KOCH

KOCH NITROGEN COMPANY

CERTIFIED MAIL: RETURN RECIEPT REQUESTED: 7004 1160 0006 4176 3756

August 5, 2005

Director
RCRA Corrective Action & Permits Branch
Air, RCRA and Toxics Division
U.S. Environmental Protection Agency Region VII
901 North Fifth Street
Kansas City, Kansas 66101

RE: Koch Nitrogen Company – Dodge City, Kansas
EPA ID NO. KSD044625010
Soil Sampling – Andco Overflow Area

Dear Ms. Stone:

By this letter, Koch Nitrogen Company (KNC), as the owner and operator of the Dodge City Nitrogen Plant, herby submits an original and one duplicate of a Sampling and Analysis Plan (Plan) for the Andco Clarifier Basin overflow area.

EPA was notified of the overflow on July 8, 2005. KNC does not believe that the overflow was a reportable event under Section C.4 of the Permit, nor that the overflow resulted in any residual soil or groundwater impacts. However, KNC has developed a SAP to document the soil conditions directly downgradient of the spill area.

KNC will conduct the sampling and analysis described within the attached Plan within approximately one (1) week of the date of this letter in order to obtain samples that are relatively contemporaneous with the incident. If you have any questions about the Plan, please do not hesitate to contact AnnieLaurie Burke at (620) 227-8631, ext. 350.

Sincerely,

Gary J. LeRock

457666

RCRA RECORDS

Gary J. LeRock
Plant Manager
Encs.: Sampling and Analysis Plan, July 2005 (2 copies)

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AUG 08 2005

ARTD/RCAP

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620/227-8631 ▪ FAX 620/227-6016

Cc: Kathy Dunn Kansas Department of Health and Environment (w/1 copy)
Everett Spellman, Kansas Department of Health and Environment (w/1 copy)
Steve Ellingson, KMS Wichita (w/1 copy)
AnnieLaurie Burke, KNC Dodge City (w/1 copy)

Sampling and Analysis Plan - Andco Clarifier Basin Overflow

KOCH NITROGEN FACILITY
DODGE CITY, KANSAS

Prepared By:

GeoStat **Environmental, LLC**
115 East Marlin, Suite 107
McPherson, KS 67460

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1.0 Introduction

On June 24, 2005, approximately 1,000 gallons of recovered groundwater was released from the Andco clarifier basin as the result of an overflow of the recovery wells during installation of the Bogner's potable water line. An area operator noticed the overflow and immediately took action to stop the release by putting the recovery system in manual override to shut down the pumps. Koch Nitrogen Company (KNC) notified the U.S. Environmental Protection Agency (EPA) of the spill, in accordance with its permit, and Kansas Department of Health and Environment (KDHE), in accordance with K.A.R. 28-48-2.

At the time of the groundwater release, the Andco clarifier basin contained recovered groundwater that had been treated by the electrochemical reduction unit. KNC believes that the treated groundwater within the Andco clarifier basin contained 0.24 milligram per liter (mg/L) or less of chromium. Prior to treatment, groundwater extracted from recovery wells contains maximum chromium concentrations of 0.560 mg/L and maximum nitrite plus nitrate as (N) concentrations of 122 mg/L.

This Sampling and Analysis Plan (SAP) provides a discussion of the technical approach and field sampling protocol proposed to evaluate the total chromium and nitrate plus nitrite (as N) concentrations in shallow soils at the subject site. The primary objective of the sampling and analysis is to determine total chromium and nitrate plus nitrite (as N) concentrations in shallow soils (0 to 8 inches below ground surface within the primary areas contacted by the groundwater spill (Figure 1).

This SAP outlines the field procedures defined to gather data to satisfy the objective, including sampling locations, sample collection methods, and subsequent laboratory analysis.

2.0 Sampling Activities

Sampling locations were selected based on the visual inspection of the spill area along with considerations of surface and near surface flow.

2.1 Sampling Locations and Nomenclature

KNC personnel discovered the groundwater spill, observed the overflow locations from the Andco clarifier basin, and noted the extent of the surface flow. Photographs taken after the spill depict the overflow locations from the Andco clarifier basin and the surface flow directions in which the groundwater spill traveled. Soil sampling locations will be focused directly downgradient of the overflow and within the primary surface flow channels as determined through visual inspection.

Table 2-1 lists the sampling locations and depth intervals. Unique alphanumeric identifications will be assigned to each sampling location. Sample designation, sampling time and date, sampling personnel, and analyses will also be recorded on the field records, sample labels, and chain-of-custody.

Table 2.1 Sample Locations

Sampling ID	Description
SS-01	Depth composite sample (0 to 8 inches)
SS-02	Depth composite sample (0 to 8 inches)
SS-03	Depth composite sample (0 to 8 inches)
SS-04	Depth composite sample (0 to 8 inches)

2.2 Sample Collection

Soil samples may be collected using a stainless steel scoop, trowel, hand auger, or post hole digger. The procedure for soil sampling (FS 3000)[1] is provided as Appendix B. Four composite samples will be collected in the upper soil horizon (0 to 8 inches) at each

sampling location (Figure 2). Composite samples will be thoroughly mixed and placed into appropriate sample containers prior to shipment to the laboratory for analysis. All applicable health and safety procedures associated with the Koch Nitrogen Plant will be strictly followed during all sampling activities.

2.3 Sample Handling and Custody

Samples will be collected per the procedures discussed in the preceding sections. Sample collection containers will consist of one 4-ounce glass jar per sample. Procedures for the handling and transport of the samples will be in accordance with the recently developed RCRA Investigation Facility Sampling and Analyses Plan including the chain-of-custody procedures. Samples will be kept in a pre-cooled ice chest until samples are logged, placed on ice, transported to the laboratory.

2.4 Laboratory Sample Analyses

Soil samples obtained during the investigation will be analyzed for nitrate plus nitrite (USEPA Method 353.2), total chromium (USEPA Method 6010B) and chromium using the Synthetic Precipitation Leaching Procedure (SPLP) (USEPA Methods 1312 and 6010B).[2] The analyses will be completed by a Kansas State Certified laboratory.

3.0 DATA MANAGEMENT

Data management provides a process for tracing the path of the data from their generation in the field or laboratory to their final use or storage. The following elements are included in this process: recording, validation, transformation, transmittal, reduction, analysis, tracking, storage and retrieval.

[1] GeoSyntec Consultants, June 2005. Sampling and Analysis Plan RCRA Facility Investigation.
[2] Approach described in the January 2004 CDU Closure Plan to evaluate direct contact and potential leaching to groundwater.

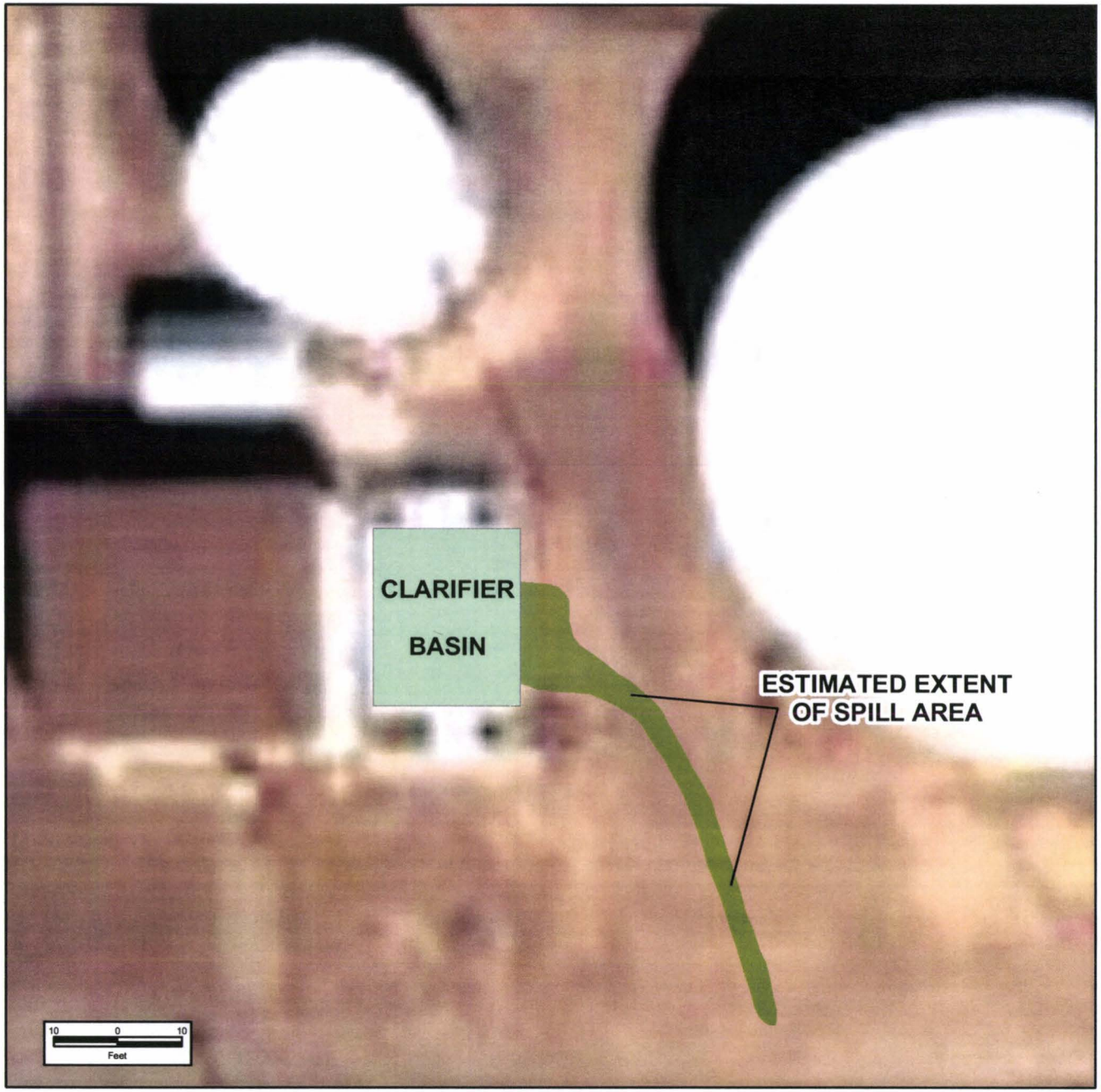
4.0 ANALYSIS AND REPORTING

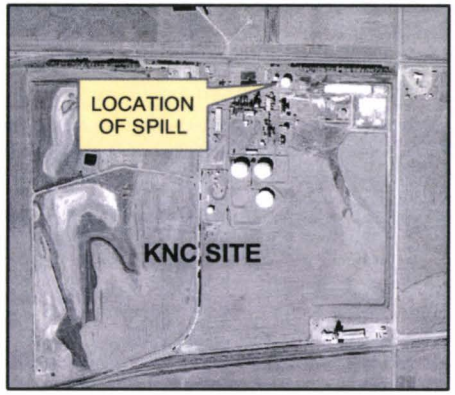
The data from the analytical procedures will indicate the total chromium and nitrate plus nitrite concentrations and leachable chromium concentrations in the soil and will be used to assess exposure risk through direct contact and leaching to groundwater. KNC will compare the chromium sampling results from the surface soil to the non-residential Tier 2 and agronomic levels in the 2003 KDHE RSK Manual. To assess potential risks from direct contact, the total chromium levels will be compared to the 4,000 milligram per kilogram (mg/kg) value in the RSK Manual. The leachable chromium levels will be compared to the 2 milligram per liter value in the RSK Manual. The nitrate plus nitrite levels will be compared to the soil pathway level of 85 mg/kg for area without vegetation. By using this level for nitrate plus nitrite, KNC is assuming that spilled groundwater did not contain appreciable levels of ammonia. The results of the sampling and analysis will be reviewed and the results summarized in a letter report. The report will include an analysis and interpretation of the laboratory results and recommendations for further action, if needed.

Copies of any field notes and the applicable KNC sampling documentation forms will be included in the report. The report will be submitted in draft form for review and comment to the KNC project manager. Any comments will incorporated into a final report.

Appendix A

Figures

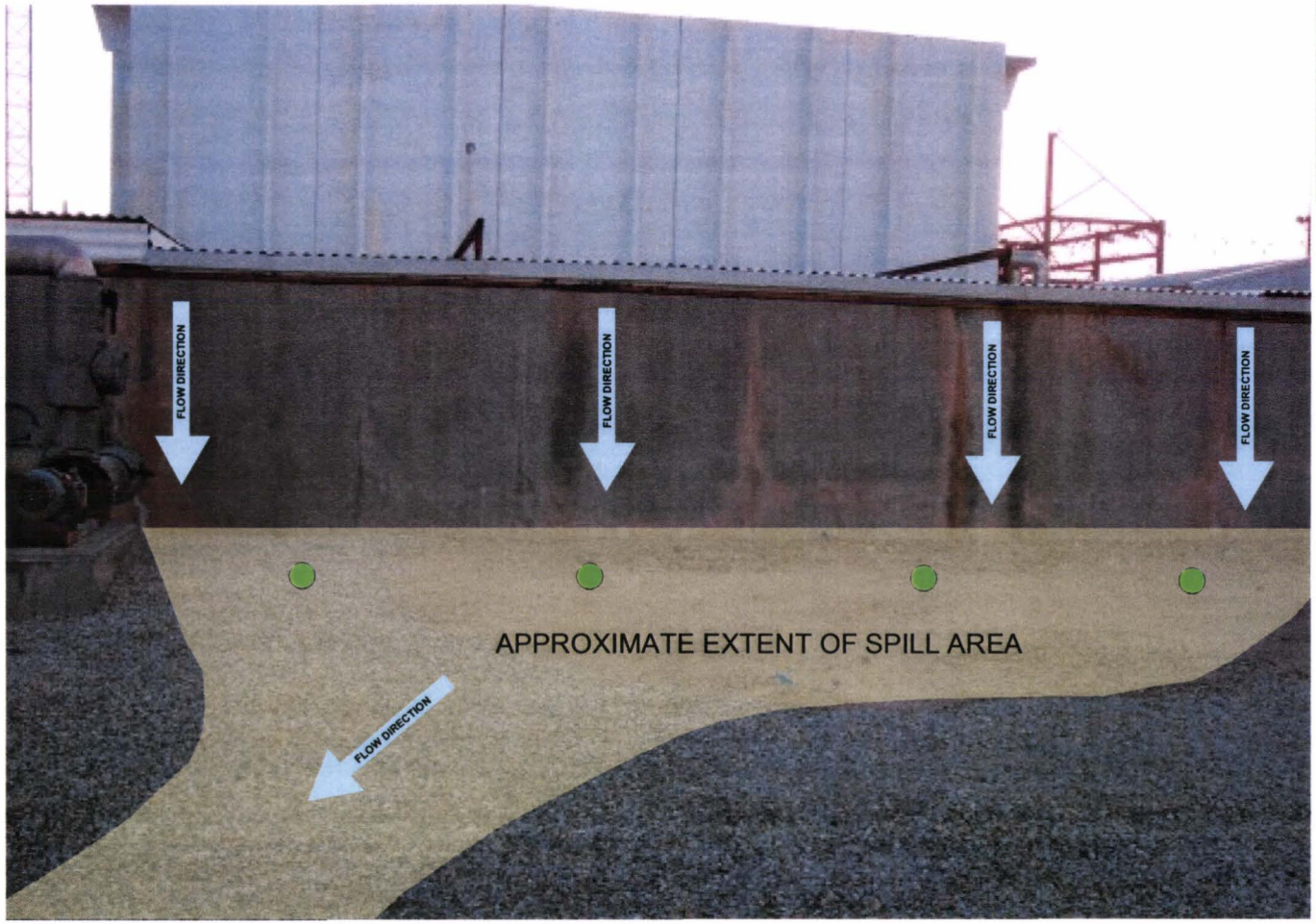




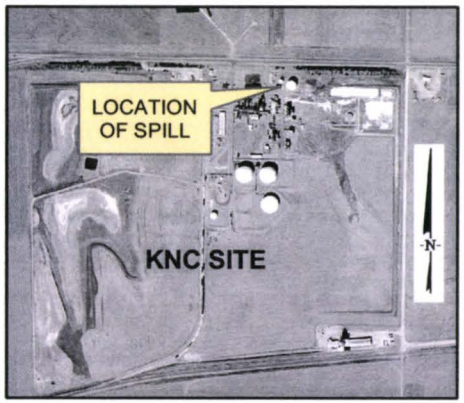
-N-

LOCATION AND ESTIMATED EXTENT OF SPILL

PREPARED FOR: KOCH KOCH NITROGEN COMPANY 11559 US HIGHWAY 50 - P.O. BOX 1337 DODGE CITY, KS 67801	
PREPARED BY: GeoStat	
PROJECT NO.	FIGURE NO. 1
DATE. JULY 2005	FILE NO.



VIEW OF EAST SIDE OF CLARIFIER BASIN AND SPILL AREA



LEGEND

PROPOSED SAMPLING LOCATION

OVERFLOW AREAS, FLOW DIRECTIONS, AND SAMPLING LOCATIONS

PREPARED FOR: KOCH
KOCH NITROGEN COMPANY
11566 US HIGHWAY 50 - P.O. BOX 1337
DODGE CITY, KS 67801

PREPARED BY: GeoStat

PROJECT NO.	FIGURE NO. 2
DATE. JULY 2005	FILE NO.

Appendix B

FS 3000

FS 3000. SOIL SAMPLING

See also the following Standard Operating Procedures:

- FC 1000 Cleaning/Decontamination Procedures
- FD 1000 Documentation Procedures
- FQ 1000 Field Quality Control Requirements
- FS 1000 General Sampling Procedures
- FT 1000 – FT 2400 Field Testing and Calibration

1. INTRODUCTION AND SCOPE

1.1. Use these SOPs during field investigations to collect soil samples that are representative of current site conditions. It is important to ensure that the collected samples are neither altered nor contaminated by sampling and handling techniques.

1.2. The following topics include: equipment choice, equipment construction materials, grab and areal or depth composite sampling techniques. Sample collection methods fall into three general depth classifications: surface, shallow subsurface, and deep subsurface. Once the samples are acquired, the handling procedures are very similar and are described below.

2. GENERAL

2.1. Select sampling equipment based on the type of sample to be collected, the sample depth, and the analytes of interest. Choose soil sampling locations such that a representative portion of the soil is collected with minimal disturbance. Locations where natural vegetation is stressed or dead and/or areas that have surficial soil staining may be indicative of improper waste disposal practices.

2.2. **Do not collect** samples for chemical analysis from auger flights or cuttings from hollow stem auger flights, except for waste characterization purposes for disposal.

2.3. Do not use samples that are collected for geological/lithological or vapor meter determinations for chemical analyses.

3. EQUIPMENT AND SUPPLIES

3.1. All equipment must be constructed of materials consistent with the analytes of interest. Refer to FS 1000, Tables FS 1000-1, FS 1000-2 and FS 1000-3 for selection of appropriate equipment and materials.

3.2. For information on sample container size and construction, see Table I-4-1 of the FSP.

3.3. For information on sampling equipment cleaning requirements, see FC 1000.

3.4. For information on preservation and holding time requirements, see Table I-4-1 of the FSP.

3.5. For information on documentation requirements, see FD 1000.

FS 3100. Surface Soil Sampling

Surface soil is generally classified as soil between the ground surface and 6-12 inches below ground surface.

1. Remove leaves, grass or other vegetation, and surface debris from the area to be sampled.
2. Select an appropriate precleaned sampling device and collect the sample.
3. Transfer the sample to the appropriate sample container using a precleaned spoon, spatula, trowel.
4. Clean the outside of the sample container to remove excess soil.
5. Label the sample container, place on wet ice to preserve to 4 ± 2°C and complete the field notes.

FS 3200. Subsurface Soil Sampling

Interval begins at approximately 6 inches below ground surface.

FS 3210. Sample Collection Procedure

Use the following after the desired depth has been reached by one of the methods outlined in FS 3220.

1. For other analyses, select an appropriate precleaned sampling device and collect the sample.
2. Transfer the sample to the appropriate sample container.
3. Clean the outside of the sample container to remove excess soil.
4. Label the sample container, place on wet ice to preserve to 4 ± 2°C and complete the field notes.

FS 3220. Reaching the Appropriate Depth

1. Shovels and Post-Hole Diggers: Used for soils from approximately 12 inches to a point when using the implement becomes impractical.
   - 1.1. Dig a hole or trench to the required depth.
   - 1.2. Follow the sample collection procedures outlined in FS 3210.
2. Backhoe: Used for soils from approximately 12 inches to a point when using the implement becomes impractical.
   - 2.1. Dig a trench or pit to the appropriate depth.
   - 2.2. Expose the sample, in the trench, by using a precleaned spoon, spatula or equivalent to clean away the soil that came in contact with the backhoe bucket.
   - 2.3. Use a **second** precleaned utensil to actually collect the sample from the trench.
   - 2.4. Follow the procedures outlined in FS 3210 to collect the sample.
3. Bucket Augers and Hollow Corers: Suitable to reach soils from approximately 12 inches to a point when using the implement becomes impractical.

3.1. Push and rotate the auger into the soil until the bucket is filled.

3.2. Addition of a non-contaminating sleeve may allow an undisturbed soil sample to be obtained.

3.2.1. The device consists of a standard auger head with a removable sleeve, which is inserted into the auger barrel. In this case it is the sleeve, which fills with soil.

3.2.2. Remove the sleeve from the auger and cap.

3.3. If the auger hole is prone to collapse due to low cohesion in some soils, we recommend inserting a temporary rigid PVC casing into the hole. The casing prevents hole collapse and minimizes cross-contamination between soil zones as the auger is advanced. After collecting the samples, remove the temporary casing (if used) and fill the hole with the excavated soil.

3.4. Remove the sample from the sampler by pushing or scraping the soil with an appropriate precleaned utensil into an appropriately precleaned tray or aluminum foil.

3.5. Remove any portion of the sample that has been disturbed and discard.

3.6. Follow the sample collection procedures outlined in FS 3210.

4. SPLIT SPOON SAMPLER: Suitable for reaching soils from approximately 12 inches to depths greater than 10 feet.

4.1. A split spoon sampler, useful for sampling unconsolidated soil, consists of two half cylinders (spoons) that fit together to form a tube approximately two feet in length and two inches in diameter.

4.1.1. The cylindrical arrangement is maintained by a retaining head and bit rings that screw on at each end of the split spoon.

4.1.2. The bit ring has beveled edges to facilitate sampling as the split spoon is forced into the ground.

4.1.3. Insert a catcher device in the head ring to prevent loss of unconsolidated sample during recovery.

4.1.4. Advance the sampler using the weight of the drilling stem and rods or a mechanical hammer.

4.2. After retrieving the split spoon sampler, expose the soil by unscrewing the bit and head rings and splitting the barrel.

4.3. If the recovery is enough to accommodate discarding a portion of the sample, discard the top and bottom two to three inches of the sample.

4.4. Select an appropriate precleaned sampling device and collect the sample.

4.5. Transfer the sample to the appropriate sample container.

4.6. Clean the outside of the sample container to remove excess soil.

4.7. Label the sample container, place on wet ice to preserve to 4°C and complete the field notes.

5. DIRECT PUSH RIGS: May be used for sampling soils/settleable matter from approximately 6 inches to greater than 10 feet below ground surface.

5.1. Liners: The clear liners may be used with direct push rigs. This method is appropriate only for unconsolidated materials. The sampling depth that can be achieved varies depending on the rig and the lithologies that are encountered. Typically, the rig operator will:

- Place the liner inside the metal probe rod
- Select a point holder with an opening appropriate for the site lithology and screw it on the probe rod
- Advance the rod a full rod length
- Retrieve the rod
- Remove the point holder
- Remove the liner, and
- Slice the liner to expose the soil.

5.2. If samples for organic vapor analysis screening are required, collect them by slicing the sample(s) using a clean, decontaminated utensil and place them in 8-ounce (preferred) or 16-ounce jars, immediately cover the opening with aluminum foil and screw on the lid ring. If the contamination is derived from petroleum products it is acceptable to use a clean gloved hand to transfer the sample(s) to the sample container(s).

5.3. For other analyses, slice the sample from the center portion of the split spoon using a clean, decontaminated utensil.

5.4. Select an appropriate precleaned sampling device and collect the sample.

5.5. Transfer the sample to the appropriate sample container.

5.6. Clean the outside of the sample container to remove excess soil.

5.7. Label the sample container, place on wet ice to preserve to 4 ± 2°C and complete the field notes.

6. SHELBY TUBE SAMPLER

6.1. The Shelby tube sampler is used to sample unconsolidated soil and consists of a tube approximately 30 inches long and two inches (or larger) in diameter.

6.2. One end of the tube has edges beveled into a cutting edge. The other end can be mounted to an adapter, which allows attachment to the drilling rig assembly.

6.3. After drilling to the required depth with an auger or rotary drill bit, a soil sample is obtained through the auger or directly in the borehole.

6.4. Push the Shelby tube into the soil using the drilling rig's hydraulic ram or manually with a sledge hammer.

6.5. Remove the tube from the sampler head.

6.6. Extrude the sample from the Shelby tube.

6.7. Use a decontaminated utensil to remove any portion of the sample that has been disturbed.

6.8. Transfer the remaining sample to the appropriate sample container.

6.9. Clean the outside of the sample container to remove excess soil.

6.10. Label the sample container, place on wet ice to preserve to 4 ± 2°C and complete the field notes.

7. ROTASONIC ® DRILL RIG

7.1. Rotasonic ® samplers are used for collecting continuous soil cores for lithologic evaluation, and collection of soil samples for chemical and/or geotechnical analysis.

7.1.1. The core barrel sampler is a cylinder which is generally 10 feet long and four inches (nominally) in diameter.

7.1.2. The inner barrel (sampler) has a removable head ring with small embedded diamonds which allow the device to cut through rock or soil as the drilling rods are vibrated and rotated.

7.2. Sample core is retrieved by removing the inner sampling tools assembly and vibrating sampled into a polyethylene sleeve.

7.3. As is

7.4. Collect sample by cutting polyethylene sleeve at desired location with a precleaned knife and removing appropriate volume of sample from sleeve.

7.5. Transfer the sample to appropriate sample container.

7.6. Clean outside of sampler (inner core barrel) to remove excess soil

7.7. Label the sample container, place on wet ice to preserve to 4 o C and complete the filed notes.

FS 3230. REFERENCES

1. U.S. Environmental Protection Agency, Region 4, Environmental Investigations Standard Operating Procedures and Quality Assurance Manual, November 2001.

2. U.S. Environmental Protection Agency, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods EPA SW-846, Third Edition (November 1986) as amended by Update III (December 1996).