Y/TS-1205

Y-12

OAK RIDGE
Y-12
PLANT

LOCKHEED MARTIN

MANAGED BY
LOCKHEED MARTIN ENERGY SYSTEMS, INC.
FOR THE UNITED STATES
DEPARTMENT OF ENERGY

UCN-13672 (26 6-95)

STORM WATER RUNOFF FOR THE Y-12 PLANT AND SELECTED PARKING LOTS

January 1996

E. T. COLLINS

WATER COMPLIANCE SECTION
ENVIRONMENTAL MANAGEMENT DEPARTMENT
HEALTH, SAFETY, ENVIRONMENT,
AND ACCOUNTABILITY DIVISION

Oak Ridge Y-12 Plant
Oak Ridge, Tennessee 37831
managed by
Lockheed Martin Energy Systems, Inc.
for the
U.S. DEPARTMENT OF ENERGY
under contract DE-AC05-84OR21400

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1.0 INTRODUCTION

A comparison of storm water runoff from the Y-12 Plant and selected employee vehicle parking lots to various industry data is provided in this document. This work is an outgrowth of and part of the continuing Non-Point Source Pollution Elimination Project that was initiated in the late 1980s. This project seeks to identify area pollution sources and remediate these areas through the Resource Conservation and Recovery Act/Comprehensive Environmental Response, Compensation, and Liability Act (RCRA/CERCLA) process as managed by the Environmental Restoration Organization staff. This work is also driven by the Clean Water Act Section 402(p) which, in part, deals with establishing a National Pollutant Discharge Elimination System (NPDES) permit for storm water discharges.

Storm water data from events occurring in 1988 through 1991 were analyzed in two reports: *Feasibility Study for the Best Management Practices to Control Area Source Pollution Derived from Parking Lots at the DOE Y-12 Plant*, September 1992, and *Feasibility Study of Best Management Practices for Non-Point Source Pollution Control at the Oak Ridge Y-12 Plant*, February 1993.[1,2] These data consisted of analysis of outfalls discharging to upper East Fork Poplar Creek (EFPC) within the confines of the Y-12 Plant (see Appendixes D and E). These reports identified the major characteristics of concern as copper, iron, lead, manganese, mercury, nitrate (as nitrogen), zinc, biological oxygen demand (BOD), chemical oxygen demand (COD), total suspended solids (TSS), fecal coliform, and aluminum.

Specific sources of these contaminants were not identifiable because flows upstream of outfalls were not sampled. In general, many of these contaminants were a concern in many outfalls. Therefore, separate sampling exercises were executed to assist in identifying (or eliminating) specific suspected sources as areas of concern. The selected sources were (1) employee vehicle parking lots, (2) the Y-12 Scrap Metal Yard, and (3) building roofs. The parking lot data will be analyzed in this report.

2.0 DATA

2.1 Y-12 PLANT DATA

The summary of data analyzed in the previously mentioned feasibility report is shown in Table 1.[2] Copper, iron, manganese, and mercury were found to exceed ambient water quality criteria (AWQC) at almost all outfalls. Lead exceeded the AWQC in only two outfalls, and nitrate was limited to one outfall. Zinc exceeded the AWQC at only nine outfalls and not nearly to the extent of other metals.

The source of nitrate is an area of former storage for urea. The urea has been removed, and the concentration of nitrate in EFPC and Outfall 17 is no longer a concern.

One source of lead appears to be the pistol range at the east end of the Y-12 Plant, which discharges through Outfall 7. The other source at Outfall 16 is unknown.

The source of fecal coliform is the large population of wild geese that frequently inhabit the eastern end of the plant. Geese droppings have long been a nuisance, if not a concern, because of their impact on water quality and appearance on paved areas. Efforts to control the geese population have not been effective.

Mercury contamination is fairly extensive at the Y-12 Plant and has been studied in great depth. Specific buildings and areas, as well as EFPC, are known to be contaminated by mercury. Mercury reduction and remediation is being managed by the Environmental Restoration Organization staff.

Iron is abundant in local soils and natural stream flows during both dry and wet weather. Typically, iron levels exceed the AWQC in even reference streams.

2.2 PARKING LOT RUNOFF

The parking lots selected for runoff analysis were those at North Portal, East Portal, and West Portal. These are three of the six major parking lots at the Y-12 Plant (see Figure 1). The sampling plan executed is shown in Appendix A. The detailed results are shown in Appendix B. The summarized results, as compared to the contaminants of concern, are shown in Table 2. Water samples were collected from the rain events of September 15 and December 10, 1993, and September 17, 1994. During these events, 1.08, 0.91, and 1.32 inches of rain, respectively, fell in 24 hours. Note that most of the rain on September 17 fell just before midnight after the sampling events were completed. The number of days without significant rain before these rain events were (1) eleven before September 15, 1993; (2) five before December 10, 1993; and (3) ten before September 17, 1994. The resulting flow in EFPC at Station 17 is shown in Figures 2 through 4.

Parking lots at the Y-12 Plant are typically mechanically swept on a monthly basis. However, no records are maintained identifying dates or areas that are cleaned. Resurfacing and repairs are periodically conducted as necessary. The North Portal was resurfaced (new asphalt layer) shortly before the September 15, 1993, grab sample was collected. All employee vehicle parking lots are routinely patrolled (daily) by security personnel who report any observed oil and/or gasoline spills or leaks. Spill response is conducted as appropriate, and vehicle owners are requested to remove their vehicles until the leaks are repaired. Periodic announcements are made to employees that vehicle repair work is prohibited in the parking lots and that vehicles are expected to be maintained such that there are no oil/grease/gasoline releases to the environment.

2.3 INDUSTRIAL SITE RUNOFF

The U.S. Environmental Protection Agency (EPA) NPDES Storm Water Group Application Data Base was accessed for storm water data (see Appendix C). This data base grouped data by industry type as shown below:

- Industrial Sector 29--Fabricated metal products (except machinery and transportation equipment, jewelry, silverware, and plated ware).
- Industrial Sector 30--Industrial and commercial machinery (except computer and office equipment), transportation equipment.
- Industrial Sector 31--Electronic and other electrical equipment and components measuring, analyzing, and controlling instruments; photographic and optical goods; watches and clocks.
- Industrial Sector 33--Industrial activities located at/on military facilities.

Extracted information from this data base was used to compile Table 3, which shows the comparison of key contaminants in typical industry storm water runoff to data collected from the Y-12 Plant parking lot runoff.

3.0 ANALYSIS

Table 3 data convincingly show that the Y-12 Plant outfalls, as a group, and the sampled parking lot runoff are less contaminated than similar employee vehicle parking lots in any industry sector. Parking lot runoff, in particular, is below standard, except for three grab sample contaminants at one parking lot (manganese, TSS, and iron at the North Portal). This observation may be associated with the newness of this parking lot. All oil and grease samples analyzed at less than 2.0 mg/L.

Total suspended solids (TSS), copper, and lead were below standard in grab and composite samples at all parking lots. Iron was slightly high in the North Portal only. Mercury and lead runoff comparison to standard was indeterminate because they were below detection limit but still possibly above standard.

4.0 CONCLUSIONS

Based on the data presented in Tables 2 and 3, parking lots at the Y-12 Plant are not a source of runoff contamination at a level of concern for any measured contaminant. Oil and grease data do not suggest that the parking lots are a significant enough source of this type of material to constitute a concern. While oil sheens on water can be generated and easily observed with smaller quantities of oils, there are no parking lot visual inspections or runoff analyses to suggest that the Y-12 Plant employee vehicle parking lots are a significant source of observed oil sheens in EFPC.

Storm water runoff from Category I and Category II outfalls at the Y-12 Plant typically is less than that from any of the industry sectors.

5.0 RECOMMENDATIONS

Parking lot sweeping should be continued along with periodic patrolling to identify/ correct vehicle leaks. Records should be maintained of cleaning dates and areas, repairs, and resurfacing.

6.0 REFERENCES

1. *Feasibility Study for the Best Management Practices to Control Area Source Pollution Derived from Parking Lots at the DOE Y-12 Plant*, Y/SUB/92-57431C/2, Martin Marietta Energy Systems, Inc., Y-12 Plant, September 1992.

2. *Feasibility Study of Best Management Practices for Non-Point Source Pollution Control at the Oak Ridge Y-12 Plant*, Y/SUB/93-288-99920C/1, Martin Marietta Energy Systems, Inc., Y-12 Plant, February 1993.

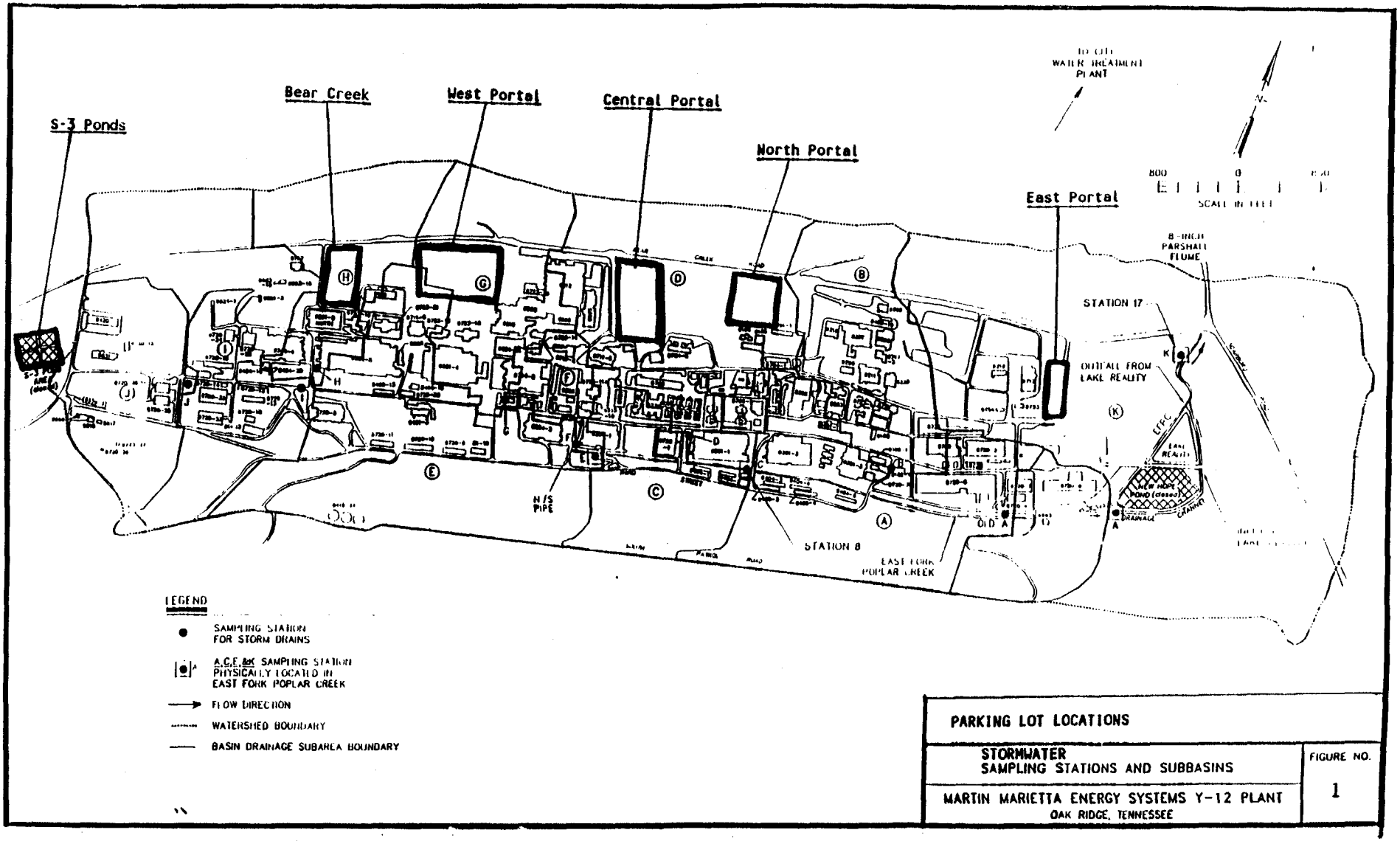


FIGURE 1. Parking Lot Locations at the Y-12 Plant.

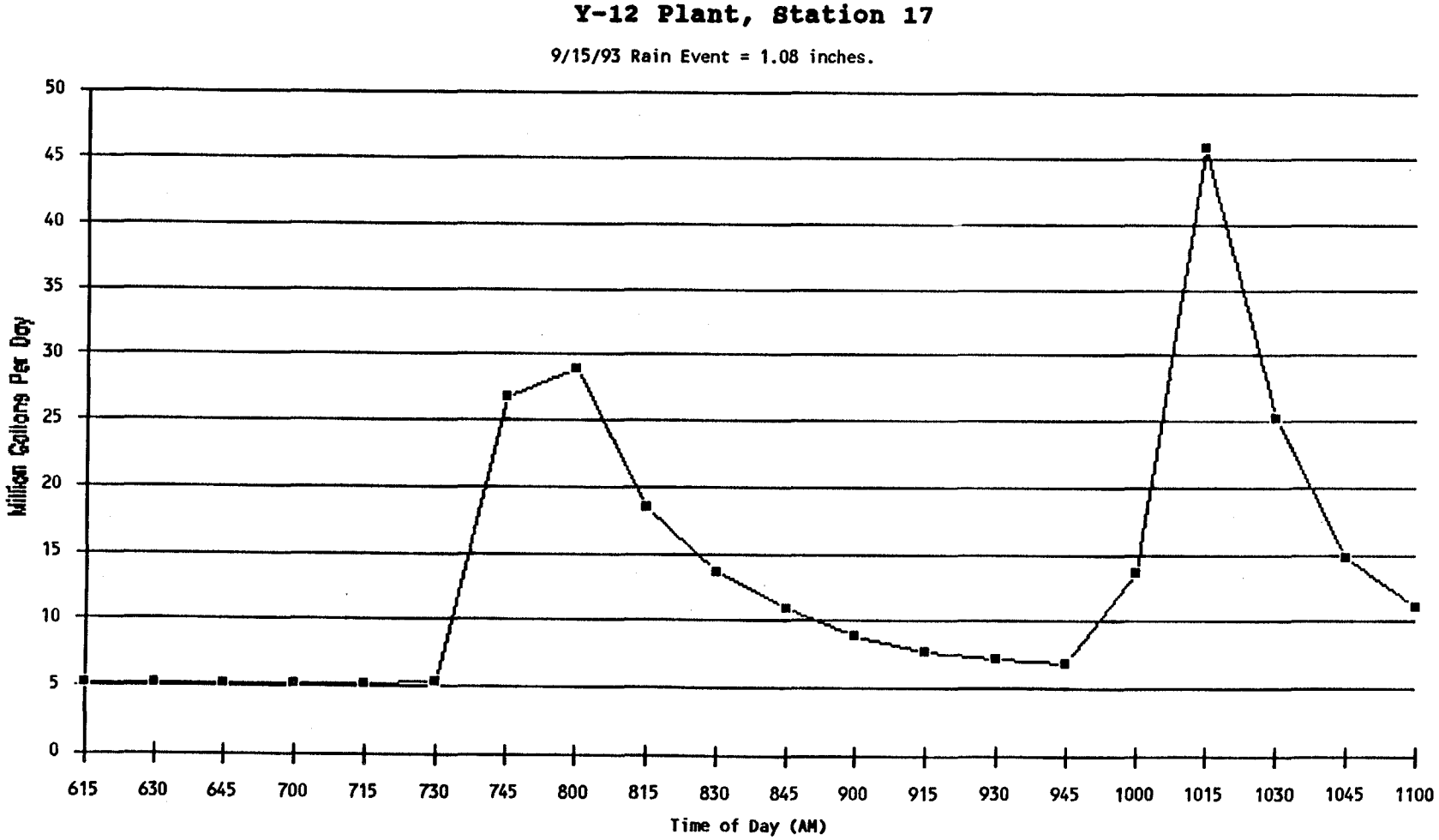


FIGURE 2. Rain Flow Event in East Fork Poplar Creek on September 15, 1993.

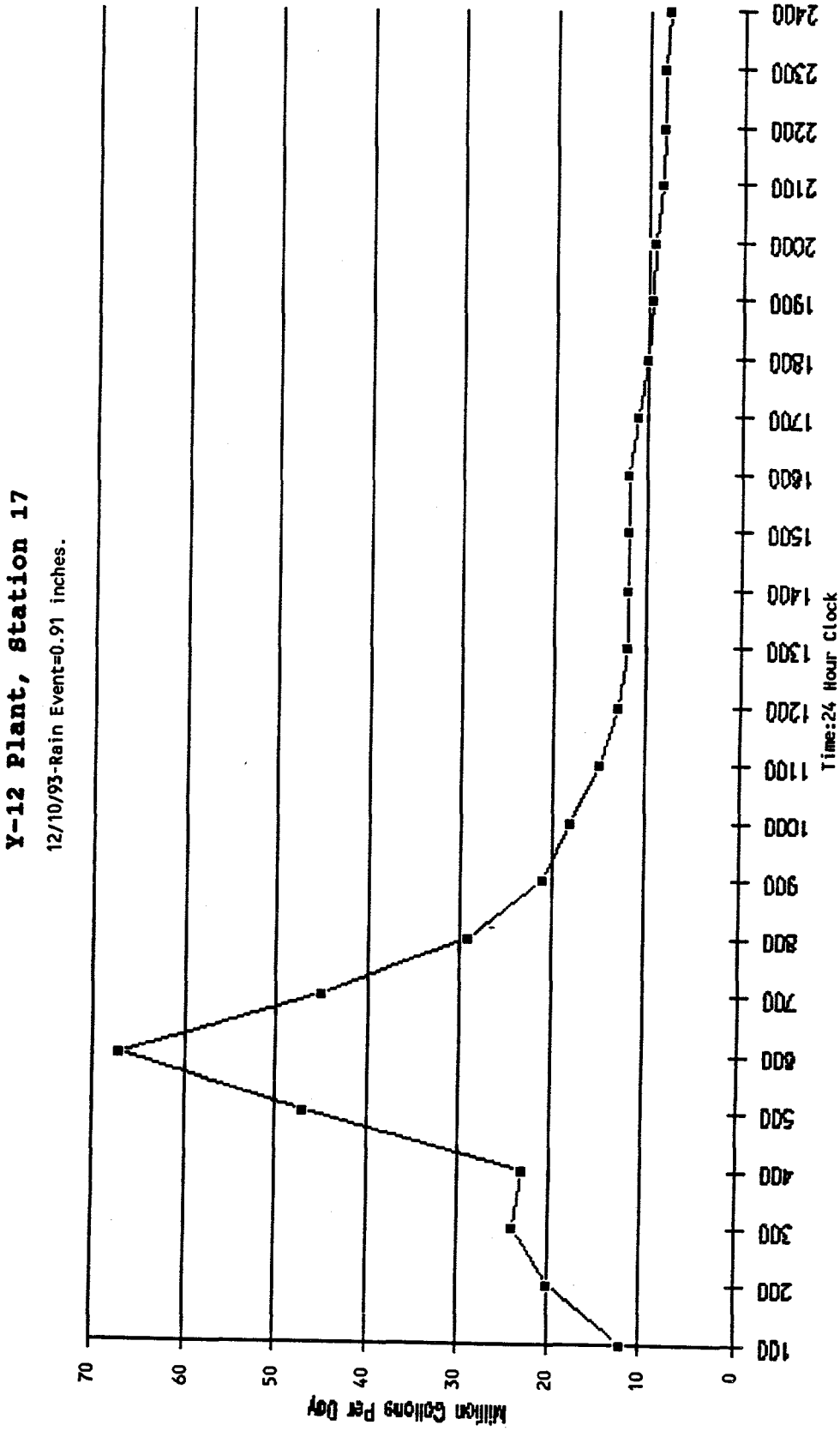


FIGURE 3. Rain Flow Event in East Fork Poplar Creek on December 10, 1993.

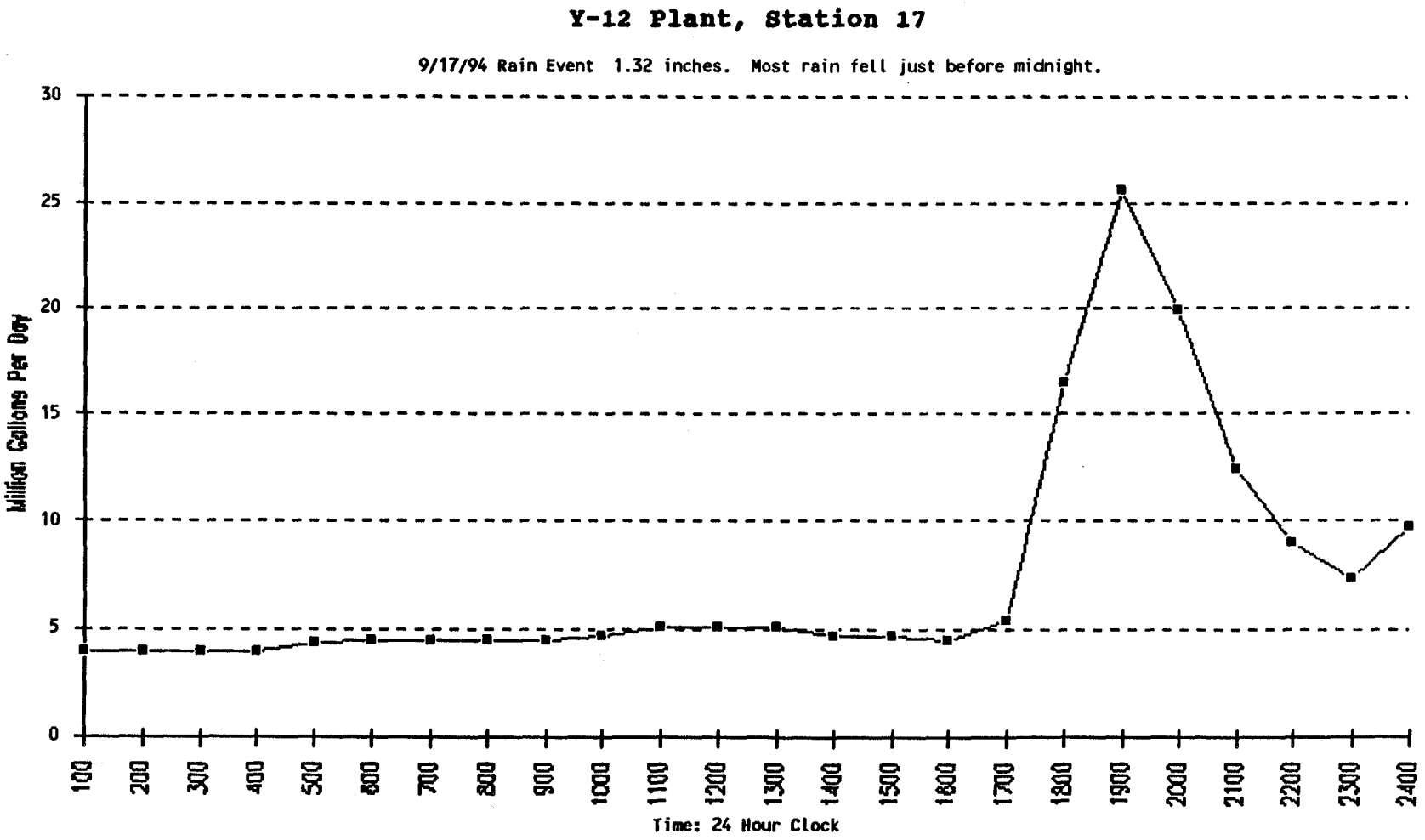


FIGURE 4. Rain Flow Event in East Fork Poplar Creek on September 17, 1994.

TABLE 1. Results of Comprehensive Sampling Program (September 1988 - April 1989)

Compound	Standard	Percent of Samples Exceeding Standard	
		Dry Weather	Wet Weather
Copper	Chronic AWQC 0.012 mg/L	11	64
Iron	Acute AWQC 1 mg/L	0	84
Lead	Chronic AWQC 0.0032 mg/L	6	77
Manganese	SMCL 0.05 mg/L	79	95
Mercury	TTRP chronic 0.012 ug/L	100	79
Nitrate (as Nitrogen)	AWQC human health 10 mg/L	23	0
Zinc	TTRP chronic 0.198 mg/L	0	22

Reference *Feasibility Study of Best Management Practices for Non-Point Source Pollution Control at the Oak Ridge Y-12 Plant*, February 1993, Y/SUB/93-28B-99920C/1.

AWQC - Ambient Water Quality Criteria
SMCL - Secondary Maximum Contaminant Level
TTRP - Tennessee Triennial Review Proposed

TABLE 2

Y-12 Plant - Parking Lot Runoff Sampling
Grab Samples 9/15/93 and 9/17/94 - Composite Sample 12/10/93

		North Portal			East Portal				West Portal			
Parameter	Units	Grab[1] 9/15/93	Grab[6] 9/17/94	Composite[2] 12/10/93	Grab[3] 9/15/93	Grab[7] 9/17/94	Composite[4] 12/10/93	Composite[8] 9/17/94	Grab[5] 9/15/93	Grab[9] 9/17/94	Composite[10] 9/17/94	AWQC[11]
Mercury	ug/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.02	0.012
BOD	mg/L	5.0	<5.0	6.8	<5.0	7.6	<5.0	5.7	<5.0	5.2	<5.0	-
COD	mg/L	2.8	<20	<20	30	93	33	26	7.8	33	<20	-
Conductivity	umhos	70.1	-	95	64.3	-	150	-	310	-	-	-
Fecal Coliform	c/100mL	3,500	-	180	550	-	20	-	870	-	-	-
Oil/Grease	mg/L	<2.0	<2.0	-	<2.0	<2.0	-	-	<2.0	<2.0	-	-
TSS	mg/L	10	65	-	7.0	5	9.0	81	<5.0	18	10	-
Copper	mg/L	<0.006	0.006	<0.006	0.007	0.012	<0.006	0.010	<0.006	0.018	0.006	0.012
Iron	mg/L	0.69	2.45	1.24	0.24	0.15	0.28	1.18	0.11	0.21	0.40	1.0
Lead	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	0.0032
Manganese	mg/L	0.159	1.35	0.027	0.013	0.010	0.01	0.029	0.004	0.010	0.016	0.05
Zinc	mg/L	0.02	0.07	0.18	0.17	0.44	0.07	0.22	0.04	0.06	0.10	0.198
Total Uranium	mg/L		<0.001	0.004	-	0.004	0.003	0.002	-	<0.001	<0.001	-
% U-235	%		N/A	0.62	-	0.51	2.6	0.63	-	N/A	N/A	-

1 Sample E932580051 - 9/15/93
2 Sample E932580054 - 12/10/93
3 Sample E932580050 - 9/15/93
4 Sample E932580053 - 12/10/93
5 Sample E932580052 - 9/15/93
6 Sample E942600001 - 9/17/94
7 Sample E942600000 - 9/17/94
8 Sample E942600003 - 9/17/94
9 Sample E942600002 - 9/17/94
10 Sample E942600004 - 9/17/94
11 Ambient Water Quality Criteria - Fresh Chronic

TABLE 3

STORM WATER RUNOFF

	INDUSTRIAL SECTOR[1]				Y-12 PLANT OUTFALLS		Y-12 PLANT PARKING LOTS			STANDARDS (mg/L)[4]	
	29	30	31	33	CAT I[2]	CAT II[3]	NORTH PORTAL	EAST PORTAL	WEST PORTAL		
GRAB SAMPLE AVERAGE (mg/L)											
Nitrate	1.596	1.272	0.866	1.416	2.41	2.49	-	-	-	AWQC human health	10
TSS	187.2	158.9	96.4	239.3	108.9	38.09	37.5[5]	6.5	11.0	Typical NPDES limit	31
Copper	0.734	0.905	0.058	0.137	0.019	0.016	<0.006	0.009	0.012	Chronic AWQC	0.012
Iron	4.894	10.389	7.09	9.488	2.67	1.43	1.57[5]	0.19	0.16	Acute AWQC	1.0
Lead	0.077	0.65	0.06	0.135	0.022	0.021	<0.02	<0.02	<0.02	Chronic AWQC	0.0032
Manganese	0.498	0.082	0.204	0.08	0.09	0.112	0.75[5]	0.011	0.007	SMCL	0.05
Mercury	0.00033	0.00052	0.01	0.0125	0.00093	0.0007	<0.0002	<0.0002	<0.0002	TTRP chronic	0.000012
Zinc	8.51	0.705	0.173	0.713	0.11	0.15	0.045	0.30	0.05	TTRP chronic	0.198
COMPOSITE SAMPLING AVERAGE (mg/L)											
Nitrate	1.405	3.569	0.694	0.961	2.45	0.81	-	-	-	AWQC human health	10
TSS	125.3	264.6	76.3	144.8	69.19	61.72	-	9.0	10	Typical NPDES limit	31
Copper	0.502	0.767	0.035	0.157	0.015	0.013	<0.006	0.008	0.006	Chronic AWQC	0.012
Iron	3.034	11.281	6.844	8.685	1.97	0.975	1.24[5]	0.73	0.40	Acute AWQC	1.0
Lead	0.071	0.569	0.06	0.152	0.021	<0.02	<0.02	<0.02	<0.02	Chronic AWQC	0.0032
Manganese	0.539	0.038	0.17	0.08	0.061	0.082	0.027	0.015	0.016	SMCL	0.05
Mercury	0.00034	0.00054	0.00046	0.0124	0.0007	0.00051	<0.0002	<0.0002	<0.0002	TTRP chronic	0.000012
Zinc	3.979	0.504	0.158	0.621	0.082	0.12	0.018	0.15	0.10	TTRP chronic	0.198

1 Source: U.S. EPA NPDES Storm Water: Application Database
Industrial Sector 29: Fabricated metal products except machinery and transportation equipment, jewelry, silverware, and plated ware.
Industrial Sector 30: Industrial and commercial machinery (except computer and office equipment), transportation equipment.
Industrial Sector 31: Electronic and other electrical equipment and components measuring, analyzing, and controlling instruments; photographic and optical goods; watches and clocks.
Industrial Sector 33: Industrial activities located at/on military facilities.
2 Category I Outfalls: Storm water only.
3 Category II Outfalls: Storm water plus process water.
4 Ambient Water Quality Criteria, National Pollutant Discharge Elimination System, Secondary Max Contamination Level, Tennessee Triennial Review Proposed
5 Over standard data.

APPENDIX A

PARKING LOT SAMPLING PLAN

Y-12 Plant Environmental Management Action Plan
for the
Parking Lot Sampling Program

March 1993

Y-12 Plant Environmental Management Action Plan
for the
Parking Lot Runoff Sampling Program

Objective

The objective of the parking lot runoff sampling program is to collect, evaluate and characterize storm water runoff from various parking lot areas at the Plant. This program is being conducted in support of the Feasibility Study for the Best Management Practices to Control Area Source Pollution Derived from Parking Lots at the DOE Y-12 Plant report which was issued in September 1992. In establishing appropriate Best Management Practices (BMPs) for parking lots, this feasibility study was somewhat limited by the use of analytical storm water data that was obtained at the point where the outfall pipe discharged into the East Fork Poplar Creek (EFPC). The complex storm drainage network at the Plant is such that multiple point and nonpoint sources of discharge co-mingle and eventually discharge through common outfalls. The three parking lots that were evaluated in the feasibility study drain at or close to the origination of the storm drain system that conveyed not only this runoff, but co-mingled with other discharges before being sampled. For this reason, this sampling program was established in order to identify more precisely any contaminants of concern from parking lot runoff and, based on these results, to promote the applicable BMPs suggested in the feasibility study.

Strategy

Three locations will be monitored as part of this plan. To maintain consistency with the feasibility study, the same three parking lots will be targetted - the West Portal, North Portal, and East Portal parking lots. One storm grate at each parking lot has been selected for sampling based on accessibility and likelihood of receiving sufficient flow for sampling. See **Figure 1** for actual location.

Sampling Requirements

As mandated by their NPDES Permit, the ORNL Facility collects samples for Total Suspended Solids (TSS), Oil and Grease (O&G), pH and flow from certain parking lots and paved areas. The feasibility study reports that Chemical Oxygen Demand (COD), Biological Oxygen Demand (BOD_5), TSS, Fecal Coliform, Aluminum, Copper, Iron, Lead, Mercury and Zinc are the contaminants in the Plant's parking lot runoff that could be in non-compliance in the anticipated Storm Water General Permit. A combination of these two lists, along with an addition of Total Uranium, %U-235, and Conductivity, will establish the parameters that will be analyzed for in the samples collected.

The protocol established in the NPDES Storm Water regulations for defining a significant storm will be followed as close as possible. This protocol states that samples must be collected from a discharge resulting from a storm event that is greater than 0.1 inches rainfall and at least 72 hours from the previously measurable storm event (greater and 0.1 inch rainfall). Where feasible, the rainfall total should be between 0.31 and 0.93 inches with a duration of 4.6 to 13.8 hours. In certain cases if a storm event comes reasonably close to meeting this criteria, the samples will be analyzed. Because this monitoring is being used for investigative rather than compliance reporting purposes, the established protocol will serve only as a guide and not as a requirement. A total of two samples will be collected at each of the three monitoring stations. **Table 1** depicts the list of parameters to be sampled for and the type of sample (grab or composite) required.

Sampling Quality Assurance/Quality Control (QA/QC)

One sample from every storm water sampling event will be taken in duplicate, and the results compared for sampling consistency. All samples will be kept under chain-of-custody at all times according to procedure ESP-500. All equipment will be decontaminated between samples in accordance with ESP-900. All grab and composite samples will be taken in accordance with ESP-301-1 and ESP-301-3, respectively. All analyses will be conducted in accordance with NPDES accepted methodology by the Y-12 Environmental Laboratory.

Safety Concerns

The Y-12 Plant Environmental Surveillance Department technicians will perform all equipment installation, calibration, maintenance and sampling for this project. Due to inclimate weather conditions, sampling personnel should work in teams of at least two persons at all times.

Action Plan Summary

This work plan has been established for the purpose of obtaining storm water analyses on the runoff from parking lot areas at the Y-12 Plant. The sampling event requirements have been set. The result of this sampling effort will be used to justify the necessity of BMPs that have previously been suggested in the feasibility study.

Table 1

Parking Lot Storm Water Sample Parameters

Parameter	Sample Type
COD	grab/comp
BOD_5	grab/comp
TSS	grab/comp
Copper	grab/comp
Iron	grab/comp
Zinc	grab/comp
Aluminum	grab/comp
Lead	grab/comp
Mercury	grab/comp
O&G	grab
Fecal Coliform	grab/comp
Flow	--
pH	grab/comp
Uranium - total	grab/comp
%U-235	grab/comp
Conductivity	grab/comp

SPECIFIC INFORMATION

ANALYSES: ELIMS project codes; **STORMC** for composites **STORMG** for grabs

Grab samples receive the following list of test. Composite samples receive the same list, but with the omission of oil and grease.

ELIMS Test	Method	
Total Suspended Solids	TSS	EPA 160.2
Oil and Grease	OIL_GR	EPA 413.1
Chemical Oxygen Demand	COD	EPA 410.2
Biological Oxygen Demand	BOD	EPA 405.1
Fecal Coliform	FCOLI	MMES EC119
ICP (metals)	ICPEPA	EPA 200.7
Mercury	AA_HG	EPA 245.1
Total U & %U235	MS_U	Y/P65-7165
Conductance	CONDUC	EPA 120.1

SAMPLE QUANTITIES AND CONTAINERS:

ICP (1) 1 LITER PLASTIC BOTTLE
TSS (1) 1 LITER PLASTIC BOTTLE
CONDUCTANCE (1) 250 mL PLASTIC BOTTLE
FECAL COLIFORM (1) 250 mL STERILE PLASTIC CONTAINER
MERCURY (1) 250 mL PLASTIC BOTTLE
OIL AND GREASE (2) 1 LITER GLASS BOTTLES
TOTAL U & %U235 (1) 50 mL PLASTIC CONE
BOD (1) 1 LITER PLASTIC BOTTLE
COD (1) 250 mL PLASTIC BOTTLE

HOLDING TIMES:
MINIMUM HOLDING TIME FOR THE DESIRED TESTS IS 6 HOURS (FECAL COLIFORM)

QUANTITATION LIMITS:
as per method

ANALYTICAL METHODS:
as listed above

PRESERVATION:
pH <2 with nitric acid: ICP,Total U & %U235,
pH <2 with nitric acid/ K2Cr2O7: Hg
PH<2 with hydrochloric acid: O&G
4 degrees C : BOD, TSS, Conductance, Fecal Coliform
pH<2 with H2SO4 and 4 degrees C: COD

MATRIX: WATER

PRECISION:
As per method.

TREATMENT OF MULTIPHASE SAMPLES:
No multiphase samples are expected in this project.

SAMPLE RECEIPT SCHEDULE:
Variable, dependent on rainfall.
Maximum of 8 samples per event.

CHAIN OF CUSTODY (COC) DETAILS:
Chain of custody will be initiated by sampling technicians and maintained by laboratory. Label project as NPDES

SAMPLE DISPOSITION AFTER ANALYSES:
Disposal by lab.

REPORT FORMAT: Standard ELIMS report

DATA VALIDATION:
Data will receive review at the test and sample level.

EMERGENCY CONTACT: Lori Muhs 4-9550

AL EMERGENCY CONTACT:
Sam Easterling

SIGNATURES

LABORATORY REPRESENTATIVE: Rick Slagle DATE 5/13/93
RICK SLAGLE 6-0736 BEEPER 564-2416

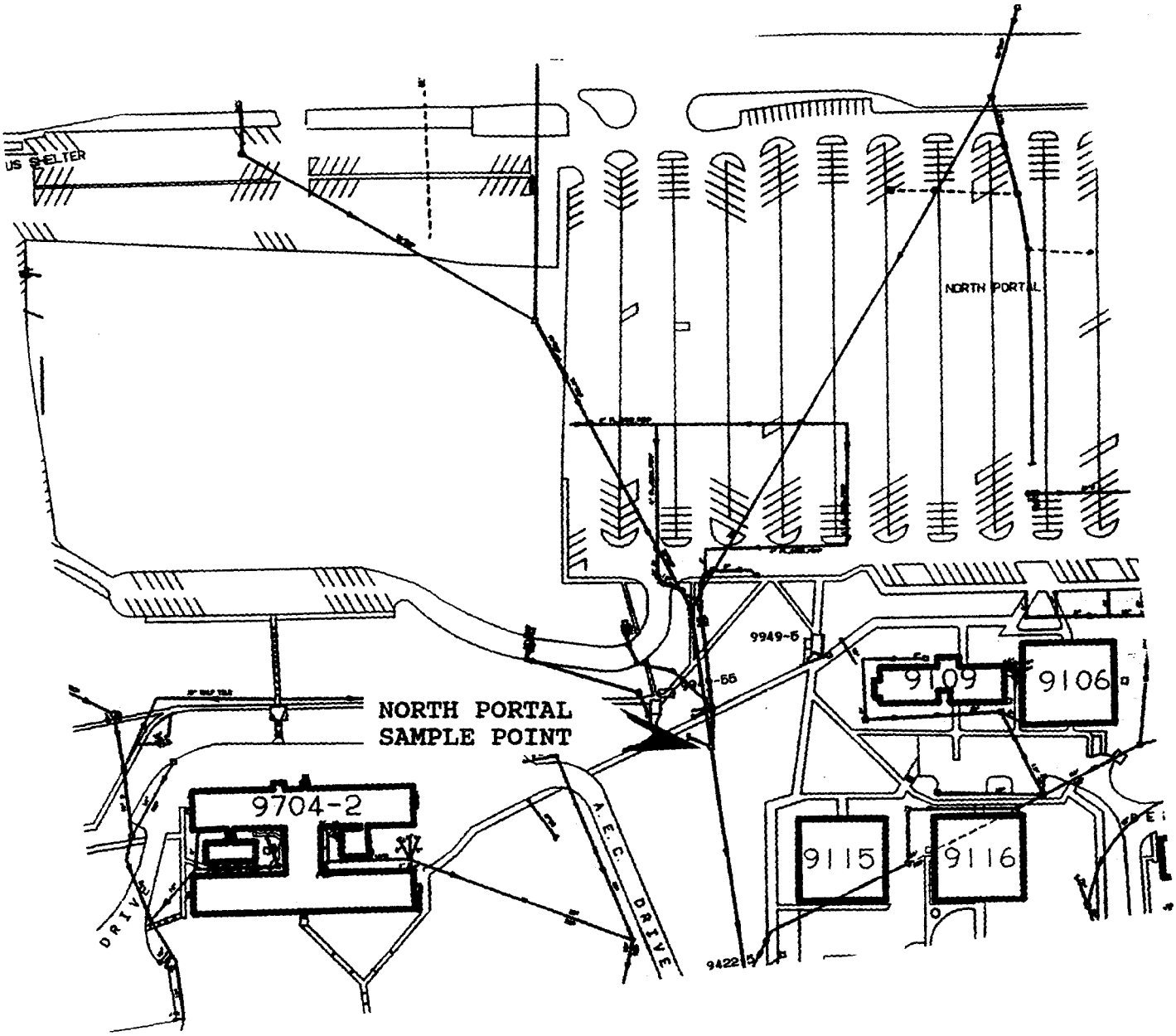
CUSTOMER REPRESENTATIVE: Lori Muhs DATE 5/13/93
LORI MUHS

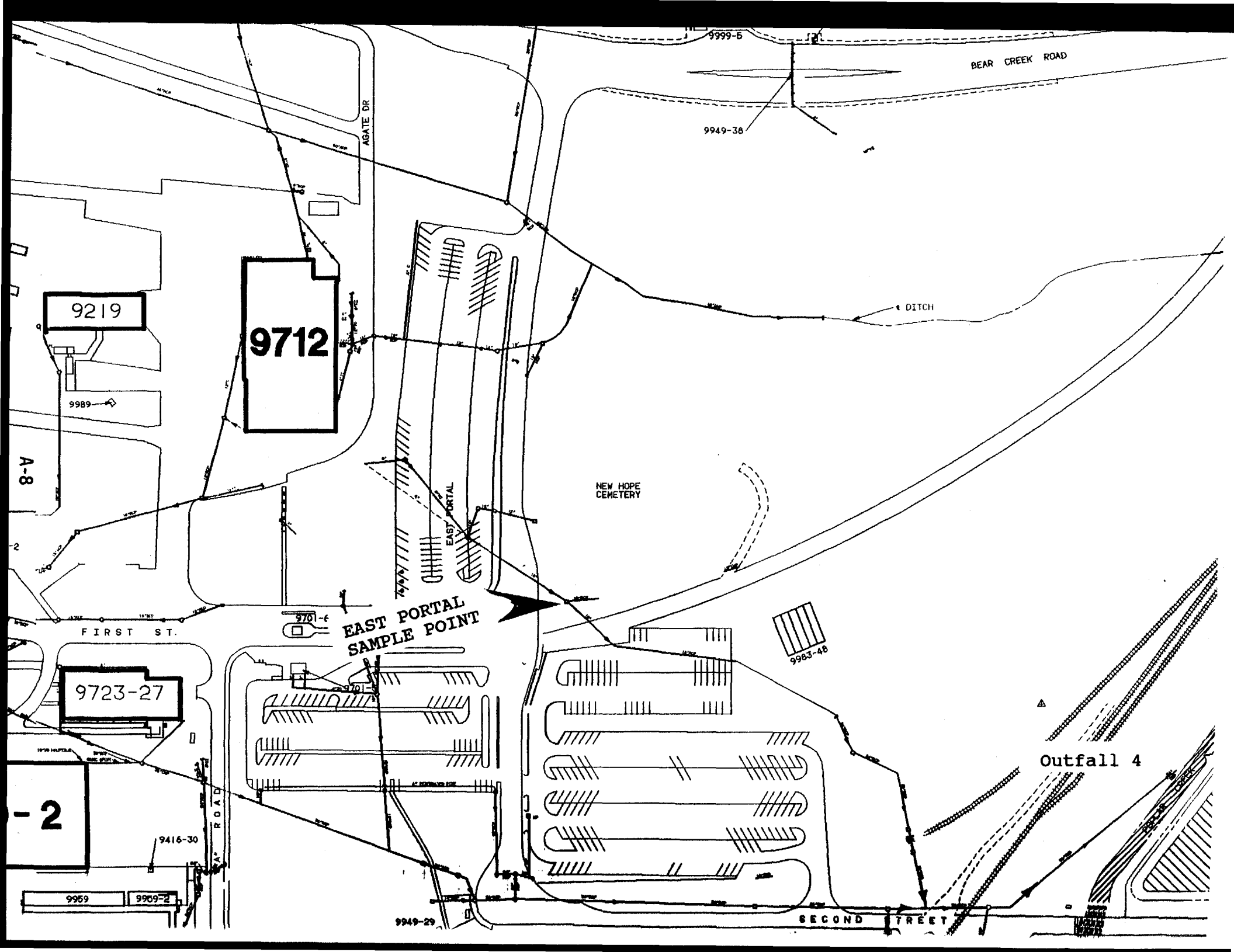
SAMPLING REPRESENTATIVE: Sam Easterling DATE 5/13/93
SAM EASTERLING

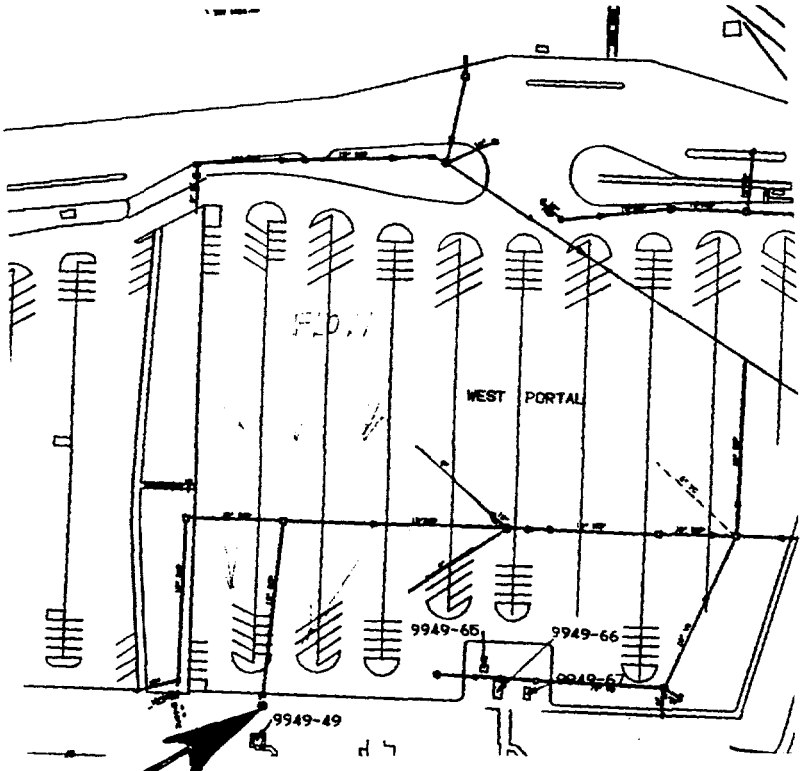
WORK AGREEMENT
ANALYTICAL LABORATORY DEPARTMENT

GENERAL INFORMATION

PROJECT: Parking Lot Sampling Program	**WORK AGREEMENT NUMBER:** Y03239301
PROJECT DESCRIPTION: The objective of the parking lot runoff sampling program is to collect, evaluate and characterize storm water runoff from various parking lot areas in the Plant. This program is being conducted in support of the Feasibility Study for the Best Management Practices to Control Area Source Pollution Derived from the Parking Lots at the DOE Y-12 Plant report which was issued in September 1992. In establishing appropriate Best Management Practices (BMPs) for parking lots, this feasibility study was somewhat limited by the use of analytical storm water data that was obtained at the point where the outfall pipe discharged into East Fork Poplar Creek (EFPC). The complex storm drainage network at the Plant is such that multiple point and nonpoint sources of discharge co-mingle and eventually discharge through common outfalls. The three parking lots that were evaluated in the feasibility study drain at or close to the origination of the storm drain system that conveyed not only this runoff, but co-mingled with other discharges before being sampled. For this reason, this sampling program was established in order to identify more precisely any contaminations of concern from parking lot runoff and, based on these results, to promote the applicable BMPs suggested in the feasibility study.	
REQUESTING ORGANIZATION: Environmental Management Department	**TECHNICAL CONTACT:** Lori Muhs 4-9550
CHARGE NUMBER: S2242H07	**APPLICABLE REGULATION:** NPDES
PROJECT SCHEDULE: Sampling may begin 5/1/93 and continue indefinitely.	**SAMPLE RECEIPT RATE:**Three sites may be sampled (1 in duplicate) each time rainfall is between 0.31" and 0.93" and has a duration of 4.6 to 13.8 hours. A grab and a composite sample will be taken from each site.
DATA REPORTING SCHEDULE: 14 days from sample receipt	**SAMPLES TRANSFER TO OFFSITE LABS:** Yes, if needed.


US SHELTER
NORTH PORTAL
9949-5
9109
9106
NORTH PORTAL
SAMPLE POINT
9704-2
A.E.C. DRIVE
9115
9116
9422-5


9999-5
BEAR CREEK ROAD
9949-38
AGATE DR
9219
9712
9989
DITCH
A-8
NEW HOPE CEMETERY
EAST PORTAL
EAST PORTAL SAMPLE POINT
9701-6
9701
FIRST ST.
9723-27
9983-48
Outfall 4
9416-30
9959
9959-2
9949-29
SECOND STREET



WEST PORTAL
SAMPLE POINT

APPENDIX B

PARKING LOT DETAILED DATA

Note: The "Z" following the results for some metals indicates that the metal is not listed in the TDEC approved version of EPA method 200.7 for ICP; however, the results are considered valid.

CORRECTION REPORT

10/05/93 10:43:05 Y-12 ANALYTICAL SERVICES ORGANIZATION

SUBMITTER	ADDRESS	CUSTOMER ID	REQ NO	SAMPLE NO	MTC	STATUS
Muhs, Lori A.	Bldg 9116, MS 8098	A1I036	A1H036	E932580051	8601	APPROVED

DATE SAMPLED: 09/15/93 10:15:00 DATE NEEDED: 09/29/93 LOCATION: STORM WATER GRAB P2 CHARGE #: S2211001
DATE RECEIVED: 09/15/93 DATE COMPLETED: 10/05/93 PROJECT CODE: NPDES CASE: SB1103
SAMPLER: 28962/13718 SAMPLE DESCRIPTION: GRABS FINAL APPROVAL:

COMMENTS: PARKING LOT RUN-OFF FOR NORTH PORTAL. STORM WATER GRABS R. E. Slagle

TEST: AA_HG Mercury (Hg) by Cold Vapor AA in Water REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 245.1 PHASE: TIME ANALYZED: 09/16/93 08:45:00 APPROVER: E02668

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7439976	Mercury		<0.0002		mg/L

TEST: BOD Biochemical Oxygen Demand (5 DAY) EPA 405.1 REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 405.1 PHASE: TIME ANALYZED: 09/16/93 13:45:00 APPROVER: E03255

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	BioChemical Oxygen Demand		5.0		mg/L

TEST: COD Chemical Oxygen Demand (Titrimetric) EPA 410.2 REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: PHASE: TIME ANALYZED: 09/21/93 15:25:00 APPROVER: E03255

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Chemical Oxygen Demand		28		mg/L

TEST: CONDUC Specific Conductance (umhos/cm) EPA 120.1 REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 120.1 PHASE: TIME ANALYZED: 10/04/93 17:05:00 APPROVER: E03255

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Specific Conductance		70.1		u mhos

TEST: FCOLI Coliform, Fecal REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: MMES-EC 119 PHASE: TIME ANALYZED: 09/15/93 12:50:00 APPROVER: E02581
COMMENTS: CONFLUENT GROWTH AT DILUTION OF 10ML. COLONIES TOO NUMEROUS TO COUNT AT THIS DILUTION.

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Coliform Bacteria		3,500		C/100mL

TEST: ICPEPA ICP Metals by EPA 200.7 REPLICATE: 1 STATUS: APPROVED
PREP MTH: 200.7 PROC MTH: 200.7 PHASE: ALL TIME ANALYZED: 09/19/93 16:07:00 APPROVER: E018492
COMMENTS: TOTAL RECOVERABLE METALS

CORRECTION REPORT

SAMPLE E932580051 Y-12 ANALYTICAL SERVICES ORGANIZATION

'Z' INDICATES ELEMENTS THAT ARE NOT EPA APPROVED FOR METHOD 200.7
THESE 'Z' ELEMENTS MAY NOT MEET THE Q.C. REQUIREMENTS OF THE METHOD.

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7440224	Silver	UDL	<0.006		mg/L
7429905	Aluminum		0.15		mg/L
7440382	Arsenic	UDL	<0.04		mg/L
7440428	Boron		0.008		mg/L
7440393	Barium		0.0143		mg/L
7440417	Beryllium	UDL	<0.0004		mg/L
7440702	Calcium		11.3		mg/L
7440439	Cadmium	UDL	<0.004		mg/L
7440451	Cerium	UDL	<0.02 Z		mg/L
7440484	Cobalt	UDL	<0.002		mg/L
7440473	Chromium	UDL	<0.006		mg/L
7440508	Copper	UDL	<0.006		mg/L
7439896	Iron		0.69		mg/L
7440553	Gallium	UDL	<0.02 Z		mg/L
7440097	Potassium		1.7		mg/L
7439932	Lithium	UDL	<0.02 Z		mg/L
7439954	Magnesium		1.03		mg/L
7439965	Manganese		0.159		mg/L
7439987	Molybdenum	UDL	<0.006		mg/L
7440235	Sodium		1.22		mg/L
7440031	Niobium	UDL	<0.01 Z		mg/L
7440020	Nickel	UDL	<0.008		mg/L
7723140	Phosphorus		0.10 Z		mg/L
7439921	Lead	UDL	<0.02		mg/L
7782492	Selenium	UDL	<0.1		mg/L
7440246	Strontium		0.024 Z		mg/L
7440291	Thorium	UDL	<0.01 Z		mg/L
7440326	Titanium	UDL	<0.02 Z		mg/L
7440280	Thallium	UDL	<0.03		mg/L
7440622	Vanadium	UDL	<0.004		mg/L
7440666	Zinc		0.02		mg/L
7440677	Zirconium	UDL	<0.004 Z		mg/L

TEST: MS_U Total U and %U235 by Mass Spec REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: Y/P65-7165 PHASE: TIME ANALYZED: 09/30/93 15:56:06 APPROVER: E030382
COMMENTS: INSUFFICIENT U TO DETERMINE %U-235

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7440611	Uranium		<.001		mg/L
15117961	Uranium-235		NA		Weight %

CORRECTION REPORT

SAMPLE E932580051 Y-12 ANALYTICAL SERVICES ORGANIZATION

TEST: OIL_GR Total Oil and Grease by EPA 413.1 REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 413.1 PHASE: TIME ANALYZED: 09/27/93 09:00:00 APPROVER: E032557

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Oil and Grease		<2.0		mg/L

TEST: TSS Total Suspended Solids, (Non-Filterable) EPA 160.2 REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 160.2 PHASE: TIME ANALYZED: 09/17/93 10:50:00 APPROVER: E032557

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Total Suspended Solids		10		mg/L

OFFICIAL REPORT

10/01/93 14:08:10 Y-12 ANALYTICAL SERVICES ORGANIZATION

SUBMITTER	ADDRESS	CUSTOMER ID	REQ NO	SAMPLE NO	MTC	STATUS
Muhs, Lori A.	Bldg 9116, MS 8098	A11035	A11035	E932580050	8601	APPROVED

DATE SAMPLED: 09/15/93 08:30:00 DATE NEEDED: 09/29/93 LOCATION: STORM WATER GRAB #1 CHARGE #: S2211001

DATE RECEIVED: 09/15/93 DATE COMPLETED: 09/30/93 PROJECT CODE: NPDES CASE: SB1103

SAMPLER: 28962 SAMPLE DESCRIPTION: GRABS FINAL APPROVAL: R.E. Slagle

COMMENTS: PARKING LOT RUN-OFF FOR EAST PORTAL. STORM WATER GRABS

TEST: AA_HG Mercury (Hg) by Cold Vapor AA in Water REPLICATE: 1 STATUS: APPROVED

PREP MTH: PROC MTH: EPA 245.1 PHASE: TIME ANALYZED: 09/16/93 08:45:00 APPROVER: E026688

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7439976	Mercury		<0.0002		mg/L

TEST: BOD Biochemical Oxygen Demand (5 DAY) EPA 405.1 REPLICATE: 1 STATUS: APPROVED

PREP MTH: PROC MTH: EPA 405.1 PHASE: TIME ANALYZED: 09/16/93 13:15:00 APPROVER: E032557

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	BioChemical Oxygen Demand		<5.0		mg/L

TEST: COD Chemical Oxygen Demand (Titrimetric) EPA 410.2 REPLICATE: 1 STATUS: APPROVED

PREP MTH: PROC MTH: PHASE: TIME ANALYZED: 09/22/93 15:15:00 APPROVER: E032557

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Chemical Oxygen Demand		30		mg/L

TEST: CONDUC Specific Conductance (umhos/cm) EPA 120.1 REPLICATE: 1 STATUS: APPROVED

PREP MTH: PROC MTH: EPA 120.1 PHASE: TIME ANALYZED: 09/16/93 07:54:00 APPROVER: E032557

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Specific Conductance		64.3		u mhos

TEST: FCOLI Coliform, Fecal REPLICATE: 1 STATUS: APPROVED

PREP MTH: PROC MTH: MMES-EC 119 PHASE: TIME ANALYZED: 09/15/93 12:50:00 APPROVER: E025815

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Coliform Bacteria		550		C/100mL

TEST: ICPEPA ICP Metals by EPA 200.7 REPLICATE: 1 STATUS: APPROVED

PREP MTH: 200.7 PROC MTH: 200.7 PHASE: ALL TIME ANALYZED: 09/19/93 16:27:00 APPROVER: E018492

COMMENTS: TOTAL RECOVERABLE METALS
'Z' INDICATES ELEMENTS THAT ARE NOT EPA APPROVED FOR METHOD 200.7
THESE 'Z' ELEMENTS MAY NOT MEET THE Q.C. REQUIREMENTS OF THE METHOD.

OFFICIAL REPORT

SAMPLE E932580050 Y-12 ANALYTICAL SERVICES ORGANIZATION

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7440224	Silver	UDL	<0.006		mg/L
7429905	Aluminum		0.16		mg/L
7440382	Arsenic	UDL	<0.04		mg/L
7440428	Boron		0.015		mg/L
7440393	Barium		0.0235		mg/L
7440417	Beryllium	UDL	<0.0004		mg/L
7440702	Calcium		12.6		mg/L
7440439	Cadmium	UDL	<0.004		mg/L
7440451	Cerium	UDL	<0.02 Z		mg/L
7440484	Cobalt	UDL	<0.002		mg/L
7440473	Chromium	UDL	<0.006		mg/L
7440508	Copper		0.007		mg/L
7439896	Iron		0.24		mg/L
7440553	Gallium	UDL	<0.02 Z		mg/L
7440097	Potassium		0.7		mg/L
7439932	Lithium	UDL	<0.02 Z		mg/L
7439954	Magnesium		1.76		mg/L
7439965	Manganese		0.013		mg/L
7439987	Molybdenum	UDL	<0.006		mg/L
7440235	Sodium		0.45		mg/L
7440031	Niobium	UDL	<0.01 Z		mg/L
7440020	Nickel	UDL	<0.008		mg/L
7723140	Phosphorus		0.05 Z		mg/L
7439921	Lead	UDL	<0.02		mg/L
7782492	Selenium	UDL	<0.1		mg/L
7440246	Strontium		0.021 Z		mg/L
7440291	Thorium	UDL	<0.01 Z		mg/L
7440326	Titanium	UDL	<0.02 Z		mg/L
7440280	Thallium	UDL	<0.03		mg/L
7440622	Vanadium	UDL	<0.004		mg/L
7440666	Zinc		0.17		mg/L
7440677	Zirconium	UDL	<0.004 Z		mg/L

TEST: MS_U Total U and %U235 by Mass Spec REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: Y/P65-7165 PHASE: TIME ANALYZED: 09/30/93 15:55:55 APPROVER: E030382
COMMENTS: INSUFFICIENT U TO DETERMINE %U-235

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7440611	Uranium		<.001		mg/L
15117961	Uranium-235		NA		Weight %

TEST: OIL_GR Total Oil and Grease by EPA 413.1 REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 413.1 PHASE: TIME ANALYZED: 09/24/93 07:00:00 APPROVER: E032557

OFFICIAL REPORT

SAMPLE E932580050 Y-12 ANALYTICAL SERVICES ORGANIZATION

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Oil and Grease		<2.0		mg/L

TEST: TSS Total Suspended Solids, (Non-Filterable) EPA 160.2 REPLICATE: 1 STATUS: APPROVED

PREP MTH: PROC MTH: EPA 160.2 PHASE: TIME ANALYZED: 09/17/93 10:20:00 APPROVER: E032557

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Total Suspended Solids		7.0		mg/L

OFFICIAL REPORT

10/01/93 14:08:48 Y-12 ANALYTICAL SERVICES ORGANIZATION

SUBMITTER	ADDRESS	CUSTOMER ID	REQ NO	SAMPLE NO	MTC	STATUS
Muhs, Lori A.	Bldg 9116, MS 8098	A11037	A1H037	E932580052	8601	APPROVED

DATE SAMPLED: 09/15/93 08:45:00 DATE NEEDED: 09/29/93 LOCATION: STARM WATER GRAB P3 CHARGE #: S2211001
DATE RECEIVED: 09/15/93 DATE COMPLETED: 09/30/93 PROJECT CODE: NPDES CASE: SB1103
SAMPLER: 13718/28962 SAMPLE DESCRIPTION: GRABS FINAL APPROVAL:

COMMENTS: PARKING LOT RUN-OFF FOR WEST PORTAL. STORM WATER GRABS

R. E. Slagle

TEST: AA_HG Mercury (Hg) by Cold Vapor AA in Water REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 245.1 PHASE: TIME ANALYZED: 09/16/93 08:45:00 APPROVER: E026688

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7439976	Mercury		<0.0002		mg/L

TEST: BOD Biochemical Oxygen Demand (5 DAY) EPA 405.1 REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 405.1 PHASE: TIME ANALYZED: 09/16/93 13:30:00 APPROVER: E032557

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	BioChemical Oxygen Demand		<5.0		mg/L

TEST: COD Chemical Oxygen Demand (Titrimetric) EPA 410.2 REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: PHASE: TIME ANALYZED: 09/21/93 15:20:00 APPROVER: E032557

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Chemical Oxygen Demand		7.8		mg/L

TEST: CONDUC Specific Conductance (umhos/cm) EPA 120.1 REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 120.1 PHASE: TIME ANALYZED: 09/16/93 07:56:00 APPROVER: E032557

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Specific Conductance		310		u mhos

TEST: FCOLI Coliform, Fecal REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: MMES-EC 119 PHASE: TIME ANALYZED: 09/15/93 12:50:00 APPROVER: E025815
COMMENTS: CONFLUENT GROWTH AT 50ML DILUTION. COLONIES TOO NUMEROUS TO COUNT AT THIS DILUTION.

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Coliform Bacteria		870		C/100mL

TEST: ICPEPA ICP Metals by EPA 200.7 REPLICATE: 1 STATUS: APPROVED
PREP MTH: 200.7 PROC MTH: 200.7 PHASE: ALL TIME ANALYZED: 09/19/93 16:20:00 APPROVER: E018492
COMMENTS: TOTAL RECOVERABLE METALS

OFFICIAL REPORT

SAMPLE E932580052 Y-12 ANALYTICAL SERVICES ORGANIZATION

'Z' INDICATES ELEMENTS THAT ARE NOT EPA APPROVED FOR METHOD 200.7
THESE 'Z' ELEMENTS MAY NOT MEET THE Q.C. REQUIREMENTS OF THE METHOD.

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7440224	Silver	UDL	<0.006		mg/L
7429905	Aluminum		0.10		mg/L
7440382	Arsenic	UDL	<0.04		mg/L
7440428	Boron		0.204		mg/L
7440393	Barium		0.0588		mg/L
7440417	Beryllium	UDL	<0.0004		mg/L
7440702	Calcium		51.0		mg/L
7440439	Cadmium	UDL	<0.004		mg/L
7440451	Cerium	UDL	<0.02 Z		mg/L
7440484	Cobalt	UDL	<0.002		mg/L
7440473	Chromium	UDL	<0.006		mg/L
7440508	Copper	UDL	<0.006		mg/L
7439896	Iron		0.11		mg/L
7440553	Gallium	UDL	<0.02 Z		mg/L
7440097	Potassium		2.1		mg/L
7439932	Lithium	UDL	<0.02 Z		mg/L
7439954	Magnesium		8.16		mg/L
7439965	Manganese		0.004		mg/L
7439987	Molybdenum	UDL	<0.006		mg/L
7440235	Sodium		2.12		mg/L
7440031	Niobium	UDL	<0.01 Z		mg/L
7440020	Nickel	UDL	<0.008		mg/L
7723140	Phosphorus	UDL	<0.05 Z		mg/L
7439921	Lead	UDL	<0.02		mg/L
7782492	Selenium	UDL	<0.1		mg/L
7440246	Strontium		0.095 Z		mg/L
7440291	Thorium	UDL	<0.01 Z		mg/L
7440326	Titanium	UDL	<0.02 Z		mg/L
7440280	Thallium	UDL	<0.03		mg/L
7440622	Vanadium	UDL	<0.004		mg/L
7440666	Zinc		0.04		mg/L
7440677	Zirconium	UDL	<0.004 Z		mg/L

TEST: MS_U Total U and %U235 by Mass Spec REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: Y/P65-7165 PHASE: TIME ANALYZED: 09/30/93 15:56:16 APPROVER: E030382
COMMENTS: INSUFFICIENT U TO DETERMINE %U-235

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7440611	Uranium		<.001		mg/L
15117961	Uranium-235		NA		Weight %

OFFICIAL REPORT

SAMPLE E932580052 Y-12 ANALYTICAL SERVICES ORGANIZATION

TEST: OIL_GR Total Oil and Grease by EPA 413.1 REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 413.1 PHASE: TIME ANALYZED: 09/27/93 09:00:00 APPROVER: E032557

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Oil and Grease		<2.0		mg/L

TEST: TSS Total Suspended Solids, (Non-Filterable) EPA 160.2 REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 160.2 PHASE: TIME ANALYZED: 09/17/93 10:30:00 APPROVER: E032557

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Total Suspended Solids		<5		mg/L

OFFICIAL REPORT

12/28/93 10:25:36 Y-12 ANALYTICAL SERVICES ORGANIZATION

SUBMITTER	ADDRESS	CUSTOMER ID	REQ NO	SAMPLE NO	MTC	STATUS
Muhs, Lori A.	Bldg 9116, MS 8098	A1I033	A1I033	E932580053	8601	APPROVED

DATE SAMPLED: 12/10/93 15:50:00 DATE NEEDED: 12/20/93 LOCATION: STORM WATER COMP. P1 CHARGE #: S2211001

DATE RECEIVED: 12/10/93 DATE COMPLETED: 12/28/93 PROJECT CODE: NPDES CASE: SB1103

SAMPLER: 13718 SAMPLE DESCRIPTION: BATCH COMPOSITE FINAL APPROVAL: 12/28/93

COMMENTS: PARKING LOT RUN-OFF COMPOSITE FOR EAST PORTAL.

TEST: AA_HG Mercury (Hg) by Cold Vapor AA in Water REPLICATE: 1 STATUS: APPROVED

PREP MTH: PROC MTH: EPA 245.1 PHASE: TIME ANALYZED: 12/14/93 14:30:00 APPROVER: E026688

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7439976	Mercury		<0.0002		mg/L

TEST: BOD Biochemical Oxygen Demand (5 DAY) EPA 405.1 REPLICATE: 1 STATUS: APPROVED

PREP MTH: PROC MTH: EPA 405.1 PHASE: TIME ANALYZED: 12/10/93 19:00:00 APPROVER: E034067

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	BioChemical Oxygen Demand		<5.0		mg/L

TEST: COD Chemical Oxygen Demand (EPA 410.x) REPLICATE: 1 STATUS: APPROVED

PREP MTH: PROC MTH: PHASE: TIME ANALYZED: 12/17/93 16:49:00 APPROVER: E034067

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Chemical Oxygen Demand		33		mg/L

TEST: CONDUC Specific Conductance (umhos/cm) EPA 120.1 REPLICATE: 1 STATUS: APPROVED

PREP MTH: PROC MTH: EPA 120.1 PHASE: TIME ANALYZED: 12/10/93 22:21:00 APPROVER: E034067

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Specific Conductance		150		u mhos

TEST: FCOLI Coliform, Fecal REPLICATE: 1 STATUS: APPROVED

PREP MTH: PROC MTH: MMES-EC 119 PHASE: TIME ANALYZED: 12/10/93 18:30:00 APPROVER: E017940

COMMENTS: YELLOW COLONIES PRESENT

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Coliform Bacteria		20		C/100mL

TEST: ICPEPA ICP Metals by EPA 200.7 REPLICATE: 1 STATUS: APPROVED

PREP MTH: EPA 200.7 PROC MTH: EPA 200.7 PHASE: TIME ANALYZED: 12/15/93 12:48:00 APPROVER: E018492

COMMENTS: TOTAL RECOVERABLE METALS

'Z' INDICATES ELEMENTS THAT ARE NOT APPROVED FOR METHOD EPA 200.7

OFFICIAL REPORT

SAMPLE E932580053 Y-12 ANALYTICAL SERVICES ORGANIZATION

THESE 'Z' ELEMENTS MAY NOT MEET THE Q.C. REQUIREMENTS OF THE METHOD.

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7440224	Silver	UDL	<0.006		mg/L
7429905	Aluminum		0.23		mg/L
7440382	Arsenic	UDL	<0.04		mg/L
7440428	Boron		0.023		mg/L
7440393	Barium		0.0270		mg/L
7440417	Beryllium	UDL	<0.0004		mg/L
7440702	Calcium		22.7		mg/L
7440439	Cadmium	UDL	<0.004		mg/L
7440451	Cerium	UDL	<0.02 Z		mg/L
7440484	Cobalt	UDL	<0.002		mg/L
7440473	Chromium	UDL	<0.006		mg/L
7440508	Copper	UDL	<0.006		mg/L
7439896	Iron		0.28		mg/L
7440553	Gallium	UDL	<0.02 Z		mg/L
7440097	Potassium		1.5		mg/L
7439932	Lithium	UDL	<0.02 Z		mg/L
7439954	Magnesium		4.60		mg/L
7439965	Manganese		0.010		mg/L
7439987	Molybdenum	UDL	<0.006		mg/L
7440235	Sodium		1.19		mg/L
7440031	Niobium	UDL	<0.01 Z		mg/L
7440020	Nickel	UDL	<0.008		mg/L
7439921	Lead	UDL	<0.02		mg/L
7782492	Selenium	UDL	<0.1		mg/L
7440246	Strontium		0.058 Z		mg/L
7440291	Thorium	UDL	<0.01 Z		mg/L
7440326	Titanium	UDL	<0.02 Z		mg/L
7440280	Thallium	UDL	<0.03		mg/L
7440622	Vanadium	UDL	<0.004		mg/L
7440666	Zinc		0.07		mg/L
7440677	Zirconium	UDL	<0.004 Z		mg/L

TEST: MS_U Total U and %U235 by Mass Spec REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: Y/P65-7165 PHASE: TIME ANALYZED: 12/14/93 15:15:50 APPROVER: E030382

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7440611	Uranium		0.003		mg/L
15117961	Uranium-235		2.6		Weight %

TEST: TSS Total Suspended Solids, (Non-Filterable) EPA 160.2 REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 160.2 PHASE: TIME ANALYZED: 12/15/93 08:55:00 APPROVER: E034067

OFFICIAL REPORT

SAMPLE E932580053 Y-12 ANALYTICAL SERVICES ORGANIZATION

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Total Suspended Solids		9.0		mg/L

OFFICIAL REPORT

12/28/93 10:25:56 Y-12 ANALYTICAL SERVICES ORGANIZATION

SUBMITTER	ADDRESS	CUSTOMER ID	REQ NO	SAMPLE NO	MTC	STATUS
Muhs, Lori A.	Bldg 9116, MS 8098	A11034	A11034	E932580054	8601	APPROVED

DATE SAMPLED: 12/10/93 15:30:00 DATE NEEDED: 12/20/93 LOCATION: STORM WATER COMP. P3 CHARGE #: S2211001

DATE RECEIVED: 12/10/93 DATE COMPLETED: 12/28/93 PROJECT CODE: NPDES CASE: SB1103

SAMPLER: 28962 SAMPLE DESCRIPTION: BATCH COMPOSITE FINAL APPROVAL:

12/28/93

COMMENTS: PARKING LOT RUN-OFF FOR NORTH PORTAL. STORM WATER COMPOSITE

TEST: AA_HG Mercury (Hg) by Cold Vapor AA in Water REPLICATE: 1 STATUS: APPROVED

PREP MTH: PROC MTH: EPA 245.1 PHASE: TIME ANALYZED: 12/14/93 14:30:00 APPROVER: E02668E

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7439976	Mercury		<0.0002		mg/L

TEST: BOD Biochemical Oxygen Demand (5 DAY) EPA 405.1 REPLICATE: 1 STATUS: APPROVED

PREP MTH: PROC MTH: EPA 405.1 PHASE: TIME ANALYZED: 12/10/93 19:00:00 APPROVER: E034067

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	BioChemical Oxygen Demand		6.8		mg/L

TEST: COD Chemical Oxygen Demand (EPA 410.x) REPLICATE: 1 STATUS: APPROVED

PREP MTH: PROC MTH: PHASE: TIME ANALYZED: 12/17/93 16:46:00 APPROVER: E034067

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Chemical Oxygen Demand		<20		mg/L

TEST: CONDUC Specific Conductance (umhos/cm) EPA 120.1 REPLICATE: 1 STATUS: APPROVED

PREP MTH: PROC MTH: EPA 120.1 PHASE: TIME ANALYZED: 12/10/93 22:15:00 APPROVER: E034067

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Specific Conductance		95		u mhos

TEST: FCOLI Coliform, Fecal REPLICATE: 1 STATUS: APPROVED

PREP MTH: PROC MTH: MMES-EC 119 PHASE: TIME ANALYZED: 12/10/93 18:30:00 APPROVER: E017940

COMMENTS: YELLOW COLONIES PRESENT

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Coliform Bacteria		180		C/100mL

TEST: ICPEPA ICP Metals by EPA 200.7 REPLICATE: 1 STATUS: APPROVED

PREP MTH: EPA 200.7 PROC MTH: EPA 200.7 PHASE: TIME ANALYZED: 12/15/93 12:34:00 APPROVER: E018492

COMMENTS: TOTAL RECOVERABLE METALS

'Z' INDICATES ELEMENTS THAT ARE NOT APPROVED FOR METHOD EPA 200.7

OFFICIAL REPORT

SAMPLE E932580054 Y-12 ANALYTICAL SERVICES ORGANIZATION

THESE 'Z' ELEMENTS MAY NOT MEET THE Q.C. REQUIREMENTS OF THE METHOD.

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7440224	Silver	UDL	<0.006		mg/L
7429905	Aluminum		0.61		mg/L
7440382	Arsenic	UDL	<0.04		mg/L
7440428	Boron		0.013		mg/L
7440393	Barium		0.0387		mg/L
7440417	Beryllium	UDL	<0.0004		mg/L
7440702	Calcium		19.1		mg/L
7440439	Cadmium	UDL	<0.004		mg/L
7440451	Cerium	UDL	<0.02 Z		mg/L
7440484	Cobalt	UDL	<0.002		mg/L
7440473	Chromium	UDL	<0.006		mg/L
7440508	Copper	UDL	<0.006		mg/L
7439896	Iron		1.24		mg/L
7440553	Gallium	UDL	<0.02 Z		mg/L
7440097	Potassium	UDL	<0.6		mg/L
7439932	Lithium	UDL	<0.02 Z		mg/L
7439954	Magnesium		3.01		mg/L
7439965	Manganese		0.027		mg/L
7439987	Molybdenum	UDL	<0.006		mg/L
7440235	Sodium		1.39		mg/L
7440031	Niobium	UDL	<0.01 Z		mg/L
7440020	Nickel	UDL	<0.008		mg/L
7439921	Lead	UDL	<0.02		mg/L
7782492	Selenium	UDL	<0.1		mg/L
7440246	Strontium		0.030 Z		mg/L
7440291	Thorium	UDL	<0.01 Z		mg/L
7440326	Titanium	UDL	<0.02 Z		mg/L
7440280	Thallium	UDL	<0.03		mg/L
7440622	Vanadium	UDL	<0.004		mg/L
7440666	Zinc		0.18		mg/L
7440677	Zirconium	UDL	<0.004 Z		mg/L

TEST: MS_U Total U and %U235 by Mass Spec REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: Y/P65-7165 PHASE: TIME ANALYZED: 12/14/93 15:15:51 APPROVER: E030382

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7440611	Uranium		0.004		mg/L
15117961	Uranium-235		0.62		Weight %

TEST: TSS Total Suspended Solids, (Non-Filterable) EPA 160.2 REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 160.2 PHASE: TIME ANALYZED: 12/15/93 08:50:00 APPROVER: E034067

OFFICIAL REPORT

SAMPLE E932580054 Y-12 ANALYTICAL SERVICES ORGANIZATION

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Total Suspended Solids		20		mg/L

OFFICIAL REPORT

09/30/94 07:33:17 Y-12 ANALYTICAL SERVICES ORGANIZATION

SUBMITTER	ADDRESS	CUSTOMER ID	REQ NO	SAMPLE NO	MTC	STATUS
Collins, Eugene Thom	Building 9116 ms:8098	199409170006		E942600004	8601	APPROVED

DATE SAMPLED: 09/17/94 18:00:00 DATE NEEDED: 10/17/94 LOCATION: P-3 CHARGE #: S2222910
DATE RECEIVED: 09/19/94 DATE COMPLETED: 09/28/94 PROJECT CODE: NPDES CASE: SB0110
SAMPLER: 13718 SAMPLE DESCRIPTION: COMPOSITE FINAL APPROVAL:

COMMENTS: P-3 PINE RIDGE PARKING LOT RUN-OFF COMPOSITES.

TEST: AA_HG Mercury (Hg) by Cold Vapor AA in Water REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 245.1 PHASE: TIME ANALYZED: 09/23/94 07:45:00 APPROVER: E026688

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7439976	Mercury		<0.0002		mg/L

TEST: BOD Biochemical Oxygen Demand (5 DAY) EPA 405.1 REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 405.1 PHASE: TIME ANALYZED: 09/18/94 13:30:00 APPROVER: E034067

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	BioChemical Oxygen Demand		<5.0		mg/L

TEST: COD Chemical Oxygen Demand (EPA 410.x) REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 410.4 PHASE: TIME ANALYZED: 09/23/94 09:15:00 APPROVER: E032996

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Chemical Oxygen Demand		<20		mg/L

TEST: ICPEPA ICP Metals by EPA 200.7 REPLICATE: 1 STATUS: APPROVED
PREP MTH: EPA 200.7 PROC MTH: EPA 200.7 PHASE: TIME ANALYZED: 09/26/94 13:59:00 APPROVER: E018492
COMMENTS: TOTAL RECOVERABLE METALS
'Z' INDICATES ELEMENTS THAT ARE NOT APPROVED FOR METHOD EPA 200.7
THESE 'Z' ELEMENTS MAY NOT MEET THE Q.C. REQUIREMENTS OF THE METHOD.

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7440224	Silver	UDL	<0.006		mg/L
7429905	Aluminum		0.37		mg/L
7440382	Arsenic	UDL	<0.04		mg/L
7440428	Boron		0.031		mg/L
7440393	Barium		0.0176		mg/L
7440417	Beryllium	UDL	<0.0004		mg/L
7440702	Calcium		16.2		mg/L
7440439	Cadmium	UDL	<0.004		mg/L
7440451	Cerium	UDL	<0.02 Z		mg/L
7440484	Cobalt	UDL	<0.002		mg/L

OFFICIAL REPORT

SAMPLE E942600004 Y-12 ANALYTICAL SERVICES ORGANIZATION

7440473	Chromium	UDL	<0.006	mg/L
7440508	Copper		0.006	mg/L
7439896	Iron		0.40	mg/L
7440553	Gallium	UDL	<0.02 Z	mg/L
7440097	Potassium		2.1	mg/L
7439932	Lithium	UDL	<0.02 Z	mg/L
7439954	Magnesium		2.32	mg/L
7439965	Manganese		0.016	mg/L
7439987	Molybdenum	UDL	<0.006	mg/L
7440235	Sodium		0.80	mg/L
7440020	Nickel	UDL	<0.008	mg/L
7439921	Lead	UDL	<0.02	mg/L
7782492	Selenium	UDL	<0.1	mg/L
7440246	Strontium		0.042 Z	mg/L
7440291	Thorium	UDL	<0.01 Z	mg/L
7440326	Titanium		0.01 Z	mg/L
7440280	Thallium	UDL	<0.03	mg/L
7440622	Vanadium	UDL	<0.004	mg/L
7440666	Zinc		0.10	mg/L
7440677	Zirconium	UDL	<0.004 Z	mg/L

TEST: MS_U Total U and %U235 by Mass Spec REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: Y/P65-7165 PHASE: TIME ANALYZED: 09/22/94 15:44:54 APPROVER: E034508

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7440611	Uranium		<0.001		mg/L
15117961	Uranium-235		NA		Weight %

TEST: TSS Total Suspended Solids, (Non-Filterable) EPA 160.2 REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 160.2 PHASE: TIME ANALYZED: 09/21/94 09:50:00 APPROVER: E032996

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Total Suspended Solids		10		mg/L

OFFICIAL REPORT

10/05/94 07:34:49 Y-12 ANALYTICAL SERVICES ORGANIZATION

SUBMITTER	ADDRESS	CUSTOMER ID	REQ NO	SAMPLE NO	MTC	STATUS
Collins, Eugene Thom	Building 9116 ms:8098	199409170003		E942600002	8601	APPROVED

DATE SAMPLED: 09/17/94 09:10:00 DATE NEEDED: 10/17/94 LOCATION: P-3 CHARGE #: S2222910
DATE RECEIVED: 09/19/94 DATE COMPLETED: 09/30/94 PROJECT CODE: NPDES CASE: SB0110
SAMPLER: 13718 SAMPLE DESCRIPTION: GRAB FINAL APPROVAL:

COMMENTS: P-3 PINE RIDGE PORTAL PARKING LOT GRAB

TEST: AA_HG Mercury (Hg) by Cold Vapor AA in Water REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 245.1 PHASE: TIME ANALYZED: 09/23/94 07:45:00 APPROVER: E026688

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7439976	Mercury		<0.0002		mg/L

TEST: BOD Biochemical Oxygen Demand (5 DAY) EPA 405.1 REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 405.1 PHASE: TIME ANALYZED: 09/18/94 13:30:00 APPROVER: E034067

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	BioChemical Oxygen Demand		5.2		mg/L

TEST: COD Chemical Oxygen Demand (EPA 410.x) REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 410.4 PHASE: TIME ANALYZED: 09/23/94 09:09:00 APPROVER: E032996

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Chemical Oxygen Demand		33		mg/L

TEST: ICPEPA ICP Metals by EPA 200.7 REPLICATE: 1 STATUS: APPROVED
PREP MTH: EPA 200.7 PROC MTH: EPA 200.7 PHASE: TIME ANALYZED: 09/26/94 13:37:00 APPROVER: E018492
COMMENTS: TOTAL RECOVERABLE METALS
'Z' INDICATES ELEMENTS THAT ARE NOT APPROVED FOR METHOD EPA 200.7
THESE 'Z' ELEMENTS MAY NOT MEET THE Q.C. REQUIREMENTS OF THE METHOD.

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7440224	Silver	UDL	<0.006		mg/L
7429905	Aluminum		0.21		mg/L
7440382	Arsenic	UDL	<0.04		mg/L
7440428	Boron		0.018		mg/L
7440393	Barium		0.0082		mg/L
7440417	Beryllium	UDL	<0.0004		mg/L
7440702	Calcium		14.9		mg/L
7440439	Cadmium	UDL	<0.004		mg/L
7440451	Cerium	UDL	<0.02 Z		mg/L
7440484	Cobalt	UDL	<0.002		mg/L

OFFICIAL REPORT

SAMPLE E942600002 Y-12 ANALYTICAL SERVICES ORGANIZATION

7440473	Chromium	UDL	<0.006	mg/L
7440508	Copper		0.018	mg/L
7439896	Iron		0.21	mg/L
7440553	Gallium	UDL	<0.02 Z	mg/L
7440097	Potassium		5.0	mg/L
7439932	Lithium	UDL	<0.02 Z	mg/L
7439954	Magnesium		0.91	mg/L
7439965	Manganese		0.010	mg/L
7439987	Molybdenum	UDL	<0.006	mg/L
7440235	Sodium		1.43	mg/L
7440020	Nickel	UDL	<0.008	mg/L
7439921	Lead	UDL	<0.02	mg/L
7782492	Selenium	UDL	<0.1	mg/L
7440246	Strontium		0.050 Z	mg/L
7440291	Thorium	UDL	<0.01 Z	mg/L
7440326	Titanium	UDL	<0.02 Z	mg/L
7440280	Thallium	UDL	<0.03	mg/L
7440622	Vanadium	UDL	<0.004	mg/L
7440666	Zinc		0.06	mg/L
7440677	Zirconium	UDL	<0.004 Z	mg/L

TEST: MS_U Total U and %U235 by Mass Spec REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: Y/P65-7165 PHASE: TIME ANALYZED: 09/22/94 15:44:33 APPROVER: E034508

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7440611	Uranium		<0.001		mg/L
15117961	Uranium-235		NA		Weight %

TEST: OIL_GR Total Oil and Grease by EPA 413.1 REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 413.1 PHASE: TIME ANALYZED: 09/28/94 23:00:00 APPROVER: E032996

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Oil and Grease		<2.0		mg/L

TEST: TSS Total Suspended Solids, (Non-Filterable) EPA 160.2 REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 160.2 PHASE: TIME ANALYZED: 09/21/94 09:40:00 APPROVER: E032996

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Total Suspended Solids		18		mg/L

OFFICIAL REPORT

09/30/94 07:32:52 Y-12 ANALYTICAL SERVICES ORGANIZATION

SUBMITTER	ADDRESS	CUSTOMER ID	REQ NO	SAMPLE NO	MTC	STATUS
Collins, Eugene Thom	Building 9116 ms:8098	199409170005		E942600003	8601	APPROVED

DATE SAMPLED: 09/17/94 18:00:00 DATE NEEDED: 10/30/94 LOCATION: P-1 CHARGE #: S2222910
DATE RECEIVED: 09/19/94 DATE COMPLETED: 09/28/94 PROJECT CODE: NPDES CASE: SB1103
SAMPLER: 13718 SAMPLE DESCRIPTION: COMPOSITE FINAL APPROVAL:

COMMENTS: P-1 GARAGE PARKING LOT RUN-OFF COMPOSITES. East Fork

TEST: AA_HG Mercury (Hg) by Cold Vapor AA in Water REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 245.1 PHASE: TIME ANALYZED: 09/23/94 07:45:00 APPROVER: E026688

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7439976	Mercury		<0.0002		mg/L

TEST: BOD Biochemical Oxygen Demand (5 DAY) EPA 405.1 REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 405.1 PHASE: TIME ANALYZED: 09/18/94 13:30:00 APPROVER: E034067

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	BioChemical Oxygen Demand		5.7		mg/L

TEST: COD Chemical Oxygen Demand (EPA 410.x) REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 410.4 PHASE: TIME ANALYZED: 09/23/94 09:12:00 APPROVER: E032996

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Chemical Oxygen Demand		26		mg/L

TEST: ICPEPA ICP Metals by EPA 200.7 REPLICATE: 1 STATUS: APPROVED
PREP MTH: EPA 200.7 PROC MTH: EPA 200.7 PHASE: TIME ANALYZED: 09/26/94 13:52:00 APPROVER: E018492
COMMENTS: TOTAL RECOVERABLE METALS
'Z' INDICATES ELEMENTS THAT ARE NOT APPROVED FOR METHOD EPA 200.7
THESE 'Z' ELEMENTS MAY NOT MEET THE Q.C. REQUIREMENTS OF THE METHOD.

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7440224	Silver	UDL	<0.006		mg/L
7429905	Aluminum		1.01		mg/L
7440382	Arsenic	UDL	<0.04		mg/L
7440428	Boron		0.021		mg/L
7440393	Barium		0.0482		mg/L
7440417	Beryllium	UDL	<0.0004		mg/L
7440702	Calcium		15.1		mg/L
7440439	Cadmium	UDL	<0.004		mg/L
7440451	Cerium	UDL	<0.02 Z		mg/L
7440484	Cobalt	UDL	<0.002		mg/L

OFFICIAL REPORT

SAMPLE E942600003 Y-12 ANALYTICAL SERVICES ORGANIZATION

7440473	Chromium	UDL	<0.006	mg/L
7440508	Copper		0.010	mg/L
7439896	Iron		1.18	mg/L
7440553	Gallium	UDL	<0.02 Z	mg/L
7440097	Potassium		0.6	mg/L
7439932	Lithium	UDL	<0.02 Z	mg/L
7439954	Magnesium		2.87	mg/L
7439965	Manganese		0.029	mg/L
7439987	Molybdenum	UDL	<0.006	mg/L
7440235	Sodium		0.41	mg/L
7440020	Nickel	UDL	<0.008	mg/L
7439921	Lead	UDL	<0.02	mg/L
7782492	Selenium	UDL	<0.1	mg/L
7440246	Strontium		0.030 Z	mg/L
7440291	Thorium	UDL	<0.01 Z	mg/L
7440326	Titanium		0.04 Z	mg/L
7440280	Thallium	UDL	<0.03	mg/L
7440622	Vanadium		0.005	mg/L
7440666	Zinc		0.22	mg/L
7440677	Zirconium	UDL	<0.004 Z	mg/L

TEST: MS_U Total U and %U235 by Mass Spec REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: Y/P65-7165 PHASE: TIME ANALYZED: 09/22/94 15:44:43 APPROVER: E034508

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7440611	Uranium		0.002		mg/L
15117961	Uranium-235		0.63		Weight %

TEST: TSS Total Suspended Solids, (Non-Filterable) EPA 160.2 REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 160.2 PHASE: TIME ANALYZED: 09/21/94 09:45:00 APPROVER: E032996

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Total Suspended Solids		81		mg/L

OFFICIAL REPORT

10/05/94 07:34:19 Y-12 ANALYTICAL SERVICES ORGANIZATION

SUBMITTER	ADDRESS	CUSTOMER ID	REQ NO	SAMPLE NO	MTC	STATUS
Collins, Eugene Thom	Building 9116 ms:8098	199409170001		E942600000	8601	APPROVED

DATE SAMPLED: 09/17/94 02:20:00 DATE NEEDED: 10/30/94 LOCATION: P-1 CHARGE #: S2222910
DATE RECEIVED: 09/19/94 DATE COMPLETED: 09/30/94 PROJECT CODE: NPDES CASE: SB1103
SAMPLER: 13718 SAMPLE DESCRIPTION: GRAB FINAL APPROVAL:

COMMENTS: GARAGE PARKING LOT RUN-OFF GRABS.

TEST: AA_HG Mercury (Hg) by Cold Vapor AA in Water REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 245.1 PHASE: TIME ANALYZED: 09/23/94 07:45:00 APPROVER: E026688

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7439976	Mercury		<0.0002		mg/L

TEST: BOD Biochemical Oxygen Demand (5 DAY) EPA 405.1 REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 405.1 PHASE: TIME ANALYZED: 09/18/94 13:30:00 APPROVER: E034067
COMMENTS: Toxicity suspected.
Holding Time was exceeded before the sample was received by the lab

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	BioChemical Oxygen Demand		7.6		mg/L

TEST: COD Chemical Oxygen Demand (EPA 410.x) REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 410.4 PHASE: TIME ANALYZED: 09/23/94 09:03:00 APPROVER: E032996

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Chemical Oxygen Demand		93		mg/L

TEST: ICPEPA ICP Metals by EPA 200.7 REPLICATE: 1 STATUS: APPROVED
PREP MTH: EPA 200.7 PROC MTH: EPA 200.7 PHASE: TIME ANALYZED: 09/26/94 13:25:00 APPROVER: E018492
COMMENTS: TOTAL RECOVERABLE METALS
'Z' INDICATES ELEMENTS THAT ARE NOT APPROVED FOR METHOD EPA 200.7
THESE 'Z' ELEMENTS MAY NOT MEET THE Q.C. REQUIREMENTS OF THE METHOD.

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7440224	Silver	UDL	<0.006		mg/L
7429905	Aluminum		0.14		mg/L
7440382	Arsenic	UDL	<0.04		mg/L
7440428	Boron		0.056		mg/L
7440393	Barium		0.0501		mg/L
7440417	Beryllium	UDL	<0.0004		mg/L
7440702	Calcium		24.7		mg/L

OFFICIAL REPORT

SAMPLE E942600000 Y-12 ANALYTICAL SERVICES ORGANIZATION

7440439	Cadmium	UDL	<0.004	mg/L
7440451	Cerium	UDL	<0.02 Z	mg/L
7440484	Cobalt	UDL	<0.002	mg/L
7440473	Chromium	UDL	<0.006	mg/L
7440508	Copper		0.012	mg/L
7439896	Iron		0.15	mg/L
7440553	Gallium	UDL	<0.02 Z	mg/L
7440097	Potassium		1.0	mg/L
7439932	Lithium	UDL	<0.02 Z	mg/L
7439954	Magnesium		3.89	mg/L
7439965	Manganese		0.010	mg/L
7439987	Molybdenum	UDL	<0.006	mg/L
7440235	Sodium		1.27	mg/L
7440020	Nickel	UDL	<0.008	mg/L
7439921	Lead	UDL	<0.02	mg/L
7782492	Selenium	UDL	<0.1	mg/L
7440246	Strontium		0.047 Z	mg/L
7440291	Thorium	UDL	<0.01 Z	mg/L
7440326	Titanium	UDL	<0.02 Z	mg/L
7440280	Thallium	UDL	<0.03	mg/L
7440622	Vanadium	UDL	<0.004	mg/L
7440666	Zinc		0.44	mg/L
7440677	Zirconium	UDL	<0.004 Z	mg/L

TEST: MS_U Total U and %U235 by Mass Spec REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: Y/P65-7165 PHASE: TIME ANALYZED: 09/22/94 15:44:10 APPROVER: E034508

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7440611	Uranium		0.004		mg/L
15117961	Uranium-235		0.51		Weight %

TEST: OIL_GR Total Oil and Grease by EPA 413.1 REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 413.1 PHASE: TIME ANALYZED: 09/28/94 23:00:00 APPROVER: E032996

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Oil and Grease		<2.0		mg/L

TEST: TSS Total Suspended Solids, (Non-Filterable) EPA 160.2 REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 160.2 PHASE: TIME ANALYZED: 09/21/94 09:35:00 APPROVER: E032996

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Total Suspended Solids		5.0		mg/L

OFFICIAL REPORT

10/05/94 07:34:35 Y-12 ANALYTICAL SERVICES ORGANIZATION

SUBMITTER	ADDRESS	CUSTOMER ID	REQ NO	SAMPLE NO	MTC	STATUS
Collins, Eugene Thom	Building 9116 ms:8098	199409170002		E942600001	8601	APPROVED

DATE SAMPLED: 09/17/94 19:15:00 DATE NEEDED: 10/17/94 LOCATION: P-2 CHARGE #: S2222910
DATE RECEIVED: 09/19/94 DATE COMPLETED: 09/30/94 PROJECT CODE: NPDES CASE: SB1103
SAMPLER: 13718 SAMPLE DESCRIPTION: GRAB FINAL APPROVAL:

COMMENTS: PARKING LOT GRABS TAKEN AT BEIGE HOUSE AT 9115 North Portal L. T. Emerson

TEST: AA_HG Mercury (Hg) by Cold Vapor AA in Water REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 245.1 PHASE: TIME ANALYZED: 09/23/94 07:45:00 APPROVER: E026688

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7439976	Mercury		<0.0002		mg/L

TEST: BOD Biochemical Oxygen Demand (5 DAY) EPA 405.1 REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 405.1 PHASE: TIME ANALYZED: 09/18/94 13:30:00 APPROVER: E034067

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	BioChemical Oxygen Demand		<5.0		mg/L

TEST: COD Chemical Oxygen Demand (EPA 410.x) REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 410.4 PHASE: TIME ANALYZED: 09/23/94 09:18:00 APPROVER: E032996

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Chemical Oxygen Demand		<20		mg/L

TEST: ICPEPA ICP Metals by EPA 200.7 REPLICATE: 1 STATUS: APPROVED
PREP MTH: EPA 200.7 PROC MTH: EPA 200.7 PHASE: TIME ANALYZED: 09/26/94 14:07:00 APPROVER: E018492
COMMENTS: TOTAL RECOVERABLE METALS
'Z' INDICATES ELEMENTS THAT ARE NOT APPROVED FOR METHOD EPA 200.7
THESE 'Z' ELEMENTS MAY NOT MEET THE Q.C. REQUIREMENTS OF THE METHOD.

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7440224	Silver	UDL	<0.006		mg/L
7429905	Aluminum		0.53		mg/L
7440382	Arsenic	UDL	<0.04		mg/L
7440428	Boron		0.017		mg/L
7440393	Barium		0.0619		mg/L
7440417	Beryllium	UDL	<0.0004		mg/L
7440702	Calcium		34.5		mg/L
7440439	Cadmium	UDL	<0.004		mg/L
7440451	Cerium	UDL	<0.02 Z		mg/L
7440484	Cobalt		0.005		mg/L

OFFICIAL REPORT

SAMPLE E942600001 Y-12 ANALYTICAL SERVICES ORGANIZATION

7440473	Chromium	UDL	<0.006	mg/L
7440508	Copper		0.006	mg/L
7439896	Iron		2.45	mg/L
7440553	Gallium	UDL	<0.02 Z	mg/L
7440097	Potassium		2.5	mg/L
7439932	Lithium	UDL	<0.02 Z	mg/L
7439954	Magnesium		5.08	mg/L
7439965	Manganese		1.35	mg/L
7439987	Molybdenum	UDL	<0.006	mg/L
7440235	Sodium		4.07	mg/L
7440020	Nickel	UDL	<0.008	mg/L
7439921	Lead	UDL	<0.02	mg/L
7782492	Selenium	UDL	<0.1	mg/L
7440246	Strontium		0.066 Z	mg/L
7440291	Thorium	UDL	<0.01 Z	mg/L
7440326	Titanium		0.01 Z	mg/L
7440280	Thallium	UDL	<0.03	mg/L
7440622	Vanadium	UDL	<0.004	mg/L
7440666	Zinc		0.07	mg/L
7440677	Zirconium	UDL	<0.004 Z	mg/L

TEST: MS_U Total U and %U235 by Mass Spec REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: Y/P65-7165 PHASE: TIME ANALYZED: 09/22/94 15:44:17 APPROVER: E034508

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7440611	Uranium		<0.001		mg/L
15117961	Uranium-235		NA		Weight %

TEST: OIL_GR Total Oil and Grease by EPA 413.1 REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 413.1 PHASE: TIME ANALYZED: 09/28/94 23:00:00 APPROVER: E032996

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Oil and Grease		<2.0		mg/L

TEST: TSS Total Suspended Solids, (Non-Filterable) EPA 160.2 REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: EPA 160.2 PHASE: TIME ANALYZED: 09/21/94 09:55:00 APPROVER: E032996

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Total Suspended Solids		65		mg/L

APPENDIX C

INDUSTRY DATA

TABLE 1

REPRESENTATIVE STORM WATER DATA
MARTIN MARIETTA ENERGY SYSTEMS, INC.
OAK RIDGE, TENNESSEE

PARAMETERS OF CONCERN (mg/l)	EPA NPDES STORM WATER GROUP APPLICATION DATA *											
	INDUSTRIAL SECTOR 29						INDUSTRIAL SECTOR 30					
	MAXGRAB			MAXCOMP			MAXGRAB			MAXCOMP		
	Range	Data Points	Average	Range	Data Points	Average	Range	Data Points	Average	Range	Data Points	Average
Nitrate + Nitrite Nitrogen	0.04 to 14.9	115	1.596	0.02 to 14.4	115	1.405	0.04 to 19.2	186	1.272	0.02 to 242.6	181	3.569
Total Suspended Solids	1 to 2,340	115	187.2	1 to 3,235	115	125.3	1 to 6,453	182	158.9	1 to 28,000	176	264.6
Copper	0.01 to 13.9	31	0.734	0.01 to 13.0	30	0.502	0.007 to 15.0	47	0.905	0.006 to 15.0	44	0.767
Iron	0.02 to 25.1	31	4.894	0.02 to 26	30	3.034	0.02 to 81	18	10.389	0.02 to 98.5	18	11.281
Lead	0.002 to 0.16	14	0.077	0.002 to 0.22	12	0.071	0.002 to 14	34	0.65	0.00001 to 14	34	0.569
Manganese	0.01 to 5	11	0.498	0.01 to 5	10	0.539	0.01 to 0.204	11	0.082	0.01 to 0.061	11	0.038
Mercury	0.0002 to 0.0005	8	0.00033	0.0002 to 0.0005	8	0.00034	0.0002 to 0.001	5	0.00052	0.0002 to 0.001	5	0.00054
Zinc	0.02 to 157	25	8.51	0.012 to 22.8	24	3.979	0.0001 to 8.8	48	0.705	0.00006 to 9	48	0.504

NOTES:

* Source: U.S. EPA NPDES Storm Water: Group Application Database. This EPA database contains information on the facilities submitting group applications – which provided Part 2 sampling data – received prior to January 1, 1993 and includes the following:
  (a) Sampling information reported in Part VII.A of the form 2F.
  (b) Sampling information reported in Part VII.B of the form 2F (each pollutant that is limited in or any pollutant listed in the facility's NPDES permit for its process wastewater).
  (c) Sampling information reported in Part VII.C of the form 2F (each pollutant shown in tables 2-F2, 2F-3, and 2F-4 that is known or believed to be present).

DEFINITIONS:

Industrial Sector 29: Fabricated metal products, except machinery and transportation equipment, jewelry, silverware, and plated ware.
Industrial Sector 30: Industrial and commercial machinery (except computer and office equipment), transportation equipment.
Industrial Sector 31: Electronic and other electrical equipment and components measuring, analyzing, and controlling instruments; photographic and optical goods; watches and clocks.
Industrial Sector 33: Industrial activities located at/on military facilities.
MAXGRAB: Maximum value reported from grab samples.
MAXCOMP: Maximum value reported from composite samples.
Data Points: Number of data points.

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TABLE 1 (continued)

REPRESENTATIVE STORM WATER DATA
MARTIN MARIETTA ENERGY SYSTEMS, INC.
OAK RIDGE, TENNESSEE

PARAMETERS OF CONCERN (mg/l)	EPA NPDES STORM WATER GROUP APPLICATION DATA **											
	INDUSTRIAL SECTOR 31						INDUSTRIAL SECTOR 33					
	MAXGRAB			MAXCOMP			MAXGRAB			MAXCOMP		
	Range	Data Points	Average	Range	Data Points	Average	Range	Data Points	Average	Range	Data Points	Average
Nitrate + Nitrite Nitrogen	0.01 to 6.969	71	0.866	0.16 to 2.54	64	0.694	0.06 to 20.05	61	1.416	0.06 to 3.57	55	0.961
Total Suspended Solids	1 to 610	68	96.4	1 to 716	62	76.3	4 to 2,299	68	239.3	3 to 1,810	61	144.8
Copper	0.005 to 1	47	0.058	0.004 to 0.1	43	0.035	0.007 1.04	24	0.137	0.007 to 0.876	24	0.157
Iron	0.04 to 190	51	7.09	0.1 to 200	47	6.844	0.456 to 29.3	13	9.488	0.254 to 44.2	12	8.685
Lead	0.002 to 0.2	52	0.06	0.001 to 0.2	48	0.06	0.0059 to 0.55	27	0.135	0.0096 to 0.746	27	0.152
Manganese	0.01 to 1.27	42	0.204	0.008 to 1.1	41	0.17	0.02 to 0.1	4	0.08	0.02 to 0.1	4	0.08
Mercury	0.0002 to 0.23	25	0.01	0.0002 to 0.001	22	0.00046	0.0002 to 0.02	13	0.0125	0.0002 to 0.02	13	0.0124
Zinc	0.02 to 1.1	44	0.173	0.02 to 1.2	41	0.158	0.032 to 5.3	27	0.713	.021 to 3.15	27	0.621

NOTES:

** Source: U.S. EPA NPDES Storm Water: Group Application Database. This EPA database contains information on the facilities submitting group applications – which provided Part 2 sampling data – received prior to January 1, 1993 and includes the following:

(a) Sampling information reported in Part VII.A of the form 2F.

(b) Sampling information reported in Part VII.B of the form 2F (each pollutant that is limited in or any pollutant listed in the facility's NPDES permit for its process wastewater).

(c) Sampling information reported in Part VII.C of the form 2F (each pollutant shown in tables 2-F2, 2F-3, and 2F-4 that is known or believed to be present).

DEFINITIONS:

Industrial Sector 29: Fabricated metal products, except machinery and transportation equipment, jewelry, silverware, and plated ware.

Industrial Sector 30: Industrial and commercial machinery (except computer and office equipment), transportation equipment.

Industrial Sector 31: Electronic and other electrical equipment and components measuring, analyzing, and controlling instruments; photographic and optical goods; watches and clocks.

Industrial Sector 33: Industrial activities located at/on military facilities.

MAXGRAB: Maximum value reported from grab samples.

MAXCOMP: Maximum value reported from composite samples.

Data Points: Number of data points.

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TABLE 2

SUMMARY OF NPDES PERMIT STORM WATER DATA
MARTIN MARIETTA ENERGY SYSTEMS, INC.
OAK RIDGE, TENNESSEE

PARAMETERS OF CONCERN (mg/l)	MMES NPDES PERMIT STORM WATER DATA *							
	GRAB				COMPOSITE			
	CATEGORY 1 OUTFALLS (1)		CATEGORY 2 OUTFALLS (2)		CATEGORY 1 OUTFALLS (3)		CATEGORY 2 OUTFALLS (4)	
	Range	Average	Range	Average	Range	Average	Range	Average
Nitrate + Nitrite Nitrogen	0.14 to 28.8	2.41	0.10 to 39.06	2.49	0.14 to 28.4	2.45	0.21 to 4.4	0.81
Total Suspended Solids	< 5 to 1,300	108.9	< 5 to 230	38.09	< 5 to 430	69.19	< 5 to 630	61.72
Copper	< 0.006 to 0.094	0.019	< 0.006 to 0.036	0.016	< 0.006 to 0.054	0.015	< 0.006 to 0.027	0.013
Iron	< 0.06 to 21.1	2.67	< 0.06 to 7.9	1.43	< 0.06 to 10.4	1.97	< 0.06 to 5.07	0.975
Lead	< 0.02 to 0.05	0.022	< 0.02 to 0.04	0.021	< 0.02 to 0.03	0.021	< 0.02	< 0.02
Manganese	0.004 to 0.531	0.09	0.003 to 1.28	0.112	0.003 to 0.233	0.061	0.008 to 0.812	0.082
Mercury	<0.0002 to 0.011	0.00093	<0.0002 to 0.0081	0.0007	< 0.0002 to 0.0059	0.0007	< 0.0002 to 0.0041	0.00051
Zinc	< 0.01 to 0.36	0.11	0.02 to 0.47	0.15	< 0.01 to 0.19	0.082	0.02 to 0.28	0.12

NOTES:

(1) Outfalls 212, 4, 6, 98, 18, 86, 15, 64, 17, 33, 62, 11, 41, 44, 45, 57, 7, 32, 111, 3 (20 total outfalls)
(2) (4) Outfalls 14, 20, 47, 67, 21, 110, 114, 109, N/S Pipes, 135, 2, 71, 113, 16, 16dup, 99, 19, 42, 46, 48dup, 48, 58 (22 total outfalls)
(3) Same as (1) except delete Outfalls 62 and 111 (18 total outfalls)

DEFINITIONS:

CATEGORY 1 OUTFALLS: Storm water only.
CATEGORY 2 OUTFALLS: Storm water plus process water.

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APPENDIX D

DATA FROM REPORT, Y/SUB/93-28B-99920C/1, *FEASIBILITY STUDY OF BEST MANAGEMENT PRACTICES FOR NON-POINT SOURCE POLLUTION CONTROL AT THE OAK RIDGE Y-12 PLANT*

TABLE 2-2
SUMMARY OF OUTFALL/WELL DATA FOR COPPER EXCEEDING THE WATER QUALITY CRITERION
(0.012 mg/L)

OUTFALL /WELL	DRAINAGE BASIN	MAX CONC (mg/L)
4	K	0.016
7	K	0.034
14	A	0.03
16	A	0.03
17	A	0.057
19	A	0.012
20	A	0.018
21	A	0.026
32	A	0.049
33	A	0.02
41	A	0.013
47	A	0.036
48	A	0.022
64	C	0.012
67	C	0.018
86	C	0.094
113	C	0.021
114	C	0.021
135	E	0.023
212	E	0.019
N/S Pipes	E	0.018
GW-195	I	0.11
GW-251	I	0.87
GW-253	I	110
GW-284	I	0.096

TABLE 2-3
SUMMARY OF OUTFALL/WELL DATA FOR IRON EXCEEDING THE WATER QUALITY CRITERION
(1.0 mg/L)

OUTFALL /WELL	DRAINAGE BASIN	MAX CONC (mg/L)
2	K	7.01
4	K	3.58
6	K	4.81
7	K	21.1
11	A	4.84
14	A	1.95
16	A	2.46
18	A	1.51
19	A	1.12
21	A	1.07
32	A	3.28
33	A	1.57
44	A	1.58
58	A	1
62	A	1.54
67	C	1.16
86	C	1.85
98	C	1.71
109	C	1.59
114	C	3.03
135	E	1.11
212	E	3.32
N/S pipes	E	7.9
GW-195	I	51
GW-284	K	45

TABLE 2-4
SUMMARY OF OUTFALL/WELL DATA FOR LEAD EXCEEDING THE WATER QUALITY CRITERION
(0.0032 mg/L)

OUTFALL /WELL	DRAINAGE BASIN	MAX CONC (mg/L)
7	K	0.05
16	A	0.04
GW-105	J	0.17
GW-253	I	0.054
GW-152	K	0.096
GW-603	K	0.19

TABLE 2-5
SUMMARY OF OUTFALL/WELL DATA FOR MANGANESE EXCEEDING THE WATER QUALITY CRITERION
(0.05 mg/L)

OUTFALL /WELL	DRAINAGE BASIN	MAX CONC (mg/L)
2	K	1.28
3	K	0.154
4	K	0.531
6	K	0.107
7	K	0.412
11	A	0.101
14	A	0.102
16	A	0.071
21	A	0.055
32	A	0.115
58	A	0.09
67	C	0.065
86	C	0.062
109	C	0.122
114	C	0.093
135	E	0.075
212	E	0.091
N/S pipes	E	0.396
GW-195	I	4.4
GW-281	K	4

TABLE 2-6
SUMMARY OF OUTFALL/WELL DATA FOR MERCURY EXCEEDING THE WATER QUALITY CRITERION
(0.000012 mg/L)

OUTFALL /WELL	DRAINAGE BASIN	MAX CONC (mg/L)
1	A	0.0006
2	K	0.0004
3	K	0.0003
4	K	0.0003
6	K	0.0016
7	K	0.0014
9	K	0.0012
14	A	0.0004
15	A	0.0002
17	A	0.0005
18	A	0.0005
19	A	0.0005
32	A	0.0077
33	A	0.011
41	A	0.0005
44	A	0.0005
45	A	0.0008
47	A	0.001
48	A	0.008
58	A	0.0005
64	A	0.0004
86	C	0.0009
108	E	0.0005
109	C	0.0004
110	C	0.0003
113	C	0.0003
134	E	0.0005
135	E	0.0003
N/S pipes	E	0.0081
156	E	0.0039
161	E	0.0005
182	I	0.0018
184	I	0.005
193	I	0.0032
197	J	0.0005
198	J	0.0005
207	J	0.0015

TABLE 2-6
SUMMARY OF OUTFALL/WELL DATA FOR MERCURY EXCEEDING THE WATER QUALITY CRITERION
(0.000012 mg/L)

OUTFALL /WELL	DRAINAGE BASIN	MAX CONC (mg/L)
212	E	0.0005
221	J	0.0033
234	I	0.0003
GW-109	J	0.087
GW-253	I	0.014
GW-282	K	0.0057
GW-222	K	0.0036

TABLE 2-7
SUMMARY OF OUTFALL/WELL DATA FOR NITRATE EXCEEDING THE WATER QUALITY CRITERION
(10 mg/L)

OUTFALL /WELL	DRAINAGE BASIN	MAX CONC (mg/L)
17	A	28.8
GW-108	J	13100
GW-270	J	136
GW-274	J	10900
GW-251	I	96
GW-253	I	1024
GW-256	I	407
GW-105	J	921
GW-633	J	5380
GW-632	J	12
GW-243	I	6230

TABLE 2-8
SUMMARY OF OUTFALL/WELL DATA FOR TSS EXCEEDING THE NPDES PERMIT LIMIT
(31 mg/L)

OUTFALL /WELL	DRAINAGE BASIN	MAX CONC (mg/L)
1	A	1400
3	K	39
7	K	98
9	K	34
32	A	380
41	A	38
45	A	80
108	E	62
156	E	100
161	E	210
184	I	82
193	I	120
197	J	50
207	J	190
221	J	230
234	I	80
GW-335	H	606
GW-603	K	5560

Zinc

Zinc was detected above water quality criteria at Station G. Zinc appears to originate from Outfalls 4, 14, 16, 19, 41, 57, 67, 114, and 135. Zinc was also present in groundwater monitoring well GW-253 above maximum observed background levels.

Possible area sources of stormwater and groundwater contamination include outdoor material storage areas (metal parts), vehicle washing and minor spills on roadways, equipment on rooftops, past spills from operations, SWMUs, and soil erosion (zinc is a naturally occurring metal). SWMUs that may be contributing to zinc loadings include YT-119 (Development Incinerator), YS-116 (Third Street Soil Pile), YS-225 (tank), and YP-503 (Building 9720-2 Drum Storage Area), and YT-004 (S-3 site).

Table 2-9 provides a summary of maximum concentrations of zinc reported in the sampling data along with the applicable water quality criterion. Appendix C includes a similar table sorted in order of increasing concentration.

TABLE 2-9

SUMMARY OF OUTFALL/WELL DATA FOR ZINC EXCEEDING THE WATER QUALITY CRITERION (0.2 mg/L)

OUTFALL/WELL	DRAINAGE BASIN	MAXIMUM CONCENTRATION (mg/L)
4	K	0.21
14	A	0.22
16	A	0.47
19	A	0.21
41	A	0.20
57	A	0.28
67	C	0.23
114	C	0.28
135	E	0.28
GW-253	I	5.80

APPENDIX E

DATA FROM REPORT, Y/SUB/93-28B-99920C/1, *FEASIBILITY STUDY OF BEST MANAGEMENT PRACTICES FOR NON-POINT SOURCE POLLUTION CONTROL AT THE OAK RIDGE Y-12 PLANT*

TABLE C-1
SUMMARY OF OUTFALL/WELL DATA FOR COPPER EXCEEDING THE WATER QUALITY CRITERION
(0.012 mg/L)

OUTFALL /WELL	DRAINAGE BASIN	MAX CONC (mg/L)	% Over Criteria
GW-253	I	110	916567%
GW-251	I	0.87	7150%
GW-195	I	0.11	817%
GW-284	I	0.096	700%
86	C	0.094	683%
17	A	0.057	375%
32	A	0.049	308%
47	A	0.036	200%
7	K	0.034	183%
14	A	0.03	150%
16	A	0.03	150%
21	A	0.026	117%
135	E	0.023	92%
48	A	0.022	83%
113	C	0.021	75%
114	C	0.021	75%
33	A	0.02	67%
212	E	0.019	58%
20	A	0.018	50%
67	C	0.018	50%
N/S Pipes	E	0.018	50%
4	K	0.016	33%
41	A	0.013	8%
19	A	0.012	0%
64	C	0.012	0%

TABLE C-2
SUMMARY OF OUTFALL/WELL DATA FOR IRON EXCEEDING THE WATER QUALITY CRITERION
(1.0 mg/L)

OUTFALL /WELL	DRAINAGE BASIN	MAX CONC (mg/L)	% Over Criteria
GW-195	I	51	5000%
GW-284	K	45	4400%
7	K	21.1	2010%
N/S pipes	E	7.9	690%
2	K	7.01	601%
11	A	4.84	384%
6	K	4.81	381%
4	K	3.58	258%
212	E	3.32	232%
32	A	3.28	228%
114	C	3.03	203%
16	A	2.46	146%
14	A	1.95	95%
86	C	1.85	85%
98	C	1.71	71%
109	C	1.59	59%
44	A	1.58	58%
33	A	1.57	57%
62	A	1.54	54%
18	A	1.51	51%
67	C	1.16	16%
19	A	1.12	12%
135	E	1.11	11%
21	A	1.07	7%
58	A	1	0%

TABLE C-3
SUMMARY OF OUTFALL/WELL DATA FOR LEAD EXCEEDING THE WATER QUALITY CRITERION
(0.0032 mg/L)

OUTFALL /WELL	DRAINAGE BASIN	MAX CONC (mg/L)	% Over Criteria
GW-603	K	0.19	5838%
GW-105	J	0.17	5213%
GW-152	K	0.096	2900%
GW-253	I	0.054	1588%
7	K	0.05	1463%
16	A	0.04	1150%

TABLE C-4
SUMMARY OF OUTFALL/WELL DATA FOR MANGANESE EXCEEDING THE WATER QUALITY CRITERION
(0.05 mg/L)

OUTFALL /WELL	DRAINAGE BASIN	MAX CONC (mg/L)	% Over Criteria
GW-195	I	4.4	8700%
GW-281	K	4	7900%
2	K	1.28	2460%
4	K	0.531	962%
7	K	0.412	724%
N/S pipes	E	0.396	692%
3	K	0.154	208%
109	C	0.122	144%
32	A	0.115	130%
6	K	0.107	114%
14	A	0.102	104%
11	A	0.101	102%
114	C	0.093	86%
212	E	0.091	82%
58	A	0.09	80%
135	E	0.075	50%
16	A	0.071	42%
67	C	0.065	30%
86	C	0.062	24%
21	A	0.055	10%

TABLE C-5
SUMMARY OF OUTFALL/WELL DATA FOR MERCURY EXCEEDING THE WATER QUALITY CRITERION
(0.000012 mg/L)

OUTFALL /WELL	DRAINAGE BASIN	MAX CONC (mg/L)	% Over Criteria
GW-109	J	0.087	724900%
GW-253	I	0.014	116567%
33	A	0.011	91567%
N/S pipes	E	0.0081	67400%
48	A	0.008	66567%
32	A	0.0077	64067%
GW-282	K	0.0057	47400%
184	I	0.005	41567%
156	E	0.0039	32400%
GW-222	K	0.0036	29900%
221	J	0.0033	27400%
193	I	0.0032	26567%
182	I	0.0018	14900%
6	K	0.0016	13233%
207	J	0.0015	12400%
7	K	0.0014	11567%
9	K	0.0012	9900%
47	A	0.001	8233%
86	C	0.0009	7400%
45	A	0.0008	6567%
1	A	0.0006	4900%
17	A	0.0005	4067%
18	A	0.0005	4067%
19	A	0.0005	4067%
41	A	0.0005	4067%
44	A	0.0005	4067%
58	A	0.0005	4067%
108	E	0.0005	4067%
134	E	0.0005	4067%
161	E	0.0005	4067%
197	J	0.0005	4067%
198	J	0.0005	4067%
212	E	0.0005	4067%
2	K	0.0004	3233%
14	A	0.0004	3233%
64	A	0.0004	3233%
109	C	0.0004	3233%

TABLE C-5
SUMMARY OF OUTFALL/WELL DATA FOR MERCURY EXCEEDING THE WATER QUALITY CRITERION
(0.000012 mg/L)

OUTFALL /WELL	DRAINAGE BASIN	MAX CONC (mg/L)	% Over Criteria
3	K	0.0003	2400%
4	K	0.0003	2400%
110	C	0.0003	2400%
113	C	0.0003	2400%
135	E	0.0003	2400%
234	I	0.0003	2400%
15	A	0.0002	1567%

TABLE C-6
SUMMARY OF OUTFALL/WELL DATA FOR NITRATE EXCEEDING THE WATER QUALITY CRITERION
(10 mg/L)

OUTFALL /WELL	DRAINAGE BASIN	MAX CONC (mg/L)	% Over Criteria
GW-108	J	13100	130900%
GW-274	J	10900	108900%
GW-243	I	6230	62200%
GW-633	J	5380	53700%
GW-253	I	1024	10140%
GW-105	J	921	9110%
GW-256	I	407	3970%
GW-270	J	136	1260%
GW-251	I	96	860%
17	A	28.8	188%
GW-632	J	12	20%

TABLE C-7
SUMMARY OF OUTFALL/WELL DATA FOR
TSS EXCEEDING THE NPDES PERMIT LIMIT
(31 mg/L)

OUTFALL /WELL	DRAINAGE BASIN	MAX CONC (mg/L)	% Over Criteria
GW-603	K	5,560	17835%
1	A	1,400	4416%
GW-335	H	606	1855%
32	A	380	1126%
221	J	230	642%
161	E	210	577%
207	J	190	513%
193	I	120	287%
156	E	100	223%
7	K	98	216%
184	I	82	165%
45	A	80	158%
234	I	80	158%
108	E	62	100%
197	J	50	61%
3	K	39	26%
41	A	38	23%
9	K	34	10%

TABLE C-8
SUMMARY OF OUTFALL/WELL DATA FOR
ZINC EXCEEDING THE WATER QUALITY CRITERION
(0.2 mg/L)

OUTFALL /WELL	DRAINAGE BASIN	MAX CONC (mg/L)	% Over Criteria
16	A	0.47	135%
57	A	0.28	40%
114	C	0.28	40%
135	E	0.28	40%
67	C	0.23	15%
14	A	0.22	10%
4	K	0.21	5%
19	A	0.21	5%
41	A	0.2	0%

Distribution

E. T. Collins
L. J. Feldman
R. E. Hawthorne
J. F. Hensley
J. A. Johnston
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