, PA

BORING A-SS-6 SAMPLE _____ DEPTH 2-4"

				⊕ #10	⊖ #10
NUMBER OF RINGS			DISH	101	A-3
WT. OF RINGS & WET SOIL			WT. OF DISH & WET SOIL	444.3	
WT. OF RINGS			WT. OF DISH & DRY SOIL	324.4	
WT. OF WET SOIL			WT. OF MOISTURE		
FIELD DENSITY			WT. OF DISH	102.5	
DRY DENSITY			WT. OF DRY SOIL		
			FIELD MOISTURE CONTENT		

WASH SIEVE _____ DRY SIEVE _____ WEIGHT OF OVEN DRY SOIL _____ (grams)

DISH NUMBER	DISH WEIGHT	SIEVE NUMBER	WEIGHT RETAINED	ACCUMULATIVE WEIGHT RETAINED	ACCUMULATIVE PERCENT	
					RETAINED	FINER
		3"				
		1-1/2"				
		3/4"		0		
		3/8"		0		
		#4		3.0		
		PAN				
		TOTAL				

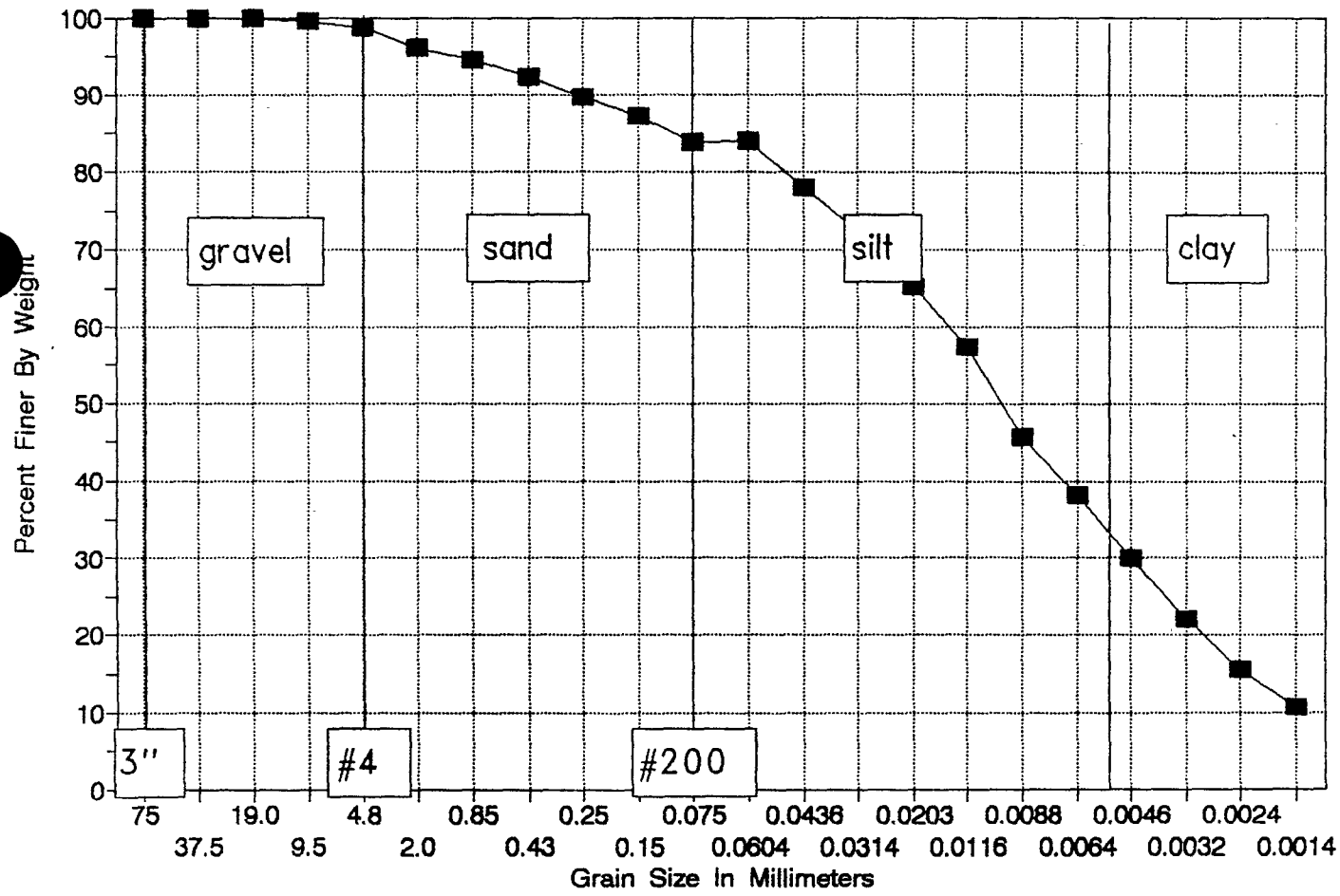
DISH NUMBER	DISH WEIGHT	SIEVE NUMBER	WEIGHT RETAINED	ACCUM. WEIGHT RETAINED	ACCUMULATIVE PERCENT		
					PARTIAL		TOTAL
					RETAINED	FINER	FINER
		#10		8.4			
3		#20		1.54			
		#40		2.22			
		#60		3.65			
		#100		4.99			
		#200		6.68			
		PAN					
		TOTAL					

AR302487

Dames & Moore

GRADATION CURVE

Sample A-SS-3, at 0-4 inches



Recticon/Allied Steel
Parkerford, Pa

Wt soil and dish	455.3
Dry soil & dish	327.9
Dish	107.1

Sample A-SS-3 at 0-4 Inches
Moisture Content = 57.7

SIEVE & HYDROMETER ANALYSIS

SIEVE PORTION

Dry weight of TOTAL sample= 220.8
sample split -#10 sieve = 39.98

Sieve #	Weight Retained	Total Percent Finer
1.5 inch		100.00%
3/4 inch	0	100.00%
3/8 inch	1.2	99.46%
# 4	3.1	98.60%
# 10	8.7	96.06%
# 20	0.66	94.47%
# 40	1.6	92.22%
# 60	2.64	89.72%
# 100	3.71	87.15%
# 200	5.1	83.81%

Constants this test
Gs= 2.65 20c=.01365 21c=.01348 22c=.01332
18c=.01399 19c=.01382
When 5 grams of Sodium
Hexametaphosphate used correction
= 6

HYDROMETER ANALYSIS

Elapsed time	Tc	R'	Zr	Particle Dia. mm	Percent Partial	Total Percent Finer
0.5	21	41	9.54	0.0604	87.54	84.09
1	21	38.5	9.95	0.0436	81.29	78.09
2	21	36.2	10.33	0.0314	75.54	72.56
5	21	33.1	10.84	0.0203	67.78	65.11
16	21	29.9	11.37	0.0116	59.78	57.42
30	21	25	12.18	0.0088	47.52	45.65
60	21	21.9	12.69	0.0064	39.77	38.20
120	21	18.5	13.25	0.0046	31.27	30.03
250	22	15.2	13.79	0.0032	23.01	22.10
484	24	12.5	14.24	0.0024	16.26	15.62
1402	22	10.5	14.57	0.0014	11.26	10.81

HYDROMETER ANALYSIS

DATE 5-3-91

OWNER Allied Steel JOB NO. 10839-047

BORING NO. A-SS-3 0-4"

SAMPLE SPECIMEN NO.	CLASSIFICATION	
DISH NO. L-9	GRADUATE NO. 10	HYDROMETER NO.

DISPERSING AGENT USED Sodium H-MPH ; QUANITY 5g

DISPERSING AGENT CORRECTION, C_D .5 ; MENISCUS CORRECTION, C_M= .1

	TIME	ELAPSED TIME	TEMP °C	HYDRO READING (R')	CORRECTED READING $R+C_M-C_D$	HEIGHT Z_R	PARTICLE DIA. (MM)	PERCENT FINER PARTIAL	PERCENT FINER TOTAL
5/6	0855	0	21°						
		.5	21°	41					
	0856	1.	21°	38.5					
	0857	2.	21°	36.2					
	0900	5	21°	33.1					
	0910	5	21°	29.9					
	0925	30	21°	25					
	0955	60	21°	21.9					
	1055	120	21°	18.5					
	1305	[illegible]	22°	15.2					
	1659	484	24°	12.5					
5/7	0817	1402	22°	10.5					

WEIGHT IN GRAMS			
	DISH PLUS DRY SOIL		
	DISH		
	DRY SOIL	W_O	

SPECIFIC GRAVITY OF SOLIDS, G_S =

CORRECTED HYDROMETER READING (R)

616.08 — 576.10 = HYDROMETER READING (R')+C_M

THE PARTICLE DIAMETER (D) IS CALCULATED FROM STOKE'S EQUATION USING CORRECTED HYDROMETER READING. USE NOMOGRAPHIC CHART FOR SOLUTION OF STOKE'S EQUATION.

HYDROMETER GRADUATED IN SPECIFIC GRAVITY

$$\text{PARTIAL PERCENT FINER} = \frac{G_S}{G_S-1} \times \frac{100}{W_O}(R-C_D+M)$$

HYDROMETER GRADUATED IN GRAMS PER LITER

$$\text{PARTIAL PERCENT FINER} = \frac{100}{W_O}(R-C_D+M)$$

W_S = TOTAL OVEN-DRY WT. OF SAMPLE USED FOR COMBINED ANALYSIS

W_O = OVEN-DRY WT. IN GRAMS OF SOIL USED FOR HYDROMETER ANALYSIS

W_1 = OVEN-DRY WT OF SAMPLE RETAINED ON NO. 200 SIEVE

$$\text{TOTAL PERCENT FINER} = \text{PARTIAL PERCENT FINER} \times \frac{W_S-W_1}{W_S}$$

REMARKS

TECHNICIAN [signature] COMPUTED BY _____ CHECKED BY EEL

URAQT FORM 1040-A
2-31-75

AR302490

MECHANICAL ANALYSIS

SA-HA

DATE 5/1/91 BY J Merrick

JOB NUMBER 10839-047 OWNER/CLIENT ALLIED STEEL

LOCATION PARKERFORD, PA

BORING A-SS-3 SAMPLE _____ DEPTH [illegible]

			(+) #10	(-) #10
NUMBER OF RINGS		DISH	29	29
WT. OF RINGS & WET SOIL		WT. OF DISH & WET SOIL	455.3	
WT. OF RINGS		WT. OF DISH & DRY SOIL	327.9	
WT. OF WET SOIL		WT. OF MOISTURE		
FIELD DENSITY		WT. OF DISH	107.1	
DRY DENSITY		WT. OF DRY SOIL		
		FIELD MOISTURE CONTENT		

WASH SIEVE _____ DRY SIEVE _____ WEIGHT OF OVEN DRY SOIL _____ (grams)

DISH NUMBER	DISH WEIGHT	SIEVE NUMBER	WEIGHT RETAINED	ACCUMULATIVE WEIGHT RETAINED	ACCUMULATIVE PERCENT	
					RETAINED	FINER
		3"				
		1-1/2"				
		3/4"		0		
		3/8"		1.2		
		#4		3.1		
		PAN				
		TOTAL				

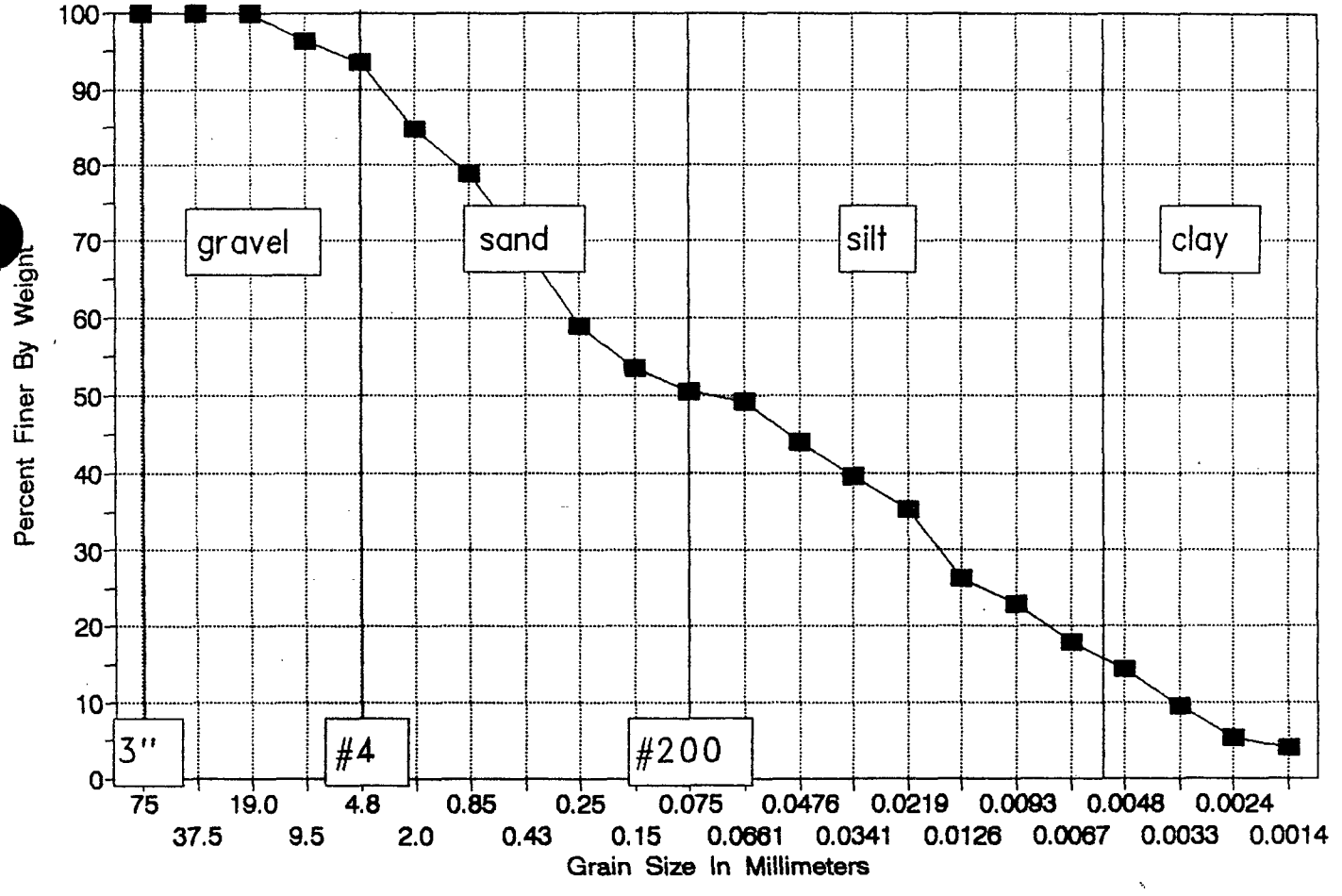
DISH NUMBER	DISH WEIGHT	SIEVE NUMBER	WEIGHT RETAINED	ACCUM. WEIGHT RETAINED	ACCUMULATIVE PERCENT		
					PARTIAL		TOTAL
					RETAINED	FINER	FINER
		#10		2.7			
79		#20		6.36			
		#40		1.63			
		#60		2.44			
		#100		3.71			
		#200		5.10			
		PAN					
		TOTAL					

AR302491

Dames & Moore

GRADATION CURVE

Sample A-SS-5, at 0-4 inches



Recticon/Allied Steel
Parkerford, Pa

Wt soil and dish	362.8
Dry soil & dish	277.7
Dish	104.4

Sample A-SS-5 at 0-4 Inches
Moisture Content = 49.1

SIEVE & HYDROMETER ANALYSIS

SIEVE PORTION

Dry weight of TOTAL sample= 173.3
sample split -#10 sieve = 40.49

Sieve #	Weight Retained	Total Percent Finer
1.5 inch		100.00%
3/4 inch	0	100.00%
3/8 inch	6.4	96.31%
# 4	11.3	93.48%
# 10	26.4	84.77%
# 20	2.85	78.80%
# 40	7.47	69.13%
# 60	12.37	58.87%
# 100	14.92	53.53%
# 200	16.42	50.39%

Constants this test
Gs= 2.65 20c=.01365 21c=.01348 22c=.01332
18c=.01399 19c=.01382
When 5 grams of Sodium
Hexametaphosphate used correction
= 6

HYDROMETER ANALYSIS

Elapsed time	Tc	R'	Zr	Particle Dia. mm	Percent Partial	Total Percent Finer
0.5	21	29.5	11.43	0.0661	58.04	49.20
1	21	27	11.85	0.0476	51.86	43.96
2	21	24.9	12.19	0.0341	46.68	39.57
5	21	22.9	12.52	0.0219	41.74	35.38
16	21	18.5	13.25	0.0126	30.87	26.17
30	21	16.9	13.51	0.0093	26.92	22.82
60	21	14.5	13.91	0.0067	20.99	17.79
120	21	12.8	14.19	0.0048	16.79	14.24
250	22	10.5	14.57	0.0033	11.11	9.42
480	24	8.5	14.90	0.0024	6.17	5.23
1398	22	7.9	15.00	0.0014	4.69	3.98

HYDROMETER ANALYSIS

DATE 5/3/91

OWNER Allied Steel JOB NO. 10839-047

BORING NO. A-SS-5

SAMPLE SPECIMEN NO.	CLASSIFICATION	
DISH NO. L-9	GRADUATE NO. 11	HYDROMETER NO.

DISPERSING AGENT USED Sodium H-MPH ; QUANITY 5g

DISPERSING AGENT CORRECTION, C_D .5 ; MENISCUS CORRECTION, C_M= .1

	TIME	ELAPSED TIME	TEMP °C	HYDRO READING (R')	CORRECTED READING $R+C_M-C_D$	HEIGHT Z_R	PARTICLE DIA. (MM)	PERCENT FINER PARTIAL	PERCENT FINER TOTAL
5/6	0900	0	21°						
		.5	21°	29^5					
	0901	1.	21°	27					
	0902	2.	21°	24^9					
	0905	5	21°	22^9					
	0915	15	21°	18^5					
	0930	30	21°	16^9					
	1000	60	21°	14^5					
	1100	120	21°	12^8					
	1310	250	22°	10^5					
	1700	480	24°	8^5					
5/7	0818	1398	22°	7^9					

WEIGHT IN GRAMS		
DISH PLUS DRY SOIL		
DISH		
DRY SOIL	W_O	

SPECIFIC GRAVITY OF SOLIDS, G_S =

CORRECTED HYDROMETER READING (R)

632 88 — 592.39 = HYDROMETER READING (R')+C_M

THE PARTICLE DIAMETER (D) IS CALCULATED FROM STOKE'S EQUATION USING CORRECTED HYDROMETER READING. USE NOMOGRAPHIC CHART FOR SOLUTION OF STOKE'S EQUATION.

HYDROMETER GRADUATED IN SPECIFIC GRAVITY

$$\text{PARTIAL PERCENT FINER} = \frac{G_S}{G_S-1} \times \frac{100}{W_O}(R-C_D+M)$$

HYDROMETER GRADUATED IN GRAMS PER LITER

$$\text{PARTIAL PERCENT FINER} = \frac{100}{W_O}(R-C_D+M)$$

W_S = TOTAL OVEN-DRY WT. OF SAMPLE USED FOR COMBINED ANALYSIS

W_O = OVEN-DRY WT. IN GRAMS OF SOIL USED FOR HYDROMETER ANALYSIS

W_1 = OVEN-DRY WT OF SAMPLE RETAINED ON NO. 200 SIEVE

$$\text{TOTAL PERCENT FINER} = \text{PARTIAL PERCENT FINER} \times \frac{W_S-W_1}{W_S}$$

REMARKS

TECHNICIAN Mensch COMPUTED BY CHECKED BY [illegible]

URAQT FORM 1040-A
2-31-75

AR302494

MECHANICAL ANALYSIS

SA-HA

DATE 5/1/91 BY [illegible]

JOB NUMBER 10839-047 OWNER/CLIENT ALLIED STEEL

LOCATION PARKERFORD, PA.

BORING A-SS-5 SAMPLE _____ DEPTH 0-4"

			F #10	F #10
NUMBER OF RINGS		DISH	5	L-9
WT. OF RINGS & WET SOIL		WT. OF DISH & WET SOIL	362.8	
WT. OF RINGS		WT. OF DISH & DRY SOIL	277.7	
WT. OF WET SOIL		WT. OF MOISTURE		
FIELD DENSITY		WT. OF DISH	104.4	
DRY DENSITY		WT. OF DRY SOIL		
		FIELD MOISTURE CONTENT		

WASH SIEVE _____ DRY SIEVE _____ WEIGHT OF OVEN DRY SOIL _____ (grams)

DISH NUMBER	DISH WEIGHT	SIEVE NUMBER	WEIGHT RETAINED	ACCUMULATIVE WEIGHT RETAINED	ACCUMULATIVE PERCENT	
					RETAINED	FINER
		3"				
		1-1/2"				
		3/4"		0		
		3/8"		5.4		
		#4		11.3		
		PAN				
		TOTAL				

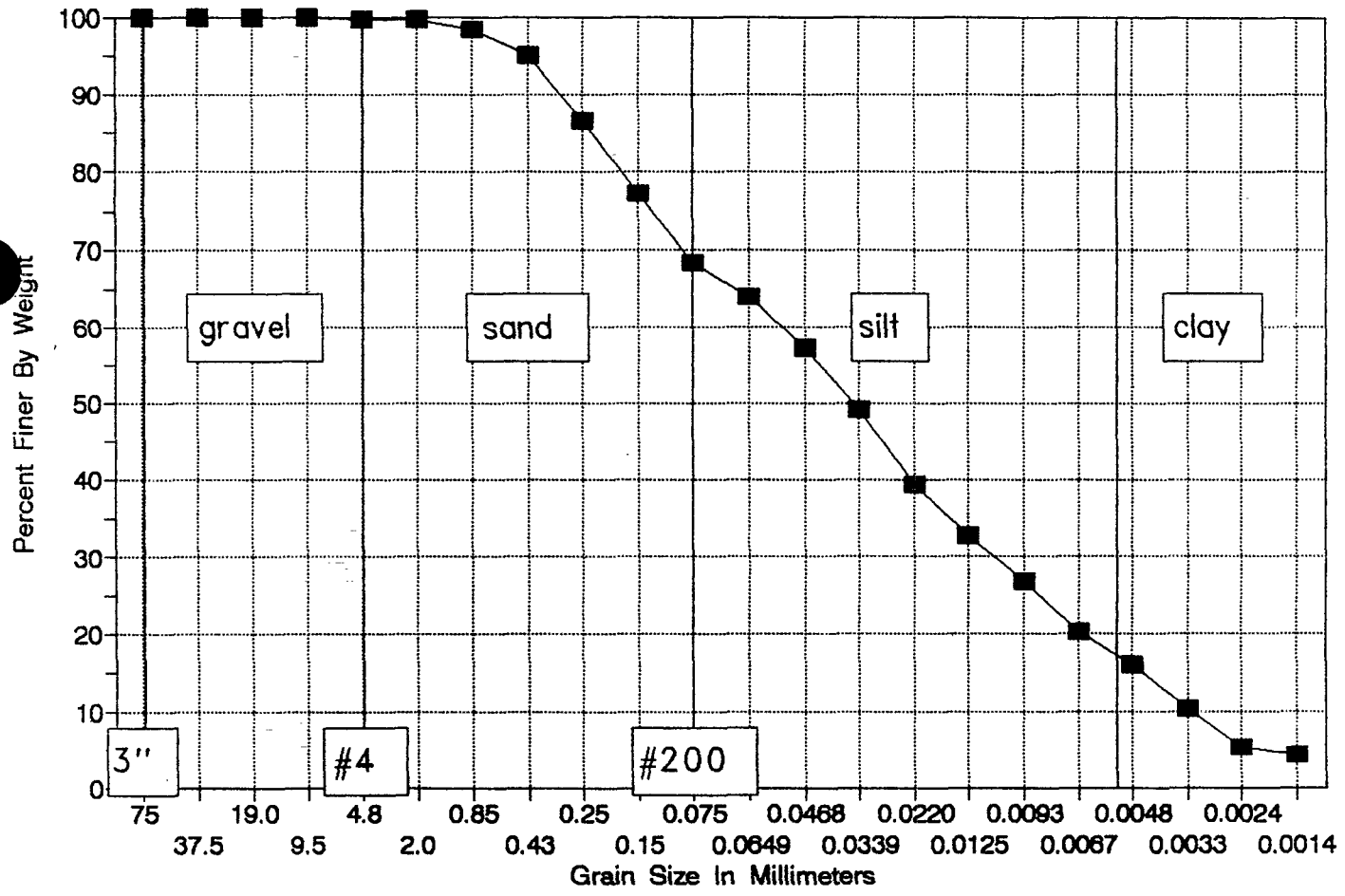
DISH NUMBER	DISH WEIGHT	SIEVE NUMBER	WEIGHT RETAINED	ACCUM. WEIGHT RETAINED	ACCUMULATIVE PERCENT		
					PARTIAL		TOTAL
					RETAINED	FINER	FINER
		#10		26.4			
20		#20		2.85			
		#40		7.47			
		#60		12.37			
		#100		14.73			
		#200		15.42			
		PAN					
		TOTAL					

AR302495

Dames & Moore

GRADATION CURVE

Sample R-SS-7A, at 0-4 inches



Reticon/Allied Steel
Parkerford, Pa

Wt soil and dish	347.8
Dry soil & dish	288.3
Dish	106.4

Sample R-SS-7A 0-4 Inches
Moisture Content = 32.7

SIEVE & HYDROMETER ANALYSIS

SIEVE PORTION

Dry weight of TOTAL sample= 181.9
sample split -#10 sieve = 40.56

Sieve #	Weight Retained	Total Percent Finer
1.5 inch		100.00%
3/4 inch	0	100.00%
3/8 inch	0	100.00%
# 4	0.5	99.73%
# 10	0.6	99.67%
# 20	0.5	98.44%
# 40	1.9	95.00%
# 60	5.28	86.70%
# 100	9.06	77.41%
# 200	12.76	68.31%

Constants this test
Gs= 2.65 20c=.01365 21c=.01348 22c=.01332
18c=.01399 19c=.01382
When 5 grams of Sodium
Hexametaphosphate used correction
= 6

HYDROMETER ANALYSIS

Elapsed time	Tc	R'	Zr	Particle Dia. mm	Percent Partial	Total Percent Finer
0.5	21	32	11.02	0.0649	64.10	63.89
1	21	29.3	11.47	0.0468	57.45	57.26
2	21	26	12.01	0.0339	49.31	49.15
5	21	22	12.67	0.0220	39.45	39.32
16	21	19.3	13.12	0.0125	32.79	32.68
30	21	16.9	13.51	0.0093	26.87	26.79
60	21	14.2	13.96	0.0067	20.22	20.15
120	21	12.5	14.24	0.0048	16.03	15.97
250	22	10.2	14.62	0.0033	10.36	10.32
500	24	8.2	14.95	0.0024	5.42	5.41
1417	22	7.7	15.03	0.0014	4.19	4.18