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A CHARACTERIZATION STUDY OF THE NEW TNX
SEEPAGE BASIN AT THE UNITED STATES
DEPARTMENT OF ENERGY'S SAVANNAH RIVER PLANT

CORR--86-00240

DE91 005698

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CONTRACT NO. AX0720590

JANUARY 1986

PROJECT NUMBER 3046

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I. INTRODUCTION

Two seepage basins have been used to treat wastewater generated by the TNX facilities. The old TNX seepage basin was constructed in 1958 for the treatment and disposal of both low-level radioactive and non-radioactive hazardous waste chemicals produced by the TNX facility. The old basin was used until 1980 after which it was closed out and waste flows were diverted to a new seepage basin located on the southeastern side of the TNX facilities area.

The new TNX seepage basin (904-102G) currently receives process waste flows from pilot-scale tests conducted at TNX in support of the Defense Waste Processing Facility (DWPF) and the plant separations areas. These wastewaters consist primarily of simulated, nonradioactive sludge along with other wastes such as small amounts of glass frit and area laboratory sink discharges. Initially, nonradioactive salt supernate was discharged to the basin, but this practice was halted in 1983. The new basin consists of two rectangular cells connected by an underground 8-inch vitrified clay pipe. The smaller cell has a bottom surface area of 200 square feet with an approximate volume capacity of 51,552 gallons. The larger cell has a bottom surface area of 6,150 square feet with an approximate volume of 520,668 gallons. The water depth in the small cell is approximately 1.5 feet and 9 feet in the larger cell. Four groundwater monitoring wells (YSB 1A through YSB 4A) are established around the perimeter of the basin to determine the impact of the seepage basin upon area groundwater resources. To date, no significant groundwater contamination has been detected.

Field and managerial services provided by Envirodyne Engineers during this study effort include:

- Project management;
- Collection of sediment samples from designated coring sites within and around the seepage basin and in a pristine area;
- Collection of a surface water sample from the small cell of the seepage basin;
- Field analysis and preparation of acquired sediment sample for laboratory analyses;
- Packing and shipment of five water samples and 54 sediment samples offsite for chemical analyses; and
- Preparation of field and final reports.

II. METHODOLOGY

A. Sample Acquisition

All field work was performed by Envirodyne personnel who are thoroughly trained in DuPont health protection, safety and security procedures. A fulltime project manager with a graduate degree in the geological sciences was provided to ensure that all basin characterization activities were performed in accordance with DuPont specifications. Safety precautions for field personnel included protective clothing (e.g. brown coveralls work boots, safety glasses, work gloves, hard hats, ear plugs), life preservers and access to an emergency eye/body wash station.

The objectives of the field sampling program were to:

- Obtain environmentally representative samples in a safe and efficient manner;
- Preserve, process, and pack environmental samples in such a manner as to maintain sample integrity and legal chain-of-custody; and
- Document all field-related activities regarding the sampling and processing of environmental samples for later use in data base management and review of study results.

A total of six 5-foot deep continuous borings were made in the project area. Three of these borings were made in the bottom of the seepage basin: two centered along the middle line of the larger cell and one centered in the middle of the smaller cell. Additionally, one boring was made in the basin's outfall gully and another at the perimeter of the outfall seepage area. One boring was also taken in a pristine area located away from the basin proper. The approximate locations of these coring sites are shown in FIGURES 1, 2 and 3. There were a total of nine sample intervals per core (see TABLE 1).

1. Basin Outfall Area and Background Sample

The 5-foot sediment cores taken from the outfall and pristine area locations were acquired by manually driving a 30-inch long by two-inch I.D. steel Shelby tube attached to a Shelby tube head and short section of drill rod into the sediment column with a 28.5- pound sliding hammer (see FIGURE 4). Following the tube's retrieval by hand, the head and drill rod assembly were removed and the length of core recovery determined. The tube was then capped, labeled as to sampling location and depth and placed on blue ice for preservation until it was transported back to the field laboratory for extrusion. This same procedure was repeated with Shelby tubes being driven progressively deeper into the same core hole until the desired five feet of sediment core was obtained.

2. Basin Bottom Sampling

The three 5-foot sediment cores from the bottom of the basin's two cells were taken using Envirodyne's custom modified jon boat (SS Envirodyne). This boat measures 20-feet long and 7-feet wide along its gunwale and has an 18-inch square sampling well in its center. Assembled over the sampling well is a four-legged metal derrick equipped with a motorized cathead and 140-pound drive hammer. Fully loaded, the boat displaces a surface water area of approximately 15-feet by 5.5-feet. Movement of the boat within the basin cells was accomplished by manual towing. The boat's position over a coring site was maintained by securing its tow lines to posts along the basin's perimeter. Access to the jon boat was gained by using a small two-man rowboat. A 35-ton crane from Carolina Cranes, Inc was used to move the jon boat in and out of each basin cell.

Coring operations within the basin consisted of first driving a four-inch I.D. PVC pipe into the basin's bottom to a depth of approximately one foot. At least six inches of the pipe extended above the water's surface. Entrapped basin waters within the pipe were then pumped out using a two-inch centrifugal PACER 'S' pump mounted on the jon boat. The purpose of this pipe was to serve as a casing to seal basin waters from the sampling site. A 30-inch long

FIGURE 1 : SCHEMATIC OF BASIN SAMPLE LOCATIONS

BASIN

FIGURE 2: APPROXIMATE LOCATION OF OUTFALL SAMPLES

TELEPHONE
POLE

FIGURE 3: APPROXIMATE LOCATION OF BACKGROUND SAMPLE

FIGURE 4 : DETAIL OF SHELBY TUBE SAMPLING DEVICE

TABLE 1: SOIL COLLECTION DEPTHS AND ANALYTICAL REQUIREMENTS

INTERVAL	ANALYSES REQUIRED				
	METALS	IONS	EP TOX	GC/MS	PERM/PORO
0.00-0.25	X	X	X	X	X
0.25-0.50	X	X			X
0.50-0.75	X	X			X
0.75-1.00	X	X			X
1.00-1.25	X	X			
1.25-1.50	X	X			
1.50-1.75	X	X			
1.75-2.00	X	X			
2.00-5.00	X	X			

Permeability and porosity samples taken on TNX-102 only
 EP Toxicity and GC/MS samples taken on TNX 101,102,103

by 2-inch I.D. steel Shelby tube attached to a Shelby tube head was then lowered to the basin's bottom on a string of drill rods and driven approximately 30 inches (or to refusal) into the sediment column using the 140-pound hammer and motorized cathead attached to the derrick. The Shelby tube was then retrieved, the head and drill rod assembly removed and the amount of core recovery determined. During retrieval, field personnel attempted to pull the tube from the hole rather than hammer it out in order to maximize sample retention. The Shelby tube was then capped, labeled as to sampling location and depth and placed on blue ice for preservation until it was transported back to the field laboratory for extrusion. This same procedure was repeated with Shelby tubes being driven progressively deeper into the same core hole until the desired five feet of core was obtained. See FIGURE 5 and FIGURE 6 for a detailed view of the sampling equipment. The hole was then grouted from bottom to top with a grout mixture of cement containing 98% Portland type I cement and 2% bentonite. This was accomplished with the Pacer "S" pump and 1.25 inch tremie pipe. Immediately adjacent to each 5-foot basin core hole, two additional holes were cored to a depth of 30 inches to ensure the acquisition of adequate sample volume to accommodate all of the analytical requirements being placed upon the three-inch intervals. These holes were also grouted by the above mentioned procedure. At station TNX-102 an additional core was taken for permeability and porosity measurements.

B. FIELD LABORATORY PROCEDURES

The field processing of the soil samples was performed by an EEL geologist during the period from November 14, 1985 through November 21, 1985 in a laboratory provided by DuPont. This laboratory is located in a trailer (Building 704-4U) parked next to Building 704-U in the TC-1 area of SRP. Field processing of the sediment samples included:

- tube extrusion;
- penetrometer readings;
- soil characterization;
- determination of percent moisture content;
- preparation of samples for laboratory analyses;
- sample packing for shipment offsite.

Samples contained in the Shelby tubes were extruded immediately upon their receipt in the field laboratory and subdivided into the desired sample intervals. The mechanical extruder was thoroughly cleaned before extruding each tube to prevent cross contamination between cores. Penetrometer readings were taken for each interval. A minimum of six readings were taken and an average value determined. Penetrometer data was recorded in a field boring log. All sample intervals were thoroughly mixed by hand to ensure their homogeneity and the following wet fractions taken:

- EP Toxicity fraction (100 grams) where applicable. These sediments were sealed in an appropriately labeled 250 ml amber glass jar and placed in a refrigerator at 4 degrees Centigrade for preservation until shipment offsite.
- Volatile organic fractions (80 grams) where applicable. These sediments were sealed in duplicate 40 ml glass vials, labeled, and placed in a refrigerator at 4 degrees Centigrade for preservation until shipment offsite for analysis.

FIGURE 5: DETAIL OF SHELBY TUBE SAMPLING EQUIPMENT

FIGURE 6: SCHEMATIC OF CUSTOM MODIFIED JON BOAT

- percent moisture fractions (5-10 grams) from each interval was processed for determination of sample moisture content. Aliquots taken for percent moisture analysis were preweighed on a digital analytical scale and then placed in an oven at 103 degrees Centigrade for drying. The samples will be periodically reweighed until their weight loss has stabilized and then placed in a dessicator to cool. They were then reweighed to determine weight loss due to dessication. Moisture content is reported as a percentage of the original sample weight. Percent moisture data is recorded in APPENDIX A.

Following the taking of wet fractions, all the remaining sample sediments with the exception of those dedicated for organic analyses were spread into labeled polyethylene trays and set out for air drying. Those samples dedicated for organic analyses were dried in porcelain basins to avoid the possibility of picking up contamination from the plastic trays. Past experience with samples from wet basins has shown the average shelf drying time to range from 5 to 10 days, depending upon atmospheric conditions within the laboratory and moisture content of the samples. During the drying process, each interval was characterized for mineralogical makeup, grain size distribution, particle shapes, soil texture and color. Munsell Soil Color Charts and the Unified Soil Classification System will be used for this purpose. When fully dried, the samples were processed under a hood to prevent contamination of the lab or personnel by dust particles or other debris. The entire sample was pulverized into a fine powder by use of a mortar and pestle. This powder was sieved through a Number 20 mesh stainless steel screen. Any residual soil clumps retained in the sieve were reground and resieved to ensure maximum sample retention. Pulverized sediments were then packed and sealed in two labeled 250 ml amber glass jars. Any excess sediments were sealed in labeled Ziplock® plastic bags and set aside for archiving. Sample containers will be made ready for shipping or archiving by first wrapping them in bubble pack and then double-sealing them in Ziplock® plastic bags. All samples were shipped to Envirodyne's laboratories in St. Louis by airfreight in Coleman® coolers.

A sample tracking log recording the various steps from sample acquisition through sample processing and transfer of custody was maintained by Envirodyne field personnel (APPENDIX B). This log included:

- date of sample acquisition
- date of sample characterization
- date of percent moisture analysis and results
- date sample drying is initiated
- dates of sample processing and packing
- dates of sample shipment offsite

Field boring logs and chain-of-custody sheets are compiled in APPENDICES C and D respectively.

C. WATER SAMPLE ACQUISITION

A water sample was collected from the middle of the small basin cell using a Masterflex portable sampling pump mounted on the jon boat. The plastic intake tube of the pump was weighted with a stainless steel weight and the sample collected at a 1-foot depth from the center of the cell. At the time of sample acquisition, the pH, conductivity, temperature, turbidity and dissolved oxygen of the water column were also measured using a Horiba Waterchecker and recorded in a field notebook (TABLE 2). Groundwater samples from the four monitoring wells located around the perimeter of the basin were taken by EEL field personnel. Temperature, conductivity, pH and the water table elevation of the groundwater were all recorded in a field notebook (TABLE 2). All surface and groundwater samples collected were preserved in appropriately labeled containers, placed on blue ice in Coleman® coolers and shipped offsite the day of acquisition to ensure that critical holding times were not exceeded.

III. QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES

A. Quality Assurance/Quality Control Procedures Used in Field Sampling

QA/QC procedures utilized during the field sampling effort were as follows:

1. Steam cleaning of all sampling equipment prior to the start of work and between the collection of each sample to prevent possible cross contamination of samples;
2. Thoroughly cleaning of Shelby tubes by washing with detergent and then steam cleaning;
3. Storing clean Shelby tubes in plastic bags to prevent their contamination prior to usage;
4. Use of clean, disposable gloves between samples to prevent possible cross contamination;
5. Appropriate labeling of sample field containers to reflect site location, sample interval and date and time of acquisition;
6. Field preservation of samples at four degrees Centigrade by using Coleman coolers filled with blue ice; and
7. Daily field notes to identify events which may impact sample integrity or project evaluation.

B. Quality Assurance / Quality Control Procedures Used in the Field Laboratory

QA/QC procedures utilized in the field laboratory were as follows :

1. Use of sample tracking log to track samples from date of acquisition, through processing, to date of transfer of custody for shipping;
2. Thorough cleaning of Shelby tube extruder between each core to prevent possible cross-contamination of samples;
3. Thorough cleaning of processing equipment with alconox, acetone and distilled water rinses between samples to prevent possible cross-contamination;
4. Use of clean, disposable gloves between samples to prevent cross-contamination;
5. Use of proper labeling on sample containers (project number, sampling site, sample identifier, date and time of acquisition, etc.) to ensure proper sample identification;
6. Proper preservation of wet and processed sample fractions prior to shipment or archiving.

TABLE 2: WATER SAMPLE DATA

GROUNDWATER MONITORING WELL SAMPLE DATA

WELL NO.	WATER TABLE DEPTH - FEET	pH	TEMP DEG-CELT	CONDUCTIVITY MS/CM
YSB 1A	28.5	4.5	19.8	28
YSB 2A	26.5	4.6	18.6	30
YSB 3A	26.8	5.1	19.4	257
YSB 4A	27.8	4.5	18.8	330

NEW TNX BASIN SURFACE WATER GRAB SAMPLE DATA

SAMPLE NO	pH	TEMP DEG-CELT	DISSOLVED OXYGEN	CONDUCTIVITY MS/CM	TURBIDITY
TNX-201	9.6	20.9	5.5	0.09	10

7. Sample containers securely wrapped in bubble pack and Ziplock® plastic bags to prevent breakage or spillage during shipping or storage;
8. Preservation during shipment with blue ice and Coleman coolers;
9. Preservation of archived samples in DuPont provided freezers; and
10. Use of chain of custody sheets to document all transfers of custody.

IV. SAFETY AND HEALTH PROCEDURES

The new TNX basin is not located within a regulated area, however it was treated as such by the field personnel involved. Protective clothing worn by the field personnel include brown coveralls, safety glasses, hard hats, disposable rubber gloves, leather work gloves and rubber boots. Protective clothing worn in the field laboratory included safety glasses, disposable rubber gloves, shoe covers and lab coats. Emergency eyewash stations were available both in the laboratory and field. Health protection coverage in the field was provided by DuPont HP. Self-monitoring was practiced by Envirodyne personnel while working in the field laboratory. All personnel wore thermoluminescent dosimeter (TLD) badges.

APPENDIX A
New TNX Basin Percent Moisture Data

APPENDIX A: NEW TNX BASIN PERCENT MOISTURE DATA

BORING
LOCATION TNX-101
Basin Bottom

SAMPLE INTERVAL	DATE % MOIST	DISH WT (gms)	NET WET SAMP (gms)	NET DRY SAMP (gms)	PERCENT MOIST
0.00-0.25	11-11-85	1	8.44	7.52	10.9
0.25-0.50	11-11-85	1	7.44	6.51	12
0.50-0.75	11-11-85	1	8.3	7.02	15.4
0.75-1.00	11-11-85	1	12.14	10.4	14.33
1.00-1.25	11-11-85	1	8.36	7.33	12.3
1.25-1.50	11-11-85	1	10.07	8.43	16.2
1.50-1.75	11-11-85	1	10.8	9.13	15.4
1.75-2.00	11-11-85	1	7.47	6.3	15.6
2.00-5.00	11-11-85	1	10.64	9.13	14.19

BORING
LOCATION TNX-102
Basin Bottom

SAMPLE INTERVAL	DATE % MOIST	DISH WT (gms)	NET WET SAMP (gms)	NET DRY SAMP (gms)	PERCENT MOIST
0.00-0.25	11-11-85	1	11.57	10.17	12.1
0.25-0.50	11-11-85	1	11.68	9.72	16.78
0.50-0.75	11-11-85	1	12.72	10.81	15.01
0.75-1.00	11-11-85	1	7.12	6.31	11.3
1.00-1.25	11-11-85	1	6.05	5.44	10.08
1.25-1.50	11-11-85	1	7.02	6.27	10.68
1.50-1.75	11-11-85	1	6.79	5.81	14.43
1.75-2.00	11-11-85	1	8.37	7.25	13.38
2.00-5.00	11-11-85	1	15.3	12.9	15.68

BORING
LOCATION TNX-103
Basin Bottom

SAMPLE INTERVAL	DATE % MOIST	DISH WT (gms)	NET WET SAMP (gms)	NET DRY SAMP (gms)	PERCENT MOIST
0.00-0.25	11-13-85	1	7.21	5.96	17.33
0.25-0.50	11-13-85	1	7.23	5.89	18.53
0.50-0.75	11-13-85	1	9.22	7.57	17.89
0.75-1.00	11-13-85	1	4.93	4.25	13.79
1.00-1.25	11-13-85	1	7.19	6.13	14.74
1.25-1.50	11-13-85	1	6.08	5.14	15.46
1.50-1.75	11-13-85	1	7.07	5.94	15.98
1.75-2.00	11-13-85	1	5.29	4.7	11.15
2.00-5.00	11-18-85	1	10.72	9.39	12.4

BORING LOCATION TNX-104
Outfall Gully

SAMPLE INTERVAL	DATE % MOIST	DISH WT (gms)	NET WET SAMP (gms)	NET DRY SAMP (gms)	PERCENT MOIST
0.00-0.25	11-06-85	1	8.49	7.65	9.89
0.25-0.50	11-06-85	1	8.56	7.68	10.28
0.50-0.75	11-06-85	1	9.74	8.8	9.65
0.75-1.00	11-06-85	1	9.54	8.47	11.21
1.00-1.25	11-06-85	1	13.81	12.55	9.12
1.25-1.50	11-06-85	1	11.36	10.36	8.8
1.50-1.75	11-06-85	1	10.57	9.34	11.63
1.75-2.00	11-06-85	1	11.17	10.07	9.84
2.00-5.00	11-06-85	1	12.44	11.05	11.17

BORING LOCATION TNX-105
Outfall Perimeter

SAMPLE INTERVAL	DATE % MOIST	DISH WT (gms)	NET WET SAMP (gms)	NET DRY SAMP (gms)	PERCENT MOIST
0.00-0.25	11-06-85	1	7.4	5.49	25.81
0.25-0.50	11-06-85	1	8.05	5.82	27.7
0.50-0.75	11-06-85	1	7.36	5.35	27.31
0.75-1.00	11-06-85	1	7.43	6.39	13.99
1.00-1.25	11-06-85	1	7.71	6.75	12.45
1.25-1.50	11-06-85	1	9.3	8.1	13.33
1.50-1.75	11-06-85	1	8.76	7.6	13.24
1.75-2.00	11-06-85	1	6.67	6.05	9.29
2.00-5.00	11-06-85	1	14.03	12.31	12.25

BORING LOCATION TNX-106
Background

SAMPLE INTERVAL	DATE % MOIST	DISH WT (gms)	NET WET SAMP (gms)	NET DRY SAMP (gms)	PERCENT MOIST
0.00-0.25	11-04-85	1	9.67	8.95	7.44
0.25-0.50	11-04-85	1	11.05	10.28	6.96
0.50-0.75	11-04-85	1	9.43	8.77	6.99
0.75-1.00	11-04-85	1	9.38	8.77	6.5
1.00-1.25	11-04-85	1	10.14	9.33	7.98
1.25-1.50	11-04-85	1	10.8	9.9	8.33
1.50-1.75	11-04-85	1	9.92	9.2	7.25
1.75-2.00	11-04-85	1	10.09	9.37	7.13
2.00-5.00	11-04-85	1	8.45	8.14	3.66

APPENDIX B
Sample Tracking Log

APPENDIX B: SAMPLE TRACKING LOG

BORING: TNX-101
LOCATION: Basin Bottom

INTERVAL	ACTION MODE	DATE ACQUIRED	PERM PORO	GC/MS VOA	EPTOX SAMP	DATE PROCESS	RELIN CUST
0.00-0.25	SHIP	11-08-85	NA	11-08-85	11-08-85	11-21-85	12-03-85
0.25-0.50	SHIP	11-08-85	NA	NA	NA	11-21-85	12-03-85
0.50-0.75	SHIP	11-08-85	NA	NA	NA	11-21-85	12-03-85
0.75-1.00	SHIP	11-08-85	NA	NA	NA	11-21-85	12-03-85
1.00-1.25	SHIP	11-08-85	NA	NA	NA	11-21-85	12-03-85
1.25-1.50	SHIP	11-08-85	NA	NA	NA	11-21-85	12-03-85
1.50-1.75	SHIP	11-08-85	NA	NA	NA	11-21-85	12-03-85
1.75-2.00	SHIP	11-08-85	NA	NA	NA	11-21-85	12-03-85
2.00-5.00	SHIP	11-08-85	NA	NA	NA	11-21-85	12-03-85

BORING: TNX-102
LOCATION: Basin Bottom

INTERVAL	ACTION MODE	DATE ACQUIRED	PERM PORO	EPTOX SAMP	GC/MS VOA	DATE PROCESS	RELIN CUST
0.00-0.25	SHIP	11-08-85	11-08-85	11-08-85	11-08-85	11-20-85	12-03-85
0.25-0.50	SHIP	11-08-85	11-08-85	NA	NA	11-20-85	12-03-85
0.50-0.75	SHIP	11-08-85	11-08-85	NA	NA	11-20-85	12-03-85
0.75-1.00	SHIP	11-08-85	11-08-85	NA	NA	11-20-85	12-03-85
1.00-1.25	SHIP	11-08-85	NA	NA	NA	11-20-85	12-03-85
1.25-1.50	SHIP	11-08-85	NA	NA	NA	11-20-85	12-03-85
1.50-1.75	SHIP	11-08-85	NA	NA	NA	11-20-85	12-03-85
1.75-2.00	SHIP	11-08-85	NA	NA	NA	11-20-85	12-03-85
2.00-5.00	SHIP	11-08-85	NA	NA	NA	11-20-85	12-03-85

BORING: TNX-103
LOCATION: Basin Bottom

INTERVAL	ACTION MODE	DATE ACQUIRED	PERM PORO	EPTOX SAMP	GC/MS VOA	DATE PROCESS	RELIN CUST
0.00-0.25	SHIP	11-13-85	NA	11-13-85	11-13-85	11-21-85	12-03-85
0.25-0.50	SHIP	11-13-85	NA	NA	NA	11-21-85	12-03-85
0.50-0.75	SHIP	11-13-85	NA	NA	NA	11-21-85	12-03-85
0.75-1.00	SHIP	11-13-85	NA	NA	NA	11-21-85	12-03-85
1.00-1.25	SHIP	11-13-85	NA	NA	NA	11-21-85	12-03-85
1.25-1.50	SHIP	11-13-85	NA	NA	NA	11-21-85	12-03-85
1.50-1.75	SHIP	11-13-85	NA	NA	NA	11-21-85	12-03-85
1.75-2.00	SHIP	11-13-85	NA	NA	NA	11-21-85	12-03-85
2.00-5.00	SHIP	11-13-85	NA	NA	NA	11-21-85	12-03-85

BORING: TNX-104
LOCATION: Basin Outfall

INTERVAL	ACTION MODE	DATE ACQUIRED	PERM PORO	EPTOX SAMP	GC/MS VOA	DATE PROCESS	RELIN CUST
0.00-0.25	SHIP	11-06-85	NA	NA	NA	11-19-85	12-03-85
0.25-0.50	SHIP	11-06-85	NA	NA	NA	11-19-85	12-03-85
0.50-0.75	SHIP	11-06-85	NA	NA	NA	11-19-85	12-03-85
0.75-1.00	SHIP	11-06-85	NA	NA	NA	11-19-85	12-03-85
1.00-1.25	SHIP	11-06-85	NA	NA	NA	11-19-85	12-03-85
1.25-1.50	SHIP	11-06-85	NA	NA	NA	11-19-85	12-03-85
1.50-1.75	SHIP	11-06-85	NA	NA	NA	11-19-85	12-03-85
1.75-2.00	SHIP	11-06-85	NA	NA	NA	11-19-85	12-03-85
2.00-5.00	SHIP	11-06-85	NA	NA	NA	11-19-85	12-03-85

BORING: TNX-105
LOCATION: Outfall Perimeter

INTERVAL	ACTION MODE	DATE ACQUIRED	PERM PORO	EPTOX SAMP	GC/MS VOA	DATE PROCESS	RELIN CUST
0.00-0.25	SHIP	11-06-85	NA	NA	NA	11-19-85	12-03-85
0.25-0.50	SHIP	11-06-85	NA	NA	NA	11-19-85	12-03-85
0.50-0.75	SHIP	11-06-85	NA	NA	NA	11-19-85	12-03-85
0.75-1.00	SHIP	11-06-85	NA	NA	NA	11-19-85	12-03-85
1.00-1.25	SHIP	11-06-85	NA	NA	NA	11-19-85	12-03-85
1.25-1.50	SHIP	11-06-85	NA	NA	NA	11-19-85	12-03-85
1.50-1.75	SHIP	11-06-85	NA	NA	NA	11-19-85	12-03-85
1.75-2.00	SHIP	11-06-85	NA	NA	NA	11-19-85	12-03-85
2.00-5.00	SHIP	11-06-85	NA	NA	NA	11-19-85	12-03-85

BORING: TNX-106
LOCATION: Background

INTERVAL	ACTION MODE	DATE ACQUIRED	PERM PORO	EPTOX SAMP	GC/MS VOA	DATE PROCESS	RELIN CUST
0.00-0.25	SHIP	11-04-85	NA	NA	NA	11-19-85	12-03-85
0.25-0.50	SHIP	11-04-85	NA	NA	NA	11-19-85	12-03-85
0.50-0.75	SHIP	11-04-85	NA	NA	NA	11-19-85	12-03-85
0.75-1.00	SHIP	11-04-85	NA	NA	NA	11-19-85	12-03-85
1.00-1.25	SHIP	11-04-85	NA	NA	NA	11-19-85	12-03-85
1.25-1.50	SHIP	11-04-85	NA	NA	NA	11-19-85	12-03-85
1.50-1.75	SHIP	11-04-85	NA	NA	NA	11-19-85	12-03-85
1.75-2.00	SHIP	11-04-85	NA	NA	NA	11-19-85	12-03-85
2.00-5.00	SHIP	11-04-85	NA	NA	NA	11-19-85	12-03-85

YSB MONITORING WELLS

WELL NUMBER	ACTION MODE	DATE ACQUIRED	PERM PORO	EP TOX SAMP	GC/MS VOA	DATE PROCESS	RELIN CUST
YSB 1A	SHIP	11-05-85	NA	NA	NA	NA	11-05-85
YSB 2A	SHIP	11-05-85	NA	NA	NA	NA	11-05-85
YSB 3A	SHIP	11-05-85	NA	NA	NA	NA	11-05-85
YSB 4A	SHIP	11-05-85	NA	NA	NA	NA	11-05-85

BASIN WATER SAMPLE

SAMPLE NO.	ACTION MODE	DATE ACQUIRED	PERM PORO	EP TOX SAMP	GC/MS VOA	DATE PROCESS	RELIN CUST
TNX-201	SHIP	11-13-85	NA	NA	NA	NA	11-13-85

BASIN SLUDGE SAMPLE

INTERVAL	ACTION MODE	DATE ACQUIRED	PERM PORO	EP TOX SAMP	GC/MS VOA	DATE PROCESS	RELIN CUST
TNX-202	SHIP	11-13-85	NA	NA	NA	NA	12-03-85

APPENDIX C
Field Boring Logs

Sheet 1 of 1

Elev

BORING NO Trx-106

Background Check

Time after drilling

Before casing removal

Depth to water

After casing removal.

Depth to cave-in

Stor 11-4-85

Unit: EE7

China BGC

Sample #	Meters	Blows on Sampler		Recovery	Re-tractor	VISUAL FIELD CLASSIFICATION AND REMARKS	S.S. Dia _____ Weight _____ Drop _____	Pump Pressure	Boulders	Drilling fluid		Drilling Method	Graphic
		0/6	6/10							Fluid Type	Fluid Loss		
1	✓			25	26	0.0-0.25' 10 YR 5/4 yellowish brown SC/SM clayey sand sd-60% Some organic matter- cl-40% roots, decayed leaves.							
2	✓			25		0.25-0.50' as above							
3	✓			25		0.50-0.75' 10 YR 5/4 yellowish brown SC/SM 10 YR 7/4 very pale brown sd-70% clayey sand with some cl-30% roots							
4	✓			25		0.75-1.00' as above							
5	✓			25		1.00-1.25' as above							
6	✓			25		1.25-1.50' as above							
7	✓			25		1.50-1.75' as above							
8	✓			35		1.75-2.00' as above							
9	✓			70		2.00-5.00' 10 YR 7/4 very pale brown SW sand sd-90% well sorted sand- cl-10% no. for grains							

Sheet 1 of 1

File

BORING NO TAX-101

While drilling n/a
Before casing removal
After casing removal

Time after drilling

Depth to water

Depth to cave-in

Start 11-11-ES

Unit EE7

Chief B6C

Sample No	Meters	Blows on Sampler		Recovery	Penetration	VISUAL FIELD CLASSIFICATION AND REMARKS	S.S. Die			Pump Pressure	Boulders	Drilling fluid		Drilling Method	Graphic
		0/6	6/18				Weight	Drop	Fluid Type			Fluid Loss			
1	✓			.25	2.0	0.0-0.25' 10 YR 8/2 White And reddish SC 7.5 YR 6/6 yellow mottled SD-60% sdy cly clay-40% Poorly sorted sand, Abund. muscovite mica. Tough hard clay. Little Perm + porosity									
2	✓			.25	2.5	0.25-0.50' as above									
3	✓			.25	2.5	0.50-0.75' as above									
4	✓			.25	2.5	0.75-1.00' as above									
5	✓			.25	2.5	1.00-1.25' as above									
6	✓			.25	2.5	1.25-1.50' as above									
7	✓			.25	2.5	1.50-1.75' as above									
8	✓			.25	2.5	1.75-2.00' as above									
9	✓			.30	2.7	2.00-5.00' 10 YR 8/2 mottled white SC 7.5 YR 5/6 and strong brown SD-70% sdy cly clay-30% Coarse sand, large muscovite flakes 1.0 mm									

Sheet 1 of 1

JOB NO 3046-02000

Flow

BORING NR TAX-102

Time after drilling

Before casing removal

Depth to water

Start 11-8-85

Unit EEI

CH/91-36C

Sample No	Moisture	Blows on Sampler		Recovery	Penetration	VISUAL FIELD CLASSIFICATION AND REMARKS	S.S. Die Weight Drop	Pump Pressure	Boulders	Drilling fluid		Drilling Method	Remarks
		0/6	6/10							Fluid Type	Fluid Loss		
1	✓			.25	.25	0.0-0.25' 10 YR 8/2 white + reddish yellow SC/sm 7.5 YR 6/6 mottled sdy clay sd - 60% Poorly sorted sd, abundant clay - 40% muscovite. Tough hard clay. Little permeability + porosity							
2	✓			.25	.25	0.25-0.50' as above							
3	✓			.25	1.4	0.50-0.75' as above							
4	✓			.25	3.3	0.75-1.00' as above							
5	✓			.25	2.4	1.00-1.25' as above							
6	✓			.25	1.0	1.25-1.50' as above							
7	✓			.25	2.2	1.50-1.75' as above							
8	✓			.25	2.0	1.75-2.00' as above							
9	✓			3.0	4.0	2.00-5.00' as above							

Sheet 1 of 1

JOB NO 3046-02000

Elev

BORING NO TNX-103

Time after drilling

Depth to water

Depth to cave-in

Start 11-13-85

Unit EEI

Chief BGC

Blow count	Moisture	Blows on Sampler		Recovery	Penetration	VISUAL FIELD CLASSIFICATION AND REMARKS	S.S. Dia Weight Drop	Pump Pressure	Boulders	Drilling fluid		Drilling Method	Graphic
		0/6	6/18							Fluid Type	Fluid Loss		
✓				.25	0	0.0-0.25' 2.5 YR 3/2 Very dark grayish SC brown cly sand sd-50% Dark sludge-like sediment cly-50%							
✓				.25	0	0.25-0.50' as above							
✓				.25	1.75	0.50-0.75' 2.5 YR 6/8 Light red SC 10 YR 5/2 Grayish brown sd-50% Mottled sdy cly cly-50%							
✓				.25	2.0	0.75-1.00' as above							
✓				.25	2.5	1.00-1.25' as above							
✓				.25	1.5	1.25-1.50' as above							
✓				.25	1.4	1.50-1.75' 2.5 YR 6/8 Light red clayey GC sand sd-50% w/ rounded/subangular cly-40% gravels 1.0-5.0 cm Gravel-10%							
✓				.25	1.6	1.75-2.00' as above							
✓				3.0	1.0	2.00-5.00' 2.5 YR 5/6 Red cly sand GC with small gravels - sd-50% subround 1.0-2.0 cm cly-40% Gravel-10%							

Sheet 1 of 1

JOB NO 3046-02000

BORING NR Tnx-104

Chief *BSC*

Sample No	Moisture	Blows on Sampler		Recovery	Retractor	VISUAL FIELD CLASSIFICATION AND REMARKS	S.S. Dia _____ Weight _____ Drop _____	Pump Pressure	Boulders	Drilling fluid		Drilling Method	Geologic
		0/6	6/18							Fluid Type	Fluid Loss		
1	✓			.25	.16	0.0-0.25' 10 YR 5/2 Grayish Brown SC/SM Clayey sand sd-60% Well sorted, sub angular cly-40% grains in clay matrix							
2	✓			.25	.08	0.25-0.50' as above							
3	✓			.25	.50	0.50-0.75' as above							
4	✓			.25	.16	0.75-1.00' as above							
5	✓			.25	.50	1.00-1.25' 10 YR 4/4 Dark yellowish SC Brown clayey sand sd-70% Well sorted rounded to cly-30% sub angular grains							
6	✓			.25	.60	1.25-1.50' as above							
7	✓			.25	.50	1.50-1.75' as above							
8	✓			.25	.60	1.75-2.00' 7.5 YR 6/6 Reddish yellow SC clayey sand sd-70% Well sorted rounded cly-30% grains							
9	✓			.70	1.0	2.00-5.00' as above							

Sheet 1 of 1

LOCATION New TXK Seepage Basin

BORING NO TNX-105

While drilling n/a

Time after drilling

Start 11-6-85

Before casing removal

Depth to water

Unit EEZ

After casing removal!

Depth to cave-in

Chief BGC

Sample No	Moisture	Blows on Sampler		Recovery	Penetration	VISUAL FIELD CLASSIFICATION AND REMARKS	S.S. Dia _____ Weight _____ Drop _____	Pump Pressure	Boulders	Drilling fluid		Drilling Method	Graphic
		0/6	5/10							Fluid Type	Fluid Loss		
1	✓			25	68	0.0-0.25' 10 YR 3/2 Very dark grayish brown organic clay OH sd. 10% clay 90% Dark highly organic loamy clay							
2	✓			25	33	0.25-0.50' as above							
3	✓			25	25	0.50-0.75' as above							
4	✓			25	41	0.75-1.00' as above							
5	✓			25	0	1.00-1.25' as above							
6	✓			25	0	1.25-1.50' as above							
7	✓			25	0	1.50-1.75' 10 YR 4/3 Brown - dark SC/sm Brown clayey sand sd. 70% clay 30% Rounded, subangular sd grains							
8	✓			25	0	1.75-2.00' as above							
9	✓			30	0	2.00-5.00' as above							

APPENDIX D
Chain of Custody Sheets

CHAIN OF CUSTODY RECORD

ite No. TNX-101 Crew Chief BGC Date _____ Page 1 of 1

Description of Shipment:

18 Piece(s) Consisting of _____ Cooler(s), _____ (other)

	SITE ID							DEPTH TO TOP INTRVL							INTRVL THICK		D I	SAMPLE DATE						Metals + Ions (#1)	EP Tox	TYPE OF CONTAINER	
	-	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		17	18	19	20	21	22			23	24
1	T	N	X		1	0	1			0	0	0	0	0	25		1	1	1	1	8	5	✓	✓			2x
2	T	N	X		1	0	1			0	0	25	0	0	25		1	1	1	1	8	5	✓				2x
3	T	N	X		1	0	1			0	0	50	0	0	25		1	1	1	1	8	5	✓				2x
4	T	N	X		1	0	1			0	0	75	0	0	25		1	1	1	1	8	5	✓				2x
5	T	N	X		1	0	1			1	0	0	0	0	25		1	1	1	1	8	5	✓				2x
6	T	N	X		1	0	1			1	0	25	0	0	25		1	1	1	1	8	5	✓				2x
7	T	N	X		1	0	1			1	0	50	0	0	25		1	1	1	1	8	5	✓				2x
8	T	N	X		1	0	1			1	0	75	0	0	25		1	1	1	1	8	5	✓				2x
9	T	N	X		1	0	1			2	0	0	3	0	0		1	1	1	1	8	5	✓				2x
10																											
11																											
12																											
13																											
14																											
15																											
16																											
17																											

ITEMS TRANSFERRED	Relinquished by	Received by	Date	Time	Reason for Transfer
18	BGC John Carter	John Carter	12-7-85		EEL For Analysis

* 1: Al, As, Ba, Be, Cd, Cr, Cu, Fe, Pb, Mg, Mn, Mo, Ni, Se, Ag, Na, Sn, Ti, Zn
 Bo, Cl, CN⁻, F⁻, NH₃, NO₂, NO₃, P, SO₃

CHAIN OF CUSTODY RECORD

* te No. TNX-102 Crew Chief BGC Date _____ Page 1 of 1

Description of Shipment:

19 Piece(s) Consisting of Cooler(s), (other)

[illegible]

ITEMS TRANSFERED	Relinquished by	Received by	Date	Time	Reason for Transfer
19	BSCal Jm Carter	Jm Carter	12-3-85		EEI For Analysis

*1: Al, As, Ba, Be, Cd, Cr, Cu, Fe, Pb, Mg, Mn, Mo, Ni, Se, Ag, Na, Sn, Ti, Zn
 Bo, Cl, CN⁻, F, NH₃, NO₂, NO₃, P, SO₃

CHAIN OF CUSTODY RECORD

Site No. TNX-103 Crew Chief BGC Date _____ Page 1 of 1

Description of Shipment:

18 Piece(s) Consisting of _____ Cooler(s), _____ (other)

	SITE ID								DEPTH TO TOP INTRVL							INTRVL THICK		D I	SAMPLE DATE						Metals + Ions (#1)	EP Tox	Radionuclides U 238 Th 228	TYPE OF CONTAINER 250ml amb.	
	-	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		18	19	20	21	22	23					24
1	T	N	X	1	0	3				0	0	0	0	0	0	0	2	5		1	1	1	3	8	5	✓	✓	✓	3x
2	T	N	X	1	0	3					0	0	2	5	0	0	2	5		1	1	1	3	8	5	✓		✓	1x
3	T	N	X	1	0	3					0	0	5	0	0	0	2	5		1	1	1	3	8	5	✓			2x
4	T	N	X	1	0	3					0	0	7	5	0	0	2	5		1	1	1	3	8	5	✓			2x
5	T	N	X	1	0	3					1	1	0	0	0	0	2	5		1	1	1	3	8	5	✓			2x
6	T	N	X	1	0	3					1	1	2	5	0	0	2	5		1	1	1	3	8	5	✓			2x
7	T	N	X	1	0	3					1	1	5	0	0	0	2	5		1	1	1	3	8	5	✓			2x
8	T	N	X	1	0	3					1	1	7	5	0	0	2	5		1	1	1	3	8	5	✓			2x
9	T	N	X	1	0	3					2	1	0	0	3	1	0	0		1	1	1	3	8	5	✓			2x
10																													
11																													
12																													
13																													
14																													
15																													
16																													
17																													
18																													

ITEMS TRANSFERRED	Relinquished by	Received by	Date	Time	Reason for Transfer
18	BGC	John Carter	12-3-85		EEI for Analysis
	John Carter				

*1: Al, As, Ba, Be, Cd, Cr, Cu, Fe, Pb, Mg, Mn, Mo, Ni, Se, Ag, Na, Sn, Ti, Zn
 Bo, Cl, CN⁻, FI, NH₃, NO₂, NO₃, P, SO₃

ITEMS TRANSFERRED	Relinquished by	Received by	Date	Time	Reason for Transfer
18	BGCak John Carter	John Carter	12-385		FEI for Analysis

* 1: Al, As, Ba, Be, Cd, Cr, Cu, Fe, Pb, Mg, Mn, Mo, Ni, Se, Ag, Na, Sn, Ti, Zn
Bo, Cl, CN⁻, FI, NH₃, NO₂, NO₃, P, SO₃

CHAIN OF CUSTODY RECORD

Report No. TNX-106 Crew Chief BGC Date Page 1 of 1

.Description of Shipment:

(8) Piece(s) Consisting of _____ Cooler(s), _____ (other)

[illegible]

ITEMS TRANSFERRED	Relinquished by	Received by	Date	Time	Reason for Transfer
1B	BGAL	John Carter	12-3-85		FEI for Analysis
	John Carter				

* 1: Al, As, Ba, Be, Cd, Cr, Cu, Fe, Pb, Mg, Mn, Mo, Ni, Se, Ag, Na, Sn, Ti, Zn
Bo, Cl, Cn^+ , F, NH_3 , NO_2 , NO_3 , P, SO_3

CHAIN OF CUSTODY RECORD

Site No. TNX-101 Crew Chief BGC Date _____ Page 1 of 1

Description of Shipment:

11 Piece(s) Consisting of _____ Cooler(s), _____ (other)

	SITE ID								DEPTH TO TOP INTRVL						INTRVL THICK		D	SAMPLE DATE						GC/MS	Hg		TYPE OF CONTAINER		
	-	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		17	18	19	20	21	22					23	24
	T	N	X	-	1	0	1																			40ml vial			
1	T	N	X	-	1	0	1					4	0	0	1	2	5			1	1	1	8	5	✓	✓		3x	
2	T	N	X	-	1	0	1					0	1	2	5	0	1	2	5		1	1	1	8	5		✓		1x
3	T	N	X	-	1	0	1					0	1	5	0	0	1	2	5		1	1	1	8	5		✓		1x
4	T	N	X	-	1	0	1					0	1	7	5	0	1	2	5		1	1	1	8	5		✓		1x
5	T	N	X	-	1	0	1					1	1	0	0	0	1	2	5		1	1	1	8	5		✓		1x
6	T	N	X	-	1	0	1					1	1	2	5	0	1	2	5		1	1	1	8	5		✓		1x
7	T	N	X	-	1	0	1					1	1	5	0	0	1	2	5		1	1	1	8	5		✓		1x
8	T	N	X	-	1	0	1					1	1	7	5	0	1	2	5		1	1	1	8	5		✓		1x
9	T	N	X	-	1	0	1					2	1	0	0	3	1	0	0		1	1	1	8	5		✓		1x
10																													
11																													
12																													
13																													
14																													
15																													
16																													
17																													

ITEMS TRANSFERED	Relinquished by	Received by	Date	Time	Reason for Transfer
11	BGC	John Carter	12-3-85		EEL for Analysis

Description of Shipment:

[illegible]

ITEMS TRANSFERED	Relinquished by	Received by	Date	Time	Reason for Transfer
11	BSCC John Carter	John Carter	12-3-85		EEI For Analysis

CHAIN OF CUSTODY RECORD

ite No. TNX-103 Crew Chief BGC Date _____ Page 1 of 1

Description of Shipment:

11 Piece(s) Consisting of _____ Cooler(s), _____ (other)

	SITE ID							DEPTH TO TOP INTRVL							INTRVL THICK	D I	SAMPLE DATE						GC/MS	Hg		TYPE OF CONTAINER				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20	21					22	23	24	25
	-	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25				40ml vial	
1	T	N	X	1	0	3					1	4	1	0	0	1	2	5		1	1	1	3	8	5	✓	✓		3x	
2	T	N	X	1	0	3					1	0	1	2	5	0	1	2	5		1	1	1	3	8	5	✓			1x
3	T	N	X	1	0	3					1	0	1	5	0	0	1	2	5		1	1	1	3	8	5	✓			1x
4	T	N	X	1	0	3					1	0	1	7	5	0	1	2	5		1	1	1	3	8	5	✓			1x
5	T	N	X	1	0	3					1	1	1	0	0	0	1	2	5		1	1	1	3	8	5	✓			1x
6	T	N	X	1	0	3					1	1	1	2	5	0	1	2	5		1	1	1	3	8	5	✓			1x
7	T	N	X	1	0	3					1	1	1	5	0	0	1	2	5		1	1	1	3	8	5	✓			1x
8	T	N	X	1	0	3					1	1	1	7	5	0	1	2	5		1	1	1	3	8	5	✓			1x
9	T	N	X	1	0	3					2	1	0	0	3	1	0	0			1	1	1	3	8	5	✓			1x
10																														
11																														
12																														
13																														
14																														
15																														
16																														
17																														

ITEMS TRANSFERED	Relinquished by	Received by	Date	Time	Reason for Transfer
11	<i>BGC</i> <i>John Carter</i>	<i>John Carter</i>	12-3-85		EEL for Analysis

CHAIN OF CUSTODY RECORD

Site No. TNX-104 Crew Chief BGC Date _____ Page 1 of 1

Description of Shipment:

9 Piece(s) Consisting of _____ Cooler(s), _____ (other)

	SITE ID								DEPTH TO TOP INTRVL								INTRVL THICK	D I	SAMPLE DATE						GC/MS	Hg		TYPE OF CONTAINER
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25			
1	TNX	1	0	4						14	190	0	1	2	5				1	1	0	6	8	5		✓		1X
2	TNX	1	0	4						10	125	0	1	2	5				1	1	0	6	8	5		✓		1X
3	TNX	1	0	4						10	150	0	1	2	5				1	1	0	6	8	5		✓		1X
4	TNX	1	0	4						10	175	0	1	2	5				1	1	0	6	8	5		✓		1X
5	TNX	1	0	4						11	100	0	1	2	5				1	1	0	6	8	5		✓		1X
6	TNX	1	0	4						11	125	0	1	2	5				1	1	0	6	8	5		✓		1X
7	TNX	1	0	4						11	150	0	1	2	5				1	1	0	6	8	5		✓		1X
8	TNX	1	0	4						11	175	0	1	2	5				1	1	0	6	8	5		✓		1X
9	TNX	1	0	4						12	100	3	1	0	0				1	1	0	6	8	5		✓		1X
10																												
11																												
12																												
13																												
14																												
15																												
16																												
17																												

ITEMS TRANSFERED	Relinquished by	Received by	Date	Time	Reason for Transfer
9	BGC	John Carter	12-3-85		EEI For Analysis
	John Carter				

CHAIN OF CUSTODY RECORD

ite No. TNX-105 Crew Chief BGC Date _____ Page 1 of 1

✓ Description of Shipment:

9 Piece(s) Consisting of _____ Cooler(s), _____ (other)

	SITE ID							DEPTH TO TOP INTRVL							INTRVL THICK							D I	SAMPLE DATE						GC/MS	Hg		TYPE OF CONTAINER	
	-	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21		22	23	24	25							
																																	40ml vial
1	T	N	X	1	0	5															1	1	0	6	8	5			✓			1X	
2	T	N	X	1	0	5															1	1	0	6	8	5			✓			1X	
3	T	N	X	1	0	5															1	1	0	6	8	5			✓			1X	
4	T	N	X	1	0	5															1	1	0	6	8	5			✓			1X	
5	T	N	X	1	0	5															1	1	0	6	8	5			✓			1X	
6	T	N	X	1	0	5															1	1	0	6	8	5			✓			1X	
7	T	N	X	1	0	5															1	1	0	6	8	5			✓			1X	
8	T	N	X	1	0	5															1	1	0	6	8	5			✓			1X	
9	T	N	X	1	0	5															1	1	0	6	8	5			✓			1X	
10																																	
11																																	
12																																	
13																																	
14																																	
15																																	
16																																	
17																																	
18																																	

ITEMS TRANSFERED	Relinquished by	Received by	Date	Time	Reason for Transfer
9	BGC	John Carter	12-3-85		EEI for Analysis
	John Carter				

CHAIN OF CUSTODY RECORD

Site No. TNX-106 Crew Chief BGC Date _____ Page 1 of 1

Description of Shipment:

9 Piece(s) Consisting of _____ Cooler(s), _____ (other)

[illegible][illegible]

CHAIN OF CUSTODY RECORD

Site No. TNX-102 Crew Chief BGC Date 12-18-85 Page of

Description of Shipment:

✓ 3 Piece(s) Consisting of 1 Cooler(s), _____ (other)

[illegible]

ITEMS TRANSFERED	Relinquished by	Received by	Date	Time	Reason for Transfer
in 1 cooler	CCee	Rgl mustant	12/8/85		EEI for Analysis
	Rgl mustant

PROJECT NUMBER: 3046 DATE WORK IN: _____
 REQUESTED BY: Simmons RECEIVED BY: _____
 REPORT TO: Coniglio Page of _____
 DATE REQUIRED: _____

SPECIAL INSTRUCTIONS:

SAMPLE IDENTIFICATION					ANALYSES REQUESTED									
LAB NO.	SITE CODE/ SAMPLE DESCRIPTION	DATE COLLECTED	PRESERV.	CONTAINER	Head	GCScan	Redox	H ₂ S	Nitrate	Toc./Pom	TOH	(N)=	*	
1	TX Basin Sample	11/12/75	WGL	gal plant			X							
2			WGL	2x40 ml										
3			WGL	gal plant										
4			Nocturnal	gal plant										
5			HND3	gal plant										
6			H ₂ SO ₄	8 oz amber										
7			WGL	(603) amber										
8			NaOH	gal plant										
9			WGL	gal plant										
10														
11														
12														
13														
14														
15														
16														

1 Color, conductivity, odor, pH specific cond, TDS, Turbidity, Fluoride, Chloride, SO₄, DOC, Formic Acids, H₂S

[illegible]

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(314) 434-6960

CUSTODY TRANSFER RECORD/LABORATORY WORK REQUEST

PROJECT NUMBER: 3046-03000 DATE WORK IN: _____ REPORT TO: Coniglio Page 1 of 1

REQUESTED BY: R. Simmons RECEIVED BY: _____ DATE REQUIRED: _____

SPECIAL INSTRUCTIONS:

SAMPLE IDENTIFICATION				ANALYSES REQUESTED											
LAB NO.	SITE CODE/ SAMPLE DESCRIPTION	DATE COLLECTED	PRESERV.	CONTAINER	(#1)	CN=	TOH	TOC, Plasm	Nitrates	Metals	H ₂ S	Radioact.	GC Scan	Pest/Herb	COMMENTS
1	904-102 1A	11-5-85	Cold	Gal Plast	✓										
2			NaOH	Qt Plast		✓									
3			Cold	16oz Amb			✓								
4			H ₂ SO ₄	8oz Amb				✓							
5			Zn Act NaOH	Qt Plast					✓						
6			Cold	Gal Plast						✓					
7			Cold	2 x 40 ml								✓			
8			Cold	Gal Amb										✓	
9			HNO ₃	Qt Plast					✓						
10															
11															
12															
13															
14															
15															
16															

ITEMS TRANSFERRED	RELINQUISHED BY	Date	Time	RECEIVED BY	Date	Time	REASON for TRANSFER
10 in 1 cooler	BSCCL			Aspl. Consultant	11/5/85		Analysis @ EEI
	Aspl. Consultant	11/5/85					
(*1) Color, conductivity, odor, pH, Specific conductance, TDS, Turbidity, Fluoride, Chloride, SO ₄ , DOC, Fertilizing Agents, TDS							

DISTRIBUTION: WHITE - Sample Custodian PINK - Project Manager
YELLOW - Records GOLD - Field Copy

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CUSTOMER TRANSFER RECORD/LABORATORY WORK REQUEST

PROJECT NUMBER: 3046-03000 DATE WORK IN: _____ REPORT TO: Coniglio Page 1 of 1
REQUESTED BY: R. Simmons RECEIVED BY: _____ DATE REQUIRED: _____
(Outport)

SPECIAL INSTRUCTIONS:

SAMPLE IDENTIFICATION					ANALYSES REQUESTED										COMMENTS
LAB NO.	SITE CODE/ SAMPLE DESCRIPTION	DATE COLLECTED	PRESERV.	CONTAINER	(*)	CN=	TOH	TOC, Pheol	Nitrate	Metals	H ₂ S	Radionucl.	GC Scan	Pest/Herb	
1	904-102 2A	11-5-85	Cold	Gal Plast	✓										
2			NaOH	Qt Plast		✓									
3			Cold	16oz Amb			✓								
4			H ₂ SO ₄	8oz Amb				✓							
5			Zn Act NaOH	Qt Plast						✓					
6			Cold	Gal Plast							✓				
7			Cold	2 x 40 ml								✓			
8			Cold	Gal Amb									✓		
9			HNO ₃	Qt Plast					✓						
10															
11															
12															
13															
14															
15															
16															

ITEMS TRANSFERRED	RELINQUISHED BY	Date	Time	RECEIVED BY	Date	Time	REASON for TRANSFER
10 in 1 cooler	BS Cel			Appointed	11/5/85		Analysis @ EEI
	Appointed	11/5/85					
(*1) Color, conductivity, odor, pH, Specific conductance, TDS, Turbidity, Flowids, Chloride, SO ₄ , DOC, Foaming Agents, TOS

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(314) 434-5960

CUSTODY TRANSFER RECORD/LABORATORY WORK REQUEST

PROJECT NUMBER: 3046-03000 DATE WORK IN: _____

REPORT TO: Coniglio Page 1 of 1

REQUESTED BY: R. Simmons RECEIVED BY: _____

DATE REQUIRED: _____

SPECIAL INSTRUCTIONS:

(OutPort)

SAMPLE IDENTIFICATION				ANALYSES REQUESTED										
LAB NO.	SITE CODE/ SAMPLE DESCRIPTION	DATE COLLECTED	PRESERV.	CONTAINER	(*)	CN=	TOH	TOC, P, KOL	Metals	H ₂ S	Radionucl.	GC Scan	Pest/Herb	COMMENTS
1	904-102 3A	11-5-85	Cold	Gal Plast	✓									
2			NaOH	Qt Plast		✓								
3			Cold	16oz Amb			✓							
4			H ₂ SO ₄	8oz Amb				✓						
5			Zn Act NaOH	Qt Plast					✓					
6			Cold	Gal Plast							✓			
7			Cold	2 x 40 ml								✓		
8			Cold	Gal Amb									✓	
9			HNO ₃	Qt Plast					✓					
10														
11														
12														
13														
14														
15														
16														

ITEMS TRANSFERRED	RELINQUISHED BY	Date	Time	RECEIVED BY	Date	Time	REASON for TRANSFER
10 in 1 cooler	BGCCL			As instructed	11/5/85		Analysis @ EEI
	As instructed	11/5/85					
(*1) Color, conductivity, odor, pH, Specific conductance, TDS, Turbidity, Fluoride, Chloride, SO ₄ , DOC, Foaming Agents, TQS							

DISTRIBUTION: WHITE - Sample Custodian PINK - Project Manager
YELLOW - Records GOLD - Field Copy

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CUSTODY TRANSFER RECORD/LABORATORY WORK REQUEST

PROJECT NUMBER: 3046-03000 DATE WORK IN: REPORT TO: Coniglio Page 1 of 1
REQUESTED BY: R. Simmons RECEIVED BY: DATE REQUIRED:

SPECIAL INSTRUCTIONS:

(Outport)

SAMPLE IDENTIFICATION					ANALYSES REQUESTED										COMMENTS
LAB NO.	SITE CODE/ SAMPLE DESCRIPTION	DATE COLLECTED	PRESERV.	CONTAINER	(*)	CN=	TOH	TOC, Phenol	Nitrates	Metals	H ₂ S	Radionucl	GC Scan	Pest/Herb	
1	904-102 4A	11-5-85	Cold	Gal Plast	✓										
2			NaOH	Qt Plast	✓										
3			Cold	16oz Amb			✓								
4			H ₂ SO ₄	8oz Amb				✓							
5			Zn Act NaOH	Qt Plast						✓					
6			Cold	Gal Plast								✓			
7			Cold	2 x 40 ml									✓		
8			Cold	Gal Amb										✓	
9			HNO ₃	Qt Plast						✓					
10															
11															
12															
13															
14															
15															
16															

ITEMS TRANSFERRED	RELINQUISHED BY	Date	Time	RECEIVED BY	Date	Time	REASON for TRANSFER
10 in 1 cooler	BGCCL			Agg. Material	11/5/85		Analysis @ EEI
	Agg. Material	11/5/85					
(*1) Color, conductivity, odor, pH, Specific Conductance, TDS, Turbidity, Fluoride, Chloride, SO ₄ , DOC, Foaming Agents, TOS

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CUSTODY TRANSFER RECORD/LABORATORY WORK REQUEST

PROJECT NUMBER: 3046-03000 DATE WORK IN: _____ REPORT TO: Conglio Page 01 of _____
REQUESTED BY: R. Simmons RECEIVED BY: _____ DATE REQUIRED: _____
SRL

SPECIAL INSTRUCTIONS:

SAMPLE IDENTIFICATION					ANALYSES REQUESTED									
LAB NO.	SITE CODE/ SAMPLE DESCRIPTION	DATE COLLECTED	PRESERV.	CONTAINER	COMMENTS									
1	TN-103 Sludge	11-13-85	cold	1-250 ml	<div>Analyze as</div> <div>separate fractions</div> <div>H₂O + sludge solids</div> <div>Priority:</div> <div>- physical parameters</div> <div>- metals</div> <div>- ANIONS</div> <div>- radioactivity</div> <div>- organics</div>									
2	+ water			2x40 ml										
3				plastic bag										
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														
16														

ITEMS TRANSFERRED	RELINQUISHED BY	Date	Time	RECEIVED BY	Date	Time	REASON for TRANSFER
4 in 1 cooler	<u>John Carter</u>	12-3-85		<u>John Carter</u>	12-3-85

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CUSTODY TRANSFER RECORD/LABORATORY WORK REQUEST

PROJECT NUMBER: 3096

DATE WORK IN: _____

REPORT TO: _____

Page 1 of 1

REQUESTED BY: Shelton

RECEIVED BY: _____

DATE REQUIRED: _____

SPECIAL INSTRUCTIONS:

SAMPLE IDENTIFICATION					ANALYSES REQUESTED	
LAB NO.	SITE CODE/ SAMPLE DESCRIPTION	DATE COLLECTED	PRESERV.	CONTAINER	COMMENTS	
1	Trx Basin Surface					
2	Gravel	11/13/05	old	plastic	X	
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						

ITEMS TRANSFERRED	RELINQUISHED BY	Date	Time	RECEIVED BY	Date	Time	REASON for TRANSFER
1	Clayton B. Shelton	11/13/05	7:10 PM	Shelton	11/13/05	7:10 PM	Carla Arce for analysis
					11/14/05	10:00	Lab Analysis

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CUSTODY TRANSFER RECORD/LABORATORY WORK REQUEST

PROJECT NUMBER: 3046-03000 DATE WORK IN: _____ REPORT TO: Coniglio Page of _____
REQUESTED BY: R. Simmons RECEIVED BY: _____ DATE REQUIRED: _____

SPECIAL INSTRUCTIONS:

(SRL)

SAMPLE IDENTIFICATION					ANALYSES REQUESTED	
LAB NO.	SITE CODE/ SAMPLE DESCRIPTION	DATE COLLECTED	PRESERV.	CONTAINER	COMMENTS	
1	904-102 1A		cold	4oz Plast	1. Cold for	
2	904-102 2A					
3	904-102 3A					
4	904-102 4A					
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						

ITEMS TRANSFERRED	REQUISITIONED BY	Date	Time	RECEIVED BY	Date	Time	REASON for TRANSFER
4	Charles B. Hudson	11/18/10	10:30A	James J. Hickey	11/18/10	10:30P	Cons. Alloc.
					11-16	0900	Lab Analysis

END

DATE FILMED

02 / 11 / 91