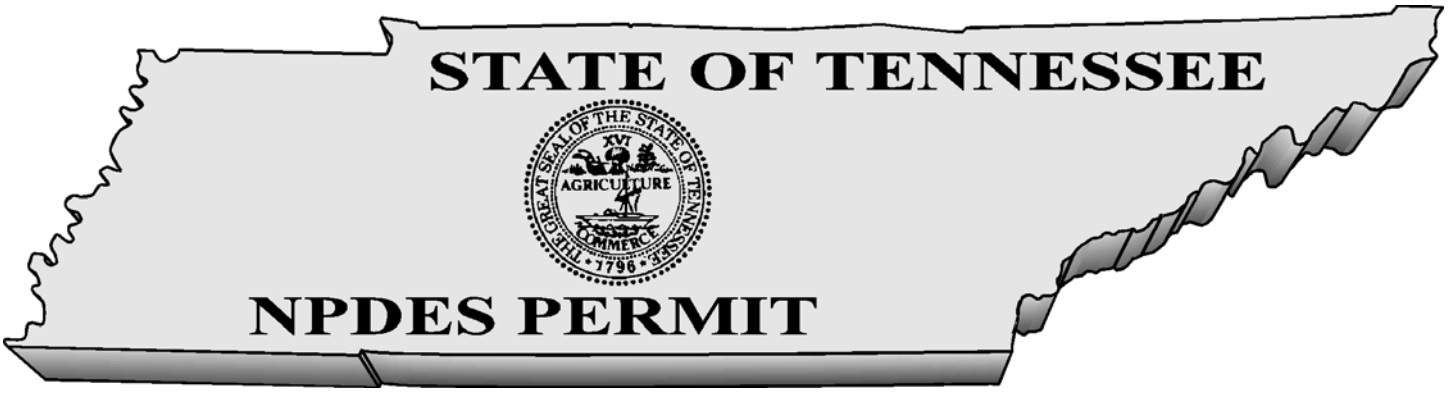

No. TN0002968

Authorization to discharge under the
National Pollutant Discharge Elimination System (NPDES)

Issued By
Tennessee Department of Environment and Conservation
Division of Water Pollution Control
401 Church Street
6th Floor, L & C Annex
Nashville, Tennessee 37243-1534

Under authority of the Tennessee Water Quality Control Act of 1977 (T.C.A. 69-3-101 et seq.) and the delegation of authority from the United States Environmental Protection Agency under the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977 (33 U.S.C. 1251, et seq.)

Discharger:	**USDOE-Oak Ridge Y12 National Security Complex**
is authorized to discharge:	**process wastewaters and other wastewaters which have been accepted for treatment via waste acceptance procedures, cooling tower blowdown, cooling waters, condensate, sump waters, storm water runoff and ground water**
from a facility located:	**in Oak Ridge, Anderson County, Tennessee**
to receiving waters named:	**East Fork Poplar Ck, McCoy Br, Bear Creek, tributaries to Clinch River**

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective on:	**May 1, 2006**
This permit shall expire on:	**December 31, 2008**
Issuance date:	**March 13, 2006**

Paul E. Davis, Director
Division of Water Pollution Control

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PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

USDOE-Oak Ridge Y12 Complex is authorized to discharge cooling waters, process wastewaters, contaminated ground water, and storm water runoff to East Fork Poplar Ck, McCoy Br, Bear Creek and unnamed tributaries to Clinch River.

These discharges shall be limited and monitored by the permittee as specified below for each discharge location. :

OUTFALL LOCATIONS				DISCHARGE
Outfall	Longitude	Latitude	CONVEYANCE	RECEIVING WATERS
Wastewater Treatment Facilities				
501	35.9838	-84.2597	North-South Pipes	East Fork Poplar Creek
502	35.9764	-84.2755	North-South Pipes	East Fork Poplar Creek
503	35.9847	-84.2550	North-South Pipes	East Fork Poplar Creek
512	35.9847	-84.2553	North-South Pipes	East Fork Poplar Creek
520	35.9858	-84.2611	Outfall 135	East Fork Poplar Creek
550	35.9844	-84.2558		East Fork Poplar Creek
551	35.9956	-84.2397	North-South Pipes	East Fork Poplar Creek
51	35.9872	-84.2489		East Fork Poplar Creek
North/South Pipes and Related Outfalls				
125	35.9861	-84.2519		East Fork Poplar Creek
135	35.9858	-84.2525		East Fork Poplar Creek
200	35.9856	-84.2528	North-South Pipes	East Fork Poplar Creek
C11	35.9853	-84.2536	In-stream monitor	East Fork Poplar Creek
Minor Outfalls				
21	35.9881	-84.2467		East Fork Poplar Creek
77	35.9867	-84.2508		East Fork Poplar Creek
13	35.9897	-84.2422		East Fork Poplar Creek
31	35.9875	-84.2500		East Fork Poplar Creek
EFP	35.9872	-84.2492	Instream Station 17	East Fork Poplar Creek
55	35.9869	-84.2492		East Fork Poplar Creek
109	35.9869	-84.2492		East Fork Poplar Creek

MONITORED STORMWATER OUTFALLS

OUTFALL LOCATIONS				DISCHARGE
Outfall	Longitude	Latitude	CONVEYANCE	RECEIVING WATERS
2	35.9956	-84.2397		East Fork Poplar Creek
3	35.9939	-84.2392		East Fork Poplar Creek
4	35.9922	-84.2381		East Fork Poplar Creek
6	35.9933	-84.2369		East Fork Poplar Creek
7	35.9917	-84.2397		East Fork Poplar Creek
14	35.9897	-84.2431		East Fork Poplar Creek
16	35.9892	-84.2431		East Fork Poplar Creek
19	35.9883	-84.2453		East Fork Poplar Creek
20	35.9886	-84.2458		East Fork Poplar Creek
33	35.9875	-84.2500		East Fork Poplar Creek
34	35.9878	-84.2475		East Fork Poplar Creek
41	35.9878	-84.2478		East Fork Poplar Creek
42	35.9875	-84.2478		East Fork Poplar Creek
44	35.9875	-84.2481		East Fork Poplar Creek
45	35.9872	-84.2483		East Fork Poplar Creek
46	35.9875	-84.2483		East Fork Poplar Creek
47	35.9875	-84.2483		East Fork Poplar Creek
48	35.9875	-84.2489		East Fork Poplar Creek
54	35.9872	-84.2492		East Fork Poplar Creek
57	35.9872	-84.2494		East Fork Poplar Creek
58	35.9869	-84.2386		East Fork Poplar Creek
62	35.9869	-84.2361		East Fork Poplar Creek
63	35.9867	-84.2500		East Fork Poplar Creek
64	35.9869	-84.2336		East Fork Poplar Creek
67	35.9867	-84.2506		East Fork Poplar Creek
71	35.9867	-84.2508		East Fork Poplar Creek
83	35.9861	-84.2514		East Fork Poplar Creek
86	35.9839	-84.2597		East Fork Poplar Creek
87	35.9764	-84.2756		East Fork Poplar Creek
88	35.9822	-84.2628		East Fork Poplar Creek
99	35.9872	-84.2611		East Fork Poplar Creek
102	35.9872	-84.2492		East Fork Poplar Creek
110	35.9842	-84.2558		East Fork Poplar Creek
113	35.9964	-84.4231		East Fork Poplar Creek
114	35.9956	-84.2397		East Fork Poplar Creek
126	35.9858	-84.2522		East Fork Poplar Creek
134	35.9858	-84.2522		East Fork Poplar Creek
S06	35.9747	-84.2767		Bear Creek
S18	35.9797	-84.2311	unnamed tributary	Clinch River
S19	35.9789	-84.2372	unnamed trib. at Rogers Quarry	Clinch River
S24	35.9731	-84.2703		Bear Creek
S26	35.9697	-84.2683	unnamed tributary	Clinch River

PERMIT LIMITS

TREATED PROCESS WASTEWATER

OUTFALL 501 - CENTRAL POLLUTION CONTROL FACILITY

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		note 1.	estimate
pH	range 6.0-9.0				1/batch	grab
Total suspended solids	31.0		40.0		1/batch	composite
Tot. Toxic Organics, (TTO)			2.13		note 2.	note 2.
Total dissolved solids	report		report		1/batch	composite
Oil and Grease (HEM)	10		15.0		1/batch	grab
Phosphate (as P)	report		report		1/batch	composite
Gross alpha (note 3)	report		report		monthly	composite
Gross beta (note 3)	report		report		monthly	composite
MBAS	report		report		note 2.	composite
Boron, total	report		report		1/batch	composite
Beryllium	report		report		1/batch	composite
Cadmium, total	0.075	0.16	0.15	0.40	1/batch	composite
Chromium, total	0.5	1.00	1.0	1.70	1/batch	composite
Copper, total	0.5	1.20	1.0	2.00	1/batch	composite
Lead, total	0.1	0.26	0.2	0.40	1/batch	composite
Mercury, total	report		report		1/batch	composite
Nickel, total	2.38	1.40	3.98	2.40	1/batch	composite
Silver, total	0.05	0.140	0.05	0.260	1/batch	composite
Zinc, total	1.48	0.90	2.0	1.60	1/batch	composite
Cyanide, total	0.65	0.40	1.2	0.72	1/batch	grab
Total PCB			0.001		note 2.	composite
Lithium, total	report		report		1/batch	composite
Uranium, total	report		report		monthly	composite

NOTE 1. Collect one 24-hour composite sample per batch discharge or one sample per week whichever is less frequent.

NOTE 2. Analyses for TTO, MBAS and PCBs shall be conducted on a sample immediately prior to a carbon column replacement. The volatile organics part of the TTO shall be collected by grab sample. Total toxic organics shall include those parameters listed in 40 CFR Part 433 which have a reasonable expectation of being present.

NOTE 3. Radioactivity results will be reported in pCi/L. A report of the isotope specific data will be submitted to the WPC and DOEO Divisions each quarter.

PERMIT LIMITS

TREATED PROCESS WASTEWATER

OUTFALL 502 WEST END TREATMENT FACILITY

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE (NOTE 3)
Flow	1/batch	report	1/batch	report	3/week	instantaneous
pH	range 6.0-9.0				weekly	grab
Total suspended solids	31.0	19	40.0	36	weekly	composite
Total dissolved solids	report		report		monthly	composite
Tot. Toxic Organics, (TTO)	note 1.		2.13		annually	composite
Oil and Grease (HEM)	10		15.0		weekly	grab
Nitrate/nitrite	report		100.0		weekly	composite
Gross alpha (note 2)	report		report		monthly	composite
Gross beta (note 2)	report		report		monthly	composite
Cadmium, total	0.075	0.16	0.15	0.4	weekly	composite
Chromium, total	0.5	1.0	1.0	1.7	weekly	composite
Copper, total	0.5	1.2	1.0	2.0	weekly	composite
Lead, total	0.1	0.26	0.2	0.4	weekly	composite
Mercury, total	report		report		weekly	composite
Nickel, total	2.38	1.4	3.98	2.4	weekly	composite
Selenium, total			report		1/batch	composite
Silver, total	0.05	0.14	0.05	0.26	weekly	composite
Zinc, total	1.48	0.9	2.0	1.6	weekly	composite
Cyanide, total	0.65	0.4	1.2	0.72	weekly	grab
Total PCB			0.001		quarterly	composite
Lithium, total	report		report		weekly	composite
Uranium, total	report		report		monthly	composite

NOTE 1. Analyses for TTO shall be conducted on a composited sample, but the volatile organics part of the TTO shall be collected by grab sample. TTO shall include those parameters listed in 40 CFR Part 433 which have a reasonable expectation of being present.

NOTE 2. Radioactivity results will be reported in pCi/L. A report of the isotope specific data will be submitted to the Division each quarter.

NOTE 3. Composite sample will be collected over a 24-hour period.

PERMIT LIMITS

TREATED PROCESS WASTEWATER

OUTFALL 503 STEAM PLANT WASTEWATER TREATMENT FACILITY

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE (NOTE 1)
Flow		report		report	weekly	recorder
pH	range 6.0-9.0				weekly	grab
Total suspended solids	30.0	125	40.0	417	weekly	composite
Temperature	report		report		weekly	grab
Fluoride	report		report		weekly	composite
Oil and Grease	10	63	15.0	83.4	weekly	grab
Sulfate, total	report		report		weekly	composite
Boron, total	report		report		weekly	composite
Iron, total	5.0	20.80	5.0	20.80	monthly	composite
Arsenic, total			report		monthly	composite
Beryllium			report		monthly	composite
Cadmium, total	0.075	0.16	0.15		monthly	composite
Chromium, total	0.2	0.8	0.2	0.8	quarterly	composite
Copper, total	0.2	4.17	0.4	4.17	monthly	composite
Lead, total	0.1		0.2		monthly	composite
Mercury, total	report		report		weekly	composite
Zinc, total	1.00	4.17	1.00	4.17	weekly	composite
Chloride, total	report		report		weekly	composite
Sodium, total	report		report		weekly	composite

NOTE 1. Composite sample will be collected over a 24-hour period.

PERMIT LIMITS

TREATED PROCESS WASTEWATER

OUTFALL 512 GROUNDWATER TREATMENT FACILITY

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE (NOTE 1)
Flow		report		report	continuous	recorder
pH	range 6.0-9.0				monthly	instant's
Copper, total			report		monthly	composite
Lead, total			report		monthly	composite
Total PCB			0.001		quarterly	composite
Gross Alpha Radioactivity			report		per RMP	per RMP
Gross Beta Radioactivity			report		per RMP	per RMP

Radioactivity results will be reported in pCi/L. A report of the isotope specific data will be submitted to the Division each quarter.

NOTE 1. Composite sample will be collected over a 24-hour period.

PERMIT LIMITS

TREATED PROCESS WASTEWATER

OUTFALL 520 LITHIUM PROCESS STEAM CONDENSATE

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE (NOTE 1)
Flow	monitor and maintain records				weekly	estimate
pH	range 6.0-9.0				weekly	grab
Total dissolved solids			report		weekly	grab

Flow records shall be maintained and made available for review by State and Federal regulatory personnel with appropriate level of clearance.

NOTE 1. Composite sample will be collected over a 24-hour period.

PERMIT LIMITS

INSTREAM MONITORING POINT
OUTFALL 200 - HEADWATERS EF POPLAR CREEK

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		weekly	calculated *
pH	range 6.0-9.0				weekly	grab
TRC Monitoring during Compliance Schedule (2 years following the effective date)						
Total Residual Chlorine	report		report		monthly	grab
TRC Monitoring following Compliance Schedule						
Total Residual Chlorine	0.025		0.044		monthly	grab
Nitrate/nitrite	report		report		quarterly	composite
Oil and Grease	10		15.0		1/week	grab
Total Dissolved Solids	report		report		quarterly	composite
Gross alpha	note 1.		note 1.		note 1.	note 1.
Gross beta	note 1.		note 1.		note 1.	note 1.
Cadmium, total	0.001		0.025		monthly	composite
Lead, total	0.041		1.190		monthly	composite
Mercury, total	report		report		weekly	composite
Uranium, total	note 1.		note 1.		monthly	composite
Total PCB	0.002		0.002		quarterly	composite
IC 25 based on 34% effluent					quarterly	composite

Note 1: To be addressed in the Radiological Monitoring Plan.

* derived from flow measurement at downstream station C11 - see text.

Composite sample will be collected over a 24-hour period.

PERMIT LIMITS

PROCESS WASTEWATER

OUTFALL 550 EAST END MERCURY TREATMENT SYSTEM

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		weekly	instantaneous
pH	range 6.0-9.0				weekly	grab
Mercury, total	0.002		0.004		weekly	composite

Discharge is proposed for elimination in 2005.

*** Minimum 24-hour composite sample shall be collected.**

OUTFALL 551 CENTRAL MERCURY TREATMENT SYSTEM

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		weekly	estimate
pH	range 6.0-9.0				weekly	grab
Mercury, total	0.002		0.004		weekly	composite

*** Minimum 24-hour composite sample shall be collected.**

GROUND WATER

OUTFALL 051 - INTERIM MERCURY TREATMENT SYSTEM

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		weekly	estimate
pH	range 6.0-9.0				monthly	grab
Mercury, total	report		report		weekly	grab

PERMIT LIMITS

PROCESS WASTE, COOLING WATER & STORMWATER

OUTFALL 135

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report	NA	report	NA	monthly	estimate
pH	range 6.0-9.0				monthly	grab
TRC Monitoring during Compliance Schedule (2 years following the effective date)						
Total Residual Chlorine	report		report		monthly	grab
TRC Monitoring following Compliance Schedule						
Total Residual Chlorine	0.025		0.044		monthly	grab
Lead, total	0.04		1.190		monthly	composite
IC25 in 5% effluent					quarterly	composite
Total PCB	0.002		0.002		quarterly	composite

* Minimum 24-hour composite sample shall be collected.

OUTFALL125

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE*
Flow	report		report		monthly	estimate
pH	range 6.0-9.0				monthly	grab
TRC Monitoring during Compliance Schedule (2 years following the effective date)						
Total Residual Chlorine	report		report		monthly	grab
TRC Monitoring following Compliance Schedule						
Total Residual Chlorine	0.025		0.044		monthly	grab
Cadmium, total	0.001		0.025		monthly	composite
Lead, total	0.04		1.190		monthly	composite
Mercury, total*	report		report		weekly*	composite
IC25 in 9% effluent					quarterly	composite
Total PCB	0.002		0.002		quarterly	composite

The acceptable methods for detection and reporting of total residual chlorine are referenced in Part I, Section B. Monitoring Procedures, subsection 3. Test Procedures.

* Minimum 24-hour composite sample shall be collected.

***** Data obtained at this outfall by CERCLA program monitoring is acceptable.

PERMIT LIMITS

PROCESS WASTEWATER

OUTFALL 055 COOLING WATER, SUMP WATER, STORMWATER

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow *	report		report		monthly	estimate
pH	range 6.0-9.0				monthly	grab
Mercury, total			0.004		weekly	grab
Total Residual Chlorine			0.5		annually	grab

* Includes reporting of each bypass of EEMTS

OUTFALL 109 COOLING WATER, STORMWATER

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow			report		quarterly	estimate
pH	range 6.0-9.0				quarterly	grab
Total Residual Chlorine	0.030		0.05		quarterly	grab

OUTFALL 021 COOLING WATER, CONDENSATE, STORMWATER

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow			report		quarterly	estimate
pH	range 6.0-9.0				quarterly	grab
Total Residual Chlorine	0.188		0.188		quarterly	grab

The acceptable methods for detection and reporting of total residual chlorine are referenced in Part I, Section B. Monitoring Procedures, subsection 3. Test Procedures.

PERMIT LIMITS

PROCESS WASTE, COOLING WATER & STORMWATER

OUTFALL 077

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.*	SAMPLE TYPE
Flow	report	NA	report	NA	monthly	estimate
pH	range 6.0-9.0				monthly	grab

* Samples to be collected during discharge upon manual operation of sump pump.

PERMIT LIMITS

INSTREAM MONITORING POINT

OUTFALL EFP (formerly Station 17)

EFFLUENT CHARACTERISTIC	MONTHLY		DAILY		MON. REQUIREMENTS	
	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE *
Flow	NOTE 1	report	NOTE 1	report	continuous	recorder
pH	range 6.0-9.0				daily	grab
Temperature	report		report		weekly	grab
Dissolved oxygen	report		report		weekly	grab
Nitrate-nitrite	report		report		weekly	grab
Total suspended solids	report		report		weekly	composite
Phosphates, as P	report		report		weekly	composite
Mercury	report		report		weekly	composite
Aluminum, total	report		report		weekly	composite
Antimony, total	report		report		weekly	composite
Arsenic, total	report		report		weekly	composite
Barium,total	report		report		weekly	composite
Boron, total	report		report		weekly	composite
Beryllium	report		report		weekly	composite
Cadmium, total	report		report		weekly	composite
Cobalt, total	report		report		weekly	composite
Chromium, total	report		report		weekly	composite
Copper, total	report		report		weekly	composite
Lead, total	report		report		weekly	composite
Lithium, total	report		report		weekly	composite
Magnesium, total	report		report		weekly	composite
Molybdenum, total	report		report		weekly	composite
Nickel, total	report		report		weekly	composite
Silver, total	report		report		weekly	composite
Strontium, total	report		report		weekly	composite
Thallium, total	report		report		weekly	composite
Vanadium, total	report		report		weekly	composite
Zinc, total	report		report		weekly	composite
PCB, total	report		report		annual	composite

NOTE 1: Flow of 7.0 mgd must be maintained, based on monthly average, as defined in the Permit Section III.H.

*** Minimum 24-hour composite sample shall be collected.**

PERMIT LIMITS

INSTREAM MONITORING POINT
STATION C11 (former OUTFALL 201)

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		2/monthly	estimate
pH	range 6.0-9.0				2/monthly	grab
Total suspended solids	report		report		2/monthly	composite
Temperature	report		30.5 C		2/monthly	grab
Tot. Res. Chlorine	0.011		0.019		2/monthly	grab
Mercury, total			report		2/monthly	composite
Aluminum, total			report		monthly	composite
Antimony, total			report		monthly	composite
Arsenic, total			report		monthly	composite
Barium,total			report		monthly	composite
Boron, total			report		monthly	composite
Beryllium			report		monthly	composite
Cadmium, total			report		monthly	composite
Cobalt, total			report		monthly	composite
Chromium, total			report		monthly	composite
Copper, total			report		monthly	composite
Lead, total			report		monthly	composite
Lithium, total			report		monthly	composite
Magnesium, total			report		monthly	composite
Molybdenum, total			report		monthly	composite
Nickel, total			report		monthly	composite
Silver, total			report		monthly	composite
Strontium, total			report		monthly	composite
Thallium, total			report		monthly	composite
Vanadium, total			report		monthly	composite
Zinc, total			report		monthly	composite
Phosphorus, total			report		monthly	composite
Nitrate-nitrite			report		monthly	composite
Nitrogen, Total			report		monthly	composite
Uranium, total			report		monthly	composite
Oil & Grease (HEM)			report		monthly	grab
MBAS surfactants			report		monthly	composite

NOTE 1. Composite sample will be collected over a 24-hour period.

PERMIT LIMITS

INSTREAM MONITORING POINT

OUTFALL S06

EFFLUENT CHARACTERISTIC	MONTHLY		DAILY		MON. REQUIREMENTS	
	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow				report	annually	estimate
pH	range 6.0-9.0				annually	grab
Nitrate/nitrite			report		annually	grab
Aluminum, total			report		annually	grab
Antimony, total			report		annually	grab
Arsenic, total			report		annually	grab
Barium,total			report		annually	grab
Boron, total			report		annually	grab
Beryllium			report		annually	grab
Cadmium, total			report		annually	grab
Cobalt, total			report		annually	grab
Chromium, total			report		annually	grab
Copper, total			report		annually	grab
Lead, total			report		annually	grab
Lithium, total			report		annually	grab
Magnesium, total			report		annually	grab
Molybdenum, total			report		annually	grab
Nickel, total			report		annually	grab
Silver, total			report		annually	grab
Strontium, total			report		annually	grab
Thallium, total			report		annually	grab
Vanadium, total			report		annually	grab
Zinc, total			report		annually	grab

PERMIT LIMITS

INSTREAM MONITORING POINT

OUTFALL S19

EFFLUENT CHARACTERISTIC	MONTHLY		DAILY		MON. REQUIREMENTS	
	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow				report	annually	estimate
pH	range 6.0-9.0				annually	grab
Total suspended solids	report		report		annually	grab
Total dissolved solids	report		report		annually	grab
Aluminum, total			report		annually	grab
Antimony, total			report		annually	grab
Arsenic, total			report		annually	grab
Barium,total			report		annually	grab
Boron, total			report		annually	grab
Beryllium			report		annually	grab
Cadmium, total			report		annually	grab
Cobalt, total			report		annually	grab
Chromium, total			report		annually	grab
Copper, total			report		annually	grab
Lead, total			report		annually	grab
Lithium, total			report		annually	grab
Magnesium, total			report		annually	grab
Molybdenum, total			report		annually	grab
Nickel, total			report		annually	grab
Silver, total			report		annually	grab
Strontium, total			report		annually	grab
Thallium, total			report		annually	grab
Vanadium, total			report		annually	grab
Zinc, total			report		annually	grab

PERMIT LIMITS

INSTREAM MONITORING POINT

OUTFALL S24*

EFFLUENT CHARACTERISTIC	MONTHLY		DAILY		MON. REQUIREMENTS	
	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
pH	range 6.0-9.0				quarterly	grab
Total suspended solids			report		quarterly	grab
Mercury, total			report		quarterly	grab
Total PCB			report		quarterly	grab
Aluminum, total			report		quarterly	grab
Antimony, total			report		quarterly	grab
Arsenic, total			report		quarterly	grab
Barium,total			report		quarterly	grab
Boron, total			report		quarterly	grab
Beryllium			report		quarterly	grab
Cadmium, total			report		quarterly	grab
Cobalt, total			report		quarterly	grab
Chromium, total			report		quarterly	grab
Copper, total			report		quarterly	grab
Lead, total			report		quarterly	grab
Lithium, total			report		quarterly	grab
Magnesium, total			report		quarterly	grab
Molybdenum, total			report		quarterly	grab
Nickel, total			report		quarterly	grab
Silver, total			report		quarterly	grab
Strontium, total			report		quarterly	grab
Thallium, total			report		quarterly	grab
Vanadium, total			report		quarterly	grab
Zinc, total			report		quarterly	grab
Phosphorus, total			report		quarterly	grab
Nitrate-nitrite			report		quarterly	grab
Nitrogen, Total			report		quarterly	grab
Uranium, total			report		quarterly	grab

* Data obtained at this outfall and at Bear Creek kilometer 9.2 by CERCLA program monitoring is acceptable.

PERMIT LIMITS

INSTREAM MONITORING POINTS

CATEGORY I OUTFALLS

Outfalls: 003, 006, 007, 033, 041, 044, 045, 046, 057, 058, 062, 063, 064, 086, 087, 102, 110, 134, S18, and S26

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		annual	estimate
pH	range 6.0-9.0				annual	grab

CATEGORY II - OUTFALLS

Outfalls: 002, 004, 014, 016, 019, 020, 047, 048, 054, 067, 083, 088, 099, 126

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		semi-annual	estimate
pH	range 6.0-9.0				semi-annual	grab
Total Residual Chlorine			0.5		semi-annual	grab

CATEGORY III - OUTFALLS

Outfalls: 034, 042, 071, 113, 114

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		semi-annual	estimate
pH		range 6.0-9.0			semi-annual	grab
Total Residual Chlorine			0.5		semi-annual	grab

The acceptable methods for detection and reporting of total residual chlorine are referenced in Part I, Section B. Monitoring Procedures, subsection 3. Test Procedures.

Additional monitoring requirements and conditions applicable to all Outfalls include:

There shall be no distinctly visible floating scum, oil or other matter contained in the wastewater discharge. The wastewater discharge must not cause an objectionable color contrast in the receiving stream.

The wastewater discharge shall not contain pollutants in quantities that will be hazardous or otherwise detrimental to humans, livestock, wildlife, plant life, or fish and aquatic life in the receiving stream.

Sludge or any other material removed by any treatment works must be disposed of in a manner which prevents its entrance into or pollution of any surface or subsurface waters. Additionally, the disposal of such sludge or other material must be in compliance with the Tennessee Solid Waste Disposal Act, TCA 68-31-101 et seq. and the Tennessee Hazardous Waste Management Act, TCA 68-46-101 et seq.

For the purpose of evaluating compliance with the permit limits established herein, where certain limits are below the State of Tennessee published required detection levels (RDLs) for any given effluent characteristics, the results of analyses below the RDL shall be reported as Below Detection Level (BDL), unless in specific cases other detection limits are demonstrated to be the best achievable because of the particular nature of the wastewater being analyzed. Analytical results reported as “BDL” are considered to be in compliance with the permit, provided the method quantitation limit achieved is equal to or less than the RDL specified in Chapter 1200-4-3-.05(8).

B. MONITORING PROCEDURES

1. Representative Sampling

Samples and measurements taken in compliance with the monitoring requirements specified herein shall be representative of the volume and nature of the monitored discharge, and shall be taken after treatment and prior to mixing with uncontaminated storm water runoff or the receiving stream. Samples taken at instream locations will be collected at representative locations within the stream width and depth.

2. Sampling Frequency

If there is a discharge from a permitted outfall on any given day during the monitoring period, the permittee must sample and report the results of analyses accordingly, and the permittee should not mark the 'No Discharge' box on the Discharge Monitoring Report form.

The permittee should mark the 'No Discharge' box on the Discharge Monitoring Report form only if a permitted outfall does not discharge at any time during the monitoring period. If the outfall discharges effluent at any time during the monitoring period, the permittee must provide at least one sampling result from the effluent of that outfall.

3. Test Procedures

a. Test procedures for the analysis of pollutants shall conform to regulations published pursuant to Section 304 (h) of the Clean Water Act (the "Act"), as amended, under which such procedures may be required.

b. Unless otherwise noted in the permit, all pollutant parameters shall be determined according to methods prescribed in Title 40, CFR, Part 136, as amended, promulgated pursuant to Section 304 (h) of the Act. For each pollutant parameter, the most sensitive test method shall be used that allows demonstration of compliance with the permit limits for that parameter. In the case where the permittee reports results indicating that the minimum level of quantitation (ML) determined using the most sensitive method is greater than the permit limit, the test method used and the data demonstrating how the ML was determined must be reported to the division. Unless in specific cases other detection limits are demonstrated to be the best achievable because of the particular nature of the wastewater being analyzed, the ML shall not be greater

than the required detection levels listed in the rules of the Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200-4-3-.05 (8).

c. Total Residual Chlorine

The acceptable methods for analysis of TRC are any methods specified in Title 40, CFR Part 136. The method detection level (MDL) for TRC shall not exceed 0.05 mg/L unless the permittee demonstrates that its MDL is higher. The permittee shall retain the documentation that justifies the higher MDL, and shall have that documentation available for review upon request. In cases where the permit limit is less than the MDL, the reporting of TRC at less than the MDL shall be interpreted to constitute compliance with the permit limit.

d. Mercury

The acceptable methods for analysis of mercury are any methods specified in Title 40 CFR, Part 136 as amended. The method detection level (MDL) for mercury shall not exceed 0.0002 mg/l. In cases where the permit limit is less than the MDL, the reporting of mercury at less than the MDL shall be interpreted to constitute compliance with the permit limit.

4. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

a. The exact place, date and time of sampling;
b. The exact person(s) collecting samples;
c. The dates and times the analyses were performed;
d. The person(s) or laboratory who performed the analyses;
e. The analytical techniques or methods used, and;
f. The results of all required analyses.

5. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation shall be retained for a minimum of three (3) years, or longer, if requested by the Division of Water Pollution Control.

C. DEFINITIONS

The ***Daily Maximum Concentration*** is a limitation on the average concentration, in milligrams per liter (mg/L), of the discharge during any calendar day. When a proportional-to-flow composite sampling device is used, the daily concentration is the concentration of that 24-hour composite; when other sampling means are used, the daily concentration is the arithmetic mean of the concentrations of equal volume samples collected during any calendar day or sampling period.

The ***Monthly Average Concentration***, a limitation on the discharge concentration, in milligrams per liter (mg/L), is the arithmetic mean of all daily concentrations determined in a one-month period. For the purpose of this definition, a frequency of 2/Month is representative of 2 separate daily samples, each sample having been collected on a separate day during the monitoring period.

The ***Monthly Average Amount***, a discharge limitation measured in pounds per day (lb/day), is the total amount of any pollutant in the discharge by weight during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required by a permit, the monthly average amount shall be determined by the summation of all the measured daily discharges by weight divided by the number of days during the calendar month when the measurements were made. For the

purpose of this definition, a frequency of 2/Month is representative of 2 separate daily samples, each sample having been collected on a separate day during the monitoring period.

The ***Daily Maximum Amount***, is a limitation measured in pounds per day (lb/day), on the total amount of any pollutant in the discharge by weight during any calendar day.

The ***Instantaneous Concentration*** is a limitation on the concentration, in milligrams per liter (mg/L), of any pollutant contained in the discharge determined from a grab sample taken at any point in time.

A ***Composite Sample***, for the purposes of this permit, is a sample collected continuously over a period of 24-hours at a rate proportional to the flow. Composite sample should be a combination of at least 8 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over a 24-hour period.

For the purposes of this permit, a ***Composite Sample*** for non-storm water discharges can be either a sample collected continuously over a period of 24-hours at a rate proportional to the flow, or a composite sample of at least 24 grab samples collected at regular intervals over a period of 24-hours.

A Grab Sample, for the purposes of this permit, is defined as a single effluent sample of at least 100 milliliters (sample volumes <100 milliliters are allowed when specified per standard methods, latest edition) collected at a randomly selected time over a period not exceeding 15 minutes. The sample(s) shall be collected at the period(s) most representative of the total discharge.

For the purpose of this permit, a ***Calendar Day*** is defined as any 24-hour period.

For the purpose of this permit, a ***Quarter*** is defined as any one of the following three month periods: January 1 through March 31, April 1 through June 30, July 1 through September 30, or October 1 through December 31. Quarterly monitoring requirements listed in this permit shall begin on the next quarterly period following the effective date of the renewed permit.

For the purpose of this permit, ***Semi-annually*** means the same as "once every six months." Measurements of the effluent characteristics concentrations may be made anytime during a 6 month period beginning from the issuance date of this permit so long as the second set of measurements for a given 12 month period are made approximately 6 months subsequent to that time, if feasible.

For the purpose of this permit, ***Annually*** is defined as a monitoring frequency of once every twelve (12) months beginning with the date of issuance of this permit so long as the following set of measurements for a given 12 month period are made approximately 12 months subsequent to that time.

Dry Weather Flow shall be construed to represent discharges consisting of process and/or non-process wastewater only.

Wet Weather Flow shall be construed to represent storm water runoff which, in combination with all process and/or non-process wastewater discharges, as applicable, is discharged during a qualifying storm event.

A **Qualifying Storm Event** is one which is greater than 0.1 inches and that occurs after a period of at least 72 hours after any previous storm event with rainfall of 0.1 inches or greater.

D. REPORTING

1. Monitoring Results

Monitoring results shall be recorded monthly and submitted monthly using Discharge Monitoring Report (DMR) forms supplied by the Division of Water Pollution Control. Submittals shall be postmarked no later than **30**

days after the completion of the reporting period. The top two copies of each report are to be submitted. A copy should be retained for the permittee's files. DMRs and any communication regarding compliance with the conditions of this permit must be sent to:

TENNESSEE DEPT. OF ENVIRONMENT & CONSERVATION
DIVISION OF WATER POLLUTION CONTROL
COMPLIANCE REVIEW SECTION
401 CHURCH STREET
L & C ANNEX 6TH FLOOR
NASHVILLE TN 37243-1534

The first DMR is due on the **thirtieth** of the month following permit effectiveness.

DMRs and any other information or report must be signed and certified by a responsible corporate officer as defined in 40 CFR 122.22, a general partner or proprietor, or a principal municipal executive officer or ranking elected official, or his duly authorized representative. Such authorization must be submitted in writing and must explain the duties and responsibilities of the authorized representative.

The electronic submission of DMRs will be accepted only if approved in writing by the division. For purposes of determining compliance with this permit, data submitted in electronic format is legally equivalent to data submitted on signed and certified DMR forms.

2. Additional Monitoring by Permittee

If the permittee monitors any pollutant specifically limited by this permit more frequently than required at the location(s) designated, using approved analytical methods as specified herein, the results of such monitoring shall be included in the calculation and reporting of the values required in the DMR form. Such increased frequency shall also be indicated on the form.

3. Falsifying Results and/or Reports

Knowingly making any false statement on any report required by this permit or falsifying any result may result in the imposition of criminal penalties as provided for in Section 309 of the Federal Water Pollution Control Act, as amended, and in Section 69-3-115 of the Tennessee Water Quality Control Act.

4. Outlier Data

Outlier data include analytical results that are probably false. The validity of results is based on operational knowledge and a properly implemented quality assurance program. False results may include laboratory artifacts, potential sample tampering, broken or suspect sample containers, sample contamination or similar demonstrated quality control flaw.

Outlier data are identified through a properly implemented quality assurance program, and according to ASTM standards (e.g. Grubbs Test, ‘h’ and ‘k’ statistics). Furthermore, outliers should be verified, corrected, or removed, based on further inquiries into the matter. If an outlier was verified (through repeated testing and/or analysis), it should remain in the preliminary data set. If an outlier resulted from a transcription or similar clerical error, it should be corrected and subsequently reported.

Therefore, only if an outlier was associated with problems in the collection or analysis of the samples and as such does not conform with the Guidelines Establishing Test Procedures for the Analysis of Pollutants (40 CFR §136), it can be removed from the data set and not reported on the Discharge Monitoring Report forms (DMRs). Otherwise, all results (including monitoring of pollutants more frequently than required at the location(s) designated, using approved analytical methods as specified in the permit) should be included in the calculation and reporting of the values required in the DMR form. You are encouraged to use “comment” section of the DMR form (or attach additional pages), in order to explain any potential outliers or dubious results.

E. SCHEDULE OF COMPLIANCE

Except for those provisions listed in this section, full compliance and operational levels shall be attained from the effective date of this permit. A schedule of compliance is granted for the period of 2 years following the effective date of this permit for compliance with total residual chlorine (TRC) limitations at Outfall 200, 125 and 135.

By six (6) months of the permit effective date
The permittee shall have completed an engineering report to identify the optimal means of reducing TRC discharges to within permit limits.

By eighteen (18) months of the permit effective date
The permittee shall have completed renovation or construction of the dechlorination system such that final operational testing can begin.

By two years of the permit effective date
The permittee shall demonstrate compliance with the permit limits shown in Part I.

Interim Progress Reports shall be submitted by letter three (3) months and twelve (12) months following the permit effective date.

Effluent limitations for discharges from Outfalls 200, 125, and 135 are summarized in Part I of the permit. The limits for total residual chlorine were established based on the instream water quality criterion for total residual chlorine in East Fork Poplar Creek, which is 0.019 mg/L.

During the compliance schedule, total residual chlorine will be monitored on a “report” basis. Monitoring frequency will be twice monthly at Outfall 200 and monthly at Outfalls 125 and 135, based on a grab sample. Following the compliance schedule, the daily maximum limitation of 0.044 mg/L as a daily maximum and 0.025 mg/L as a monthly average for total residual chlorine will become effective.

Following the requirements summarized in 40 CFR §122.47: Schedules of compliance, this permit will set forth interim requirements and the dates for their achievement. Furthermore, §122.47(a)(3)(ii) states:

(ii) If the time necessary for completion of any interim requirement (such as the construction of a control facility) is more than 1 year and is not readily divisible into stages for completion, the permit shall specify interim dates for the submission of reports of progress toward completion of the interim requirements and indicate a projected completion date.

The interim reports shall summarize total residual chlorine values discharged during the previous interim period, and the narrative report of progress made in achieving compliance. Interim reports should be submitted to the local Division of Water Pollution Control office address:

Environmental Assistance Center - Knoxville
Division of Water Pollution Control
Suite 220, State Plaza
2700 Middlebrook Pike
Knoxville, TN 37921

PART II

A. GENERAL PROVISIONS

1. Duty to Reapply

Permittee is not authorized to discharge after the expiration date of this permit. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit such information and forms as are required to the Director of Water Pollution Control (the "Director") no later than 180 days prior to the expiration date. Such applications must be properly signed and certified.

2. Right of Entry

The permittee shall allow the Director, the Regional Administrator of the U.S. Environmental Protection Agency, or their authorized representatives, upon the presentation of credentials:

a. To enter upon the permittee's premises where an effluent source is located or where records are required to be kept under the terms and conditions of this permit, and at reasonable times to copy these records;

b. To inspect at reasonable times any monitoring equipment or method or any collection, treatment, pollution management, or discharge facilities required under this permit; and

c. To sample at reasonable times any discharge of pollutants.

3. Availability of Reports

Except for data determined to be confidential under Section 308 of the Federal Water Pollution Control Act, as amended, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Division of Water Pollution Control. As required by the Federal Act, effluent data shall not be considered confidential.

4. Proper Operation and Maintenance

a. The permittee shall at all times properly operate and maintain all facilities and systems (and related appurtenances) for collection and treatment which are installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance also includes adequate laboratory and process controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit. Backup continuous pH and flow monitoring equipment are not required.

b. Dilution water shall not be added to comply with effluent requirements to achieve BCT, BPT, BAT and or other technology-based effluent limitations such as those in State of Tennessee Rule 1200-4-5-.09.

5. Treatment Facility Failure

The permittee, in order to maintain compliance with this permit, shall control production, all discharges, or both, upon reduction, loss, or failure of the treatment facility, until the facility is restored or an alternative method of treatment is provided. This requirement applies in such situations as the reduction, loss, or failure of the primary source of power.

6. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations.

7. Severability

The provisions of this permit are severable. If any provision of this permit due to any circumstance, is held invalid, then the application of such provision to other circumstances and to the remainder of this permit shall not be affected thereby.

8. Other Information

If the permittee becomes aware that he failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, then he shall promptly submit such facts or information.

B. CHANGES AFFECTING THE PERMIT

1. Planned Changes

The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or

b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42(a)(1).

2. Permit Modification, Revocation, or Termination

a. This permit may be modified, revoked and reissued, or terminated for cause as described in 40 CFR 122.62 and 122.64, Federal Register, Volume 49, No. 188 (Wednesday, September 26, 1984), as amended.

b. The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

c. If any applicable effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established for any toxic pollutant under Section 307(a) of the Federal Water Pollution Control Act, as amended, the Director shall modify or revoke and reissue the permit to conform to the prohibition or to the effluent standard, providing that the effluent standard is more stringent than the limitation in the permit on the toxic pollutant. The permittee shall comply with these effluent standards or prohibitions within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified or revoked and reissued to incorporate the requirement.

d. The filing of a request by the permittee for a modification, revocation, reissuance, termination, or notification of planned changes or anticipated noncompliance does not halt any permit condition.

3. Change of Ownership

This permit may be transferred to another party (provided there are neither modifications to the facility or its operations, nor any other changes which might affect the permit limits and conditions contained in the permit) by the permittee if:

a. The permittee notifies the Director of the proposed transfer at least 30 days in advance of the proposed transfer date;

b. The notice includes a written agreement between the existing and new permittees containing a specified date for transfer of permit responsibility, coverage, and liability between them; and

c. The Director, within 30 days, does not notify the current permittee and the new permittee of his intent to modify, revoke or reissue, or terminate the permit and to require that a new application be filed rather than agreeing to the transfer of the permit.

Pursuant to the requirements of 40 CFR 122.61, concerning transfer of ownership, the permittee must provide the following information to the division in their formal notice of intent to transfer ownership: 1) the NPDES permit number of the subject permit; 2) the effective date of the proposed transfer; 3) the name and address of the transferor; 4) the name and address of the transferee; 5) the names of the responsible parties for both the transferor and transferee; 6) a statement that the transferee assumes responsibility for the subject NPDES permit; 7) a statement that the transferor relinquishes responsibility for the subject NPDES permit; 8) the signatures of the responsible parties for both the transferor and transferee pursuant to the requirements of 40 CFR 122.22(a), “Signatories to permit applications”; and, 9) a statement regarding any proposed modifications to the facility, its operations, or any other changes which might affect the permit limits and conditions contained in the permit.

4. Change of Mailing Address

The permittee shall promptly provide to the Director written notice of any change of mailing address. In the absence of such notice the original address of the permittee will be assumed to be correct.

C. NONCOMPLIANCE

1. Effect of Noncompliance

All discharges shall be consistent with the terms and conditions of this permit. Any permit noncompliance constitutes a violation of applicable State and Federal laws and is grounds for enforcement action, permit termination, permit modification, or denial of permit reissuance.

2. Reporting of Noncompliance

a. 24-Hour Reporting

In the case of any noncompliance which could cause a threat to public drinking supplies, or any other discharge which could constitute a threat to human health or the environment, the required notice of non-compliance shall be provided to the Division of Water Pollution Control in the appropriate Environmental Assistance Center within 24-hours from the time the permittee becomes aware of the circumstances. (The Environmental Assistance Center should be contacted for names and phone numbers of environmental response personnel).

A written submission must be provided within five days of the time the permittee becomes aware of the circumstances unless this requirement is waived by the Director on a case-by-case basis. The permittee shall provide the Director with the following information:

i. A description of the discharge and cause of noncompliance;

ii. The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue; and

iii. The steps being taken to reduce, eliminate, and prevent recurrence of the noncomplying discharge.

b. Scheduled Reporting

For instances of noncompliance which are not reported under subparagraph 2.a. above, the permittee shall report the noncompliance on the Discharge Monitoring Report. The report shall contain all information concerning the steps taken, or planned, to reduce, eliminate, and prevent recurrence of the violation and the anticipated time the violation is expected to continue.

3. Sanitary Sewer Overflow

a. "***Sanitary Sewer Overflow***" means the discharge to land or water of wastes from any portion of the collection, transmission, or treatment system other than through permitted outfalls.

b. Sanitary Sewer Overflows are prohibited.

c. The permittee shall operate the collection system so as to avoid sanitary sewer overflows. No new or additional flows shall be added upstream of any point in the collection system, which experiences chronic sanitary sewer overflows (greater than 5 events per year) or would otherwise overload any portion of the system.

d. Unless there is specific enforcement action to the contrary, the permittee is relieved of this requirement after: 1) an authorized representative of the Commissioner of the Department of Environment and Conservation has approved an engineering report and construction plans and specifications prepared in accordance with accepted engineering practices for correction of the problem; 2) the correction work is underway; and 3) the cumulative, peak-design, flows potentially added from new connections and line extensions upstream of any chronic overflow point are less than or proportional to the amount of inflow and infiltration removal documented upstream of that point. The inflow and infiltration reduction must be measured by the permittee using practices that are customary in the environmental engineering field and reported in an attachment to a Monthly Operating Report submitted to the local TDEC Environmental Assistance Center. The data measurement period shall be sufficient to account for seasonal rainfall patterns and seasonal groundwater table elevations.

e. In the event that more than five (5) sanitary sewer overflows have occurred from a single point in the collection system for reasons that may not warrant the self-imposed moratorium or completion of the actions identified in this paragraph, the permittee may request a meeting with the Division of Water Pollution Control EAC staff to petition for a waiver based on mitigating evidence.

4. Upset

a. "***Upset***" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. An upset shall constitute an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the permittee demonstrates, through properly signed, contemporaneous operating logs, or other relevant evidence that:

i. An upset occurred and that the permittee can identify the cause(s) of the upset;

ii. The permitted facility was at the time being operated in a prudent and workman-like manner and in compliance with proper operation and maintenance procedures;

iii. The permittee submitted information required under "Reporting of Noncompliance" within 24-hours of becoming aware of the upset (if this information is provided orally, a written submission must be provided within five days); and

iv. The permittee complied with any remedial measures required under "Adverse Impact."

5. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to the waters of Tennessee resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

6. Bypass

a. "***Bypass***" is the intentional diversion of wastewater away from any portion of a treatment facility. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypasses are prohibited unless the following 3 conditions are met:

i. The bypass is unavoidable to prevent loss of life, personal injury, or severe property damage;

ii. There are not feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment down-time or preventative maintenance;

iii. The permittee submits notice of an unanticipated bypass to the Division of Water Pollution Control in the appropriate environmental assistance center within 24-hours of becoming aware of the bypass (if this information is provided orally, a written submission must be provided within five days). When the need for the bypass is foreseeable, prior notification shall be submitted to the Director, if possible, at least 10 days before the date of the bypass.

c. Bypasses not exceeding limitations are allowed **only** if the bypass is necessary for essential maintenance to assure efficient operation. All other bypasses are prohibited. Allowable bypasses not exceeding limitations are not subject to the reporting requirements of 6.b.iii, above.

d. Bypass does not include diverting from one treatment unit of treatment facility to another for alternate treatment.

7. Washout

a. For domestic wastewater plants only, a "washout" shall be defined as loss of Mixed Liquor Suspended Solids (MLSS) of 30.00% or more. This refers to the MLSS in the aeration basin(s) only. This does not include MLSS decrease due to solids wasting to the sludge disposal system. A washout can be caused by improper operation or from peak flows due to infiltration and inflow.

b. A washout is prohibited. If a washout occurs the permittee must report the incident to the Division of Water Pollution Control in the appropriate Environmental Assistance Center within 24-hours by telephone. A written submission must be provided within 5 days. The washout must be noted on the discharge monitoring report. Each day of a washout is a separate violation.

D. LIABILITIES

1. Civil and Criminal Liability

Except as provided in permit conditions for "**Bypassing,**" "**Overflow,**" and "**Upset,**" nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance. Notwithstanding this permit, the permittee shall remain liable for any damages sustained by the State of Tennessee, including but not limited to fish kills and losses of aquatic life and/or wildlife, as a result of the discharge of wastewater to any surface or subsurface waters. Additionally, notwithstanding this Permit, it shall be the responsibility of the permittee to conduct its wastewater treatment and/or discharge activities in a manner such that public or private nuisances or health hazards will not be created.

2. Liability Under State Law

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or the Federal Water Pollution Control Act, as amended.

PART III

OTHER REQUIREMENTS

A. TOXIC POLLUTANTS

The permittee shall notify the Division of Water Pollution Control as soon as it knows or has reason to believe:

1. That any activity has occurred or will occur which would result in the discharge on a routine or frequent basis, of any toxic substance(s) (listed at 40 CFR 122, Appendix D, Table II and III) which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

a. One hundred micrograms per liter (100 ug/l);

b. Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;

c. Five (5) times the maximum concentration value reported for that pollutant(s) in the permit application in accordance with 122.21(g)(7); or

d. The level established by the Director in accordance with 122.44(f).

2. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

a. Five hundred micrograms per liter (500 ug/l);

b. One milligram per liter (1 mg/L) for antimony;

c. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 122.21(g)(7); or

d. The level established by the Director in accordance with 122.44(f).

B. REOPENER CLAUSE

If an applicable standard or limitation is promulgated under Sections 301(b)(2)(C) and (D), 304(B)(2), and 307(a)(2) and that effluent standard or limitation is more stringent than any effluent limitation in the permit or controls a pollutant not limited in the permit, the permit shall be promptly modified or revoked and reissued to conform to that effluent standard or limitation.

C. PLACEMENT OF SIGNS

Within sixty (60) days of the effective date of this permit, the permittee shall place and maintain a sign(s) at each outfall and any bypass/overflow point in the collection system. For the purposes of this requirement, any bypass/overflow point that has discharged five (5) or more times in the last year must be so posted. The sign(s) should be clearly visible to the public from the bank and the receiving stream or from the nearest public property/right-of-way, if applicable. The minimum sign size should be two feet by two feet (2' x 2') with one inch (1") letters. The sign should be made of durable material and have a white background with black letters.

The sign(s) are to provide notice to the public as to the nature of the discharge and, in the case of the permitted outfalls, that the discharge is regulated by the Tennessee Department of Environment and Conservation, Division of Water Pollution Control. The following is given as an example of the minimal amount of information that must be included on sign:

TREATED INDUSTRIAL WASTEWATER [or INDUSTRIAL STORMWATER]
USDOE-Oak Ridge Y12 Complex
(Permittee's Phone Number)
NPDES Permit NO. TN0002968
TENNESSEE DIVISION OF WATER POLLUTION CONTROL
1-888-891-8332 ENVIRONMENTAL ASSISTANCE CENTER - KNOXVILLE

The above sign shall be posted near the corner of Bear Creek Road and Scarboro Road. Individual outfall signs need list only the Outfall number and category (if applicable).

D. ANTIDEGRADATION

Pursuant to the Rules of the Tennessee Department of Environment and Conservation, Chapter 1200-4-3-.06, titled “Tennessee Antidegradation Statement,” and in consideration of the Department’s directive in attaining the greatest degree of effluent reduction achievable in

municipal, industrial, and other wastes, the permittee shall further be required, pursuant to the terms and conditions of this permit, to comply with the effluent limitations and schedules of compliance required to implement applicable water quality standards, to comply with a State Water Quality Plan or other State or Federal laws or regulations, or where practicable, to comply with a standard permitting no discharge of pollutants.

E. BIOMONITORING REQUIREMENTS, CHRONIC

The permittee shall conduct a 3-Brood *Ceriodaphnia dubia* Survival and Reproduction Test and a 7-Day Fathead Minnow *(Pimephales promelas)* Larval Survival and Growth Test on the same samples of final effluent from Outfalls 125, 135, and 200.

The measured endpoint for toxicity will be the inhibition concentration causing 25% reduction (IC25) in survival, reproduction, or growth of the test organisms. The IC25 shall be determined based on a 25% reduction as compared to the controls. The average reproduction and growth responses will be determined based on the number of *Ceriodaphnia dubia* or *Pimephales promelas* larvae used to initiate the test.

Test shall be conducted and its results reported based on appropriate replicates of a total of five serial dilutions and a control, using the percent effluent dilutions as presented in the following table:

OUTFALL 200

Serial Dilutions for Whole Effluent Toxicity (WET) Testing					
100% Effluent	**(100+PL)/2**	**Permit Limit (PL)**	**0.50 X PL**	**0.25 X PL**	**Control**
% effluent					
100	**67**	**34**	**17**	**8.5**	**0**

OUTFALL 135

Serial Dilutions for Whole Effluent Toxicity (WET) Testing					
4 X PL	**2 X PL**	**Permit Limit (PL)**	**0.50 X PL**	**0.25 X PL**	**Control**
% effluent					
20	**10**	**5**	**2.5**	**1.2**	**0**

OUTFALL 125

Serial Dilutions for Whole Effluent Toxicity (WET) Testing					
4 X PL	**2 X PL**	**Permit Limit (PL)**	**0.50 X PL**	**0.25 X PL**	**Control**
% effluent					
36	**18**	**9**	**4.5**	**2.25**	**0**

The dilution/control water used will be a moderately hard water as described in Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to

Freshwater Organisms, EPA-821-R-02-013 (or the most current edition). Results from a chronic standard reference toxicant quality assurance test for each species tested shall be submitted with the discharge monitoring report. Reference toxicant tests shall be conducted as required in EPA-821-R-02-013 (or the most current edition). Additionally, the analysis of this multi-concentration test shall include review of the concentration-response relationship to ensure that calculated test results are interpreted appropriately.

Toxicity will be demonstrated if the IC25 is less than or equal to the permit limit indicated for each outfall in the above table(s). Toxicity demonstrated by the tests specified herein constitutes a violation of this permit.

All tests will be conducted using a minimum of three 24-hour flow-proportionate composite samples of final effluent (e.g., collected on days 1, 3 and 5). If, in any control more than 20% of the test organisms die in 7 days, the test (control and effluent) is considered invalid and the test shall be repeated within 30 days of the date the initial test is invalidated. Furthermore, if the results do not meet the acceptability criteria of section 4.9.1, EPA-821-R-02-013 (or the most current edition), or if the required concentration-response review fails to yield a valid relationship per guidance contained in Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing, EPA-821-B-00-004 (or the most current edition), that test shall be repeated. Any test initiated but terminated before completion must also be reported along with a complete explanation for the termination.

The toxicity tests specified herein shall be conducted quarterly (1/Quarter) and begin no later than 60 days from the effective date of this permit. If testing does not indicate toxicity in the first year of the renewed permit, testing shall be reduced to annually (1/Year). Testing will be evaluated at the end of the first year of the permit for each of the three outfalls 125, 135, and 200 described above.

In the event of a test failure, the permittee must start a follow-up test within 2 weeks and submit results from a follow-up test within 30 days from obtaining initial WET testing results. The follow-up test must be conducted using the same serial dilutions as presented in the corresponding table(s) above. **The follow-up test will not negate an initial failed test. In addition, the failure of a follow-up test will constitute a separate permit violation which must also be reported.**

In the event of 2 consecutive test failures or 3 test failures within a 12-month period for the same outfall, the permittee must initiate a Toxicity Identification Evaluation/Toxicity Reduction Evaluation (TIE/TRE) study within 30 days and so notify the division by letter. This notification shall include a schedule of activities for the initial investigation of that outfall. **During the term of the TIE/TRE study, the frequency of biomonitoring shall be once every three months.** Additionally, the permittee shall submit progress reports once every three months throughout the term of the TIE/TRE study. The toxicity must be reduced to allowable limits for that outfall within 2 years of initiation of the TIE/TRE study. Subsequent to the results obtained from the TIE/TRE studies, the permittee may request an extension of the TIE/TRE study period if necessary to conduct further analyses. The final determination of any extension period will be made at the discretion of the division.

The TIE/TRE study may be terminated at any time upon the completion and submission of 2 consecutive tests (for the same outfall) demonstrating compliance. Following the completion of TIE/TRE study, the frequency of monitoring will return to a regular schedule, as defined previously in this section as well in Part I of the permit. **During the course of the TIE/TRE study, the permittee will continue to conduct toxicity testing of the outfall being investigated at the frequency of once every three months but will not be required to perform follow-up tests for that outfall during the period of TIE/TRE study.**

Test procedures, quality assurance practices, determinations of effluent survival/reproduction and survival/growth values, and report formats will be made in accordance with Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013, or the most current edition.

Results of all tests, reference toxicant information, copies of raw data sheets, statistical analysis and chemical analyses shall be compiled in a report. The report will be written in accordance with Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013, or the most current edition.

Four (4) copies of biomonitoring reports (including follow-up reports) shall be submitted to the division. One copy of the report shall be submitted along with the discharge monitoring report (DMR) to both Divisions of Water Pollution Control and DOE Oversight; the third copy shall be submitted to the Permit Section. The fourth copy shall be submitted to the local Division of Water Pollution Control office address:

Environmental Assistance Center- Knoxville
Division of Water Pollution Control
2700 Middlebrook Pike, Suite 220
Knoxville, TN 37921-

F. RADIOLOGICAL MONITORING PLAN

Radiological monitoring for the radioisotope content of liquid effluents of the Y-12 Complex site is specified in the radiological monitoring plan (RMP) required by the permit. The RMP is based on radiological analysis of past and present Y-12 Complex operations and monitoring and any additional monitoring specified by the Division. Monitoring under this permit will continue as specified in the RMP until the RMP is modified. The RMP requires sufficient data collection to allow determination and analysis of appropriate parameters to be analyzed and reported for the radiological monitoring program. Requirements for sampling, data precision, minimum detectable activities and supporting radiological analyses are included in the RMP.

After review and analysis of monitoring under the RMP, the RMP may be modified. Modification approved by the Division will result in modification of the permit at the appropriate time

Within sixty (60) days of the permit effective date, the existing RMP for the Oak Ridge Y-12 Complex: Surface Water, Y/TS-1704 will be revised and submitted to the Division of WPC and DOE Oversight for review and ~~approval~~ comment.

G. BIOLOGICAL MONITORING AND ABATEMENT PROGRAM

The program began in 1985 and included in the last permit will be continued under the renewed permit. Within 30 days from the effective date of the permit, the permittee shall review the BMAP Plan pertaining to the Y-12 site. The permittee shall submit to the Division of Water Pollution Control a revised BMAP Plan within 60 days of the permit effective date. The plan shall include studies to annually evaluate the receiving streams' biological integrity in comparison to TN Water Quality Criteria. *USEPA comments on the draft BMAP Plan will be used during discussions with DOE in reaching final plan approval.*

Upon the Division's review of data from the Biological Monitoring Plan and Abatement Program, this plan may be modified, revoked or reissued, in order to reflect appropriate permit conditions.

MACROINVERTEBRATE STREAM SURVEY PROCESS to be followed in the BMAP Plan:
Macroinvertebrate stream surveys will be conducted in accordance with the TDEC Quality System Standard Operating Procedure for Macroinvertebrate Surveys, latest revision (November 2003 at this writing).

Frequency – annually during low flow, high temperature conditions. (Exceptions are for specific streams which are dry in low flow).

The BMAP Plan will identify the professional qualifications of personnel selected to perform the survey and will provide measures for advance notice of field work. The Divisions of WPC and DOE Oversight desire to be notified at least two weeks prior to conducting the biological survey.

Locations - The sites selected must provide appropriate habitat and must be generally comparable. All selected stream sampling points shall be identified in the BMAP Plan and approved by the EFO.

BIOSURVEYS
The biosurvey will consist of a single habitat semi-quantitative macroinvertebrate sample and a habitat survey. Habitat assessments, sample collection, subsampling, taxonomy and metric calculation must adhere exactly to the following methodology.

Habitat Assessment

Appropriate habitat assessment forms will be completed concurrent with each biological survey. These forms can be found in Appendix A-1 of EPA's Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers (EPA 841-B-99-002). The High Gradient Form will be used in conjunction with riffle kick collections and the Low Gradient Form will be used in conjunction with rooted bank collections.

Macroinvertebrate Sample Collection

A semi-quantitative single habitat macroinvertebrate sample will be collected at each site. The habitat to be sampled will be appropriate for ecoregion 67f. Two (2) one meter square riffle kicks using a 500 micron mesh net will be collected. Debris from both kicks will be composited and preserved. All sorting and identification is to be conducted in the laboratory.

Three (3) rooted bank sweeps will be collected using a 500-micron mesh triangular dip net. These are to include at least one sample from each bank, samples from different velocities and incorporate different bank types. Approximately one meter is to be sampled during each sweep. The debris from all three sweeps will be composited and preserved. All sorting and identification is to be conducted in the laboratory.

Subsampling

All samples will be reduced to 200+/- 20% organisms following subsampling protocols detailed in section 7.3 *Laboratory Processing for Macroinvertebrate Samples* in EPA's Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers (EPA 841-B-99-002.

Taxonomy

All taxa in the subsample will be identified to genus level.

Biometrics

The following biometrics will be calculated for each subsample (without extrapolation).

Taxa Richness (TR)
Chironomidae and Oligochaeta Abundance (%OC)
North Carolina Biotic Index (NCBI)
Percent Contribution of Single Most Dominant Taxon (%DOM)
Percent Clingers (%CLINGERS)
EPT Richness (EPT)
EPT Abundance (%EPT)

The following information will be recorded at each station during the biosurvey:

Water temperature (^{O}C)
Dissolved Oxygen (mg/l)
pH (S.U.)
Conductivity (umhos)
Stream Flow (cfs)

Reporting

Results of the biosurvey including complete taxa lists shall be submitted annually to DOEO, the Regional Environmental Field Office, as well as the WPC Nashville Compliance Section and Planning & Standards Section. Reporting, data and records management, and quality assurance/quality control will conform to TDEC/WPC Quality System Standard Operating Procedure for Macroinvertebrate Stream Surveys, Revised November 2003.

The BMAP shall produce data usable in the State's ArcView geographic information system. The permittee shall submit an annual report in July of each year of BMAP data for review, electronic data in ArcView format. The permittee will submit a brief letter report to update WPC on the ongoing work and advise of any potential difficulties which may be reflected in the annual report. This letter report will be submitted twice per year, for each of the spring-summer and fall-winter sampling periods.

H. ADDITION OF RAW WATER TO EAST FORK POPLAR CREEK

The permittee shall continue to maintain a flow in East Fork Poplar Creek at Station 17 of 7 million gallons per day through the permit period. The natural flow in East Fork Poplar Creek has been augmented for many years by Y-12 Complex flows. Raw water pumped from the Clinch River may be used to maintain this level of flow but may be discontinued whenever flows at Station 17 are greater than 7 MGD without this additional water being added to the creek or during emergency situations such as described in the next paragraph.

The permittee shall have a spill/accident plan ready such that base flow of raw water from the Clinch River can be shut off in the case of spills or other incidents in which Lake Reality will be used to capture contaminated plumes moving down the creek. The raw water will not be added to the creek in such circumstances until it is safe to do so.

Reporting of flow data will be performed as follows:

- Flows greater than 10 mgd will be assigned a value of 10 mgd for the purpose of determining compliance with the requirement to maintain a 7 mgd flow per the existing permit.
- Compliance will be determined monthly by calculating an arithmetic mean of the individual daily flow measurements.
- Individual daily flows of less than 7 mgd will not be considered a noncompliance if due to an emergency situation or to operational mishaps such as ruptured water lines or outages of the raw water supply beyond the permittees control. Specific details on such flow interruptions will be provided on Monthly Discharge Monitoring Reports (DMR's).
- Monthly DMR's will contain a table of flow values listing the daily measured flow, flows-greater-than-10-mgd replaced with 10 mgd and will display average flows for both columns for comparison.

Should additional study indicate that a lower flow is appropriate, the permittee should submit the data to WPC for review and consideration for possible permit modification.

I. TEMPERATURE PROFILE OF EAST FORK POPLAR CREEK

The permittee shall develop a temperature profile during hot summer conditions from Outfall 200 to Lake Reality at least once per year. The purpose of this profile is to see if thermal loadings from cooling waters are in compliance with this permit's limitations in the creek. Sampling points must include the locations C11, C08, C05, and C03 as identified in the Rationale on Figure 3: "Y-12 Complex In Stream Monitoring". Additional sampling points may be chosen as appropriate. Results of the profile will be briefly summarized and reported to the Division with the DMR submittal for the period.

J. WASTEWATER CONTROL

The permittee shall provide the Division a description of the procedures and criteria used to determine which wastewaters are routed to which treatment system. The report shall describe what wastewater acceptance criteria are used to determine which wastewaters are sent for treatment and the procedures used to control influents introduced to the treatment systems.

The report describing these procedures shall include whatever safeguards are in place to prevent introduction of wastewaters into a treatment system which are not appropriate for treatment. The report should also describe how a wastewater would be evaluated if it is of unusual character or different than what has been historically handled by the treatment systems. This description shall include a description of record-keeping and documentation of this process.

The report shall be submitted to the Division within one year of the permit effective date. Documentation of such decisions and operational records for the wastewater systems shall be maintained for at least three years and shall be made available to Department personnel within 15 days if requested.

The permittee may not add significant wasteloads to the existing treatment systems (such as loads that approach the existing design capacity) without the knowledge and approval of the Division. Significant wasteloads will only be added after review of such wasteloads based on the Wastewater Treatability and review by acceptable wastewater control procedures which are in place. Significant revisions to the Wastewater Control procedures for a treatment facility shall be sent to the Division.

The permittee shall keep its site survey of building and area drains up-to-date as part of the Wastewater Control program. If additional drains are added to a building or if drains are removed from service, the survey documentation shall be updated to reflect such changes. Where additional buildings or process areas are constructed and put in service at the site which connect to either the storm sewer system or the sewage collection system, it shall be included in the drain survey documentation.

K. MERCURY EFFLUENT LIMITS AND REMEDIATION

Permittee shall continue to reduce mercury discharges through operation of treatment facilities, control of stormwater runoff, source elimination, and by implementing CERCLA projects. This permit contains effluent limits for discharges from treatment units developed to control legacy mercury. These limits are retained from the previous permit on the basis of settlement from the permittee's appeal of the previous permit.

It is recognized that mercury and other legacy contaminants, including PCB's, are to be regulated by the CERCLA program. In the 1999 consent order, DOE and TDEC agreed that mercury limits were appropriate for inclusion in the existing permit for the treated effluent at Outfalls 55, 550 and 551.

The Consent Order, Page 3, Para. 4 Findings states: "Even though the mercury discharged at the three outfalls is from legacy problems, it is appropriate to continue having permit limits at these three outfalls because they are from treatment processes and the discharges have been able to meet the NPDES limits. The current effluent levels … will be retained for the duration of the current permit but will be reevaluated in future NPDES permits because of the potential application of improved technologies developed since the issuance of the permit in 1995."

The basis for this language was that if new treatment technology became available, more restrictive limits might be applicable. No evaluations have been made showing that new treatment technologies have become available. Thus the renewed permit applies the same mercury limits as found in the Consent Order.

The evaluations referenced in the Order involved numerous meetings and discussions with DOE, as well as the review of data supplied with the application. We concluded that retaining the existing limits is appropriate.

Permit limits will continue in force pending completion of a Total Maximum Daily Load (TMDL) for mercury in East Fork Poplar Creek. The TMDL will establish the maximum amount of mercury which EFPC can assimilate and still meet water quality standards. This TMDL will likely be completed prior to permit expiration and will serve as the basis upon which progress toward mercury cleanup will be judged.

In addition, the Biological Monitoring and Abatement Program will continue to provide data on aquatic biological life. Ongoing DOE fish community and fish tissue studies should be continued to document mercury concentrations in fish tissue.

L. COMPLIANCE WITH TOTAL RESIDUAL CHLORINE

A schedule of compliance is granted for the period of 2 years following the effective date of this permit for compliance with total residual chlorine (TRC) limitations at Outfall 200, 125 and 135. The Schedule requires completion of engineering report, renovation or construction of the dechlorination system, and final operational testing.

Effluent limitations for discharges from Outfalls 200, 125, and 135 are summarized in Part I of the permit. The limits for total residual chlorine were established based on the instream water quality criterion for total residual chlorine in East Fork Poplar Creek, which is 0.019 mg/L.

During the compliance schedule, total residual chlorine will be monitored on a "report" basis. Monitoring frequency will be twice monthly at Outfall 200 and monthly at Outfalls 125 and 135, based on a grab sample. Following the compliance schedule, the daily maximum limitation of 0.044 mg/L as a daily maximum and 0.025 mg/L as a monthly average for total residual chlorine will become effective.

PART IV

BEST MANAGEMENT PRACTICES

A. GENERAL CONDITIONS

1. BMP Plan

The permittee shall update the existing Best Management Practices (BMP) plan with the goal of reducing pollution at its source. The BMP Plan prevents, or minimizes the potential for, the release of pollutants (including oil and grease) from *ancillary activities*, including material storage areas; Complex site runoff; in-Complex transfer, process and material handling areas; loading and unloading operations, and sludge and waste disposal areas, to the waters of the State of Tennessee through Complex site runoff; spillage or leaks; sludge or waste disposal; or drainage from raw material storage. For purposes of this part, the terms "pollutant" or "pollutants" refer to any substance listed as toxic under Section 307(a)(1) of the Clean Water Act, oil, as defined in Section 311(a)(1) of the Act, and any substance listed as hazardous under Section 311 of the Act.

2. Implementation

The existing BMP plan shall be updated within three (3) months after the effective date of this permit. The permittee shall continue implementation of the existing BMP Plan pending approval of the revisions.

B. GENERAL REQUIREMENTS

The BMP program shall:

1. Be documented in narrative form, and shall include any necessary plot plans, drawings, or maps;

2. Establish specific objectives for the control of toxic and hazardous pollutants:

a. Each facility component or system shall be examined for its potential for causing a release of significant amounts of toxic or hazardous pollutants to waters of the State of Tennessee due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc.;

b. Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural condition (e.g., precipitation), or other circumstances to result in significant amounts of toxic or hazardous pollutants reaching surface waters, the plan should include a prediction of the direction, rate of flow, and total quantity of toxic or hazardous pollutants which could be discharged from the facility as a result of each condition or circumstance;

3. Establish specific best management practices to meet the objectives identified under section B.2. contained herein, addressing each component or system capable of causing a release of significant amounts of toxic or hazardous pollutants to the waters of the State of Tennessee;

4. The BMP program:

a. May reflect requirements for Spill Prevention Control and Countermeasure (SPCC) plans under section 311 of the Act and 40 CFR part 112, and may incorporate any part of such plans into the BMP program by reference;

b. Shall assure the proper management of solid and hazardous waste in accordance with regulations promulgated under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976 (RCRA) (40 U.S.C. §6901, et. seq.). Management practices required under RCRA regulations shall be considered in the BMP program; and,

c. Shall address the following points for the ancillary activities listed in section A.1.:

i. Statement of policy;

ii. Spill Control Committee: responsible for BMP program implementation and subsequent review and updating;

iii. Material inventory: identification of all sources and quantities of toxic and hazardous substances handled or produced, including Complex drawings and plot plans, materials flow diagrams, physical, chemical, toxicological, and health information on toxic and hazardous substances, and investigation and evaluation of new materials;

iv. Material compatibility: evaluation of process changes or revisions for materials compatibility, review of properties of chemicals handled and materials of construction, evaluation of means of chemical disposal and incompatibility, cleansing of vessels and transfer lines, and use of proper coatings and cathodic protection on buried pipelines if required;

v. Employee training: meetings to be held at frequent intervals, spill drills, adequate job training, transmission of information on past spills and causes, informing employees of BMP program components, training in cleanup procedures, and review and interface with safety program;

vi. Reporting and notification procedures: maintenance of records of spills through formal reports for internal review, notification as required by law to governmental and environmental agencies in the event of a spill, and procedures for notifying the appropriate Complex personnel;

vii. Visual inspections: routine inspections with visual observations of storage facilities, transfer pipelines, and loading and unloading areas, detailed inspections of pipes, pumps, valves, fittings, tank corrosion, tank support and foundation deterioration, etc.;

viii. Preventive maintenance: identification of equipment and systems to which the preventive maintenance program should apply, periodic inspection and testing of such equipment and systems, appropriate adjustment, repair, or replacement of parts, and maintenance of preventive maintenance records;

ix. Good housekeeping: neat and orderly storage of chemicals, prompt removal of small spillage, regular garbage pickup, maintenance of dry and clean floors, proper pathways and walkways, minimum accumulation of liquid and solid chemicals on the ground or floor in a building, and stimulation of employee interest in good housekeeping;

x. Security: Complex patrols, fencing, good lighting, traffic control, controlled access where appropriate, visitor passes, locked entrances, locks on drain valves and pumps for chemical storage tanks, and television monitoring.

C. DOCUMENTATION

The permittee shall maintain the BMP plan at the facility and shall make the plan available to the permit issuing authority upon request.

D. BMP PLAN MODIFICATION

The permittee shall amend the BMP plan whenever there is a change in the facility or change in the operation of the facility which materially increases the potential for the ancillary activities to result in a discharge of significant amounts of pollutants.

E. MODIFICATION FOR INEFFECTIVENESS

If the BMP plan proves to be ineffective in achieving the general objective of preventing the release of significant amounts of pollutants to surface waters and the specific objectives and requirements under section B, the permit shall be subject to modification pursuant to 40 CFR 122.62 or 122.63 to incorporate revised BMP requirements. Any such permit modification shall be subject to review in accordance with the procedures for permit appeals set forth in accordance with 69-3-110, Tennessee Code Annotated.

F. COMPLIANCE SCHEDULE

1. The plan should be developed and available for review within 30 days after permit issuance.

2. The permittee shall begin implementation of the BMP Plan as soon as possible, but not later than 60 days after permit coverage. Where new construction is necessary to implement the management plan, a construction schedule should be included. Construction should be completed as soon as possible.

3. The permittee shall fully complete the approved BMP Plan, including all necessary construction, and be in full compliance with the Act, within 6 months following initial implementation of the Plan.

PART V

STORM WATER POLLUTION PREVENTION PLAN

The discharger will develop, document and maintain a storm water pollution prevention plan (SWPPP) pursuant to the requirements set forth in EPA guidance manuals titled "Storm Water Management for Industrial Activities, Developing Pollution Prevention Plans and Best Management Practices", (EPA 832-R-92-006), September, 1992, and the "Summary Guidance", (EPA 833-R-92-002), October, 1992. The plan shall be signed by a principal executive officer of a corporation. The SWPPP developed and implemented shall be site specific to the permitted facility with regard to the general terms and conditions outlined in the guidance manuals cited herein, and, at a minimum, shall contain the following items:

Note: This section addresses runoff from operating areas under DOE control. We recognize that future site development will result in cooperative activities being undertaken on the DOE Reservation by local, state, and other federal agencies. Effective control of stormwater requires that each activity conducts proper planning, permitting, and oversight for development and operations. As the host of these activities offering infrastructure support, the Y-12 Complex remains ultimately responsible for water quality effects of tenant activities.

A. POLLUTANT SOURCES AND PATHWAYS

1. A site map outlining the individual storm water drainage areas, existing structural control measures, surface water bodies, and sinkholes

2. A narrative description of significant materials (40 CFR 122.26) that are currently or in the past have been treated, stored, or disposed outside; materials management practices; existing structural and non-structural control measures to reduce pollutants; and a description of any storm water treatment

3. A list of significant spills and leaks of toxic or hazardous pollutants at the facility that have taken place after the effective date of the permit

4. A prediction of direction of flow and the possible pollutants associated with each area of the Complex that generates storm water

5. A record of available sampling data describing pollutants in storm water discharges

B. STORM WATER MANAGEMENT CONTROLS

1. Formulate a pollution prevention team with named individuals who will develop the storm water prevention plan and assist Complex manager in its implementation.

Due to the significant stormwater impacts from CERCLA remediation projects, a representative from the remediation staff should be added to the SWPPP team.

2. Inventory types of materials handled and associated potential of release to storm water. Evaluate the following for potential pollutant contribution: loading and unloading operations, outdoor storage and manufacturing activities, dust or particulate generating processes, and on-site waste disposal practices. Consider toxicity of chemicals, quantity of chemicals, and history of leaks or spills of toxic or hazardous pollutants.

3. Design a preventive maintenance program including inspection and maintenance of storm water management devices and testing Complex equipment and systems to uncover conditions which could cause failures.

4. Maintain a clean, orderly facility.

5. Establish spill prevention and response procedures. Identify potential spill areas and drainage points. Specify material handling procedures and storage requirements. Identify spill cleanup procedures and provide to responsible personnel. Make available to responsible personnel the necessary equipment to implement cleanup at all times when the facility is in operation.

6. Include in the plan a narrative of traditional storm water management practices, i.e., other than those which control the source of pollutants.

7. Identify areas of potentially high soil erosion and measures to limit erosion.

8. Train employees at all levels of responsibility in the components of the storm water prevention plan.

9. Identify qualified personnel to inspect equipment, Complex areas, and material handling areas. Develop a tracking system to ensure corrective action and maintain records of inspections.

10. Designate a position in the plan, such as the Spill Response Coordinator, who will keep records of spills or other discharges, inspections and maintenance activities, and information describing the quality and quantity of storm water discharges.

11. Identify any non-storm water discharges, and their source(s), associated with the storm water outfalls. In the event non-storm water discharges are discovered in combination with the storm water discharges, the permittee must submit the appropriate EPA form(s) for the characterization of these non-storm water discharges as warranted.

C. FACILITY INSPECTION

Responsible person(s) named in the plan will inspect the facility at least semi-annually for the accuracy of the plan and maps, adequate measures to reduce pollutants in storm water runoff, and the need for additional controls. Records of these inspections will be maintained for a period of three years.

D. SPILL PREVENTION CONTROL AND COUNTERMEASURES

Storm water management programs may reflect requirements for spill prevention control and countermeasures (SPCC) plans under section 311 of the CWA.

E. PLAN REVIEW AND UPDATE

The plan will be reviewed and updated, if necessary, by the facility at least annually. The plan and all records will be retained for at least three years after expiration of this permit.

F. PLAN IMPLEMENTATION

The plan should be developed and available for review within 30 days after permit coverage. Facilities should implement the management practices as soon as possible, but not later than one year after permit coverage. Where new construction is necessary to implement the management plan, a construction schedule should be included. Construction should be completed as soon as possible.

G. PLAN AVAILABILITY

The plan will be maintained by the discharger on the site or at a nearby office. Copies of the plan will be submitted to the Division of Water Pollution Control within ten working days of any request.

H. PLAN MODIFICATION

The plan will be modified as required by the Director of the Division of Water Pollution Control.

I. MONITORING PLAN

Storm water discharges will be monitored as required in Attachment I. For each outfall monitored, the surface area and type of cover, for example, roof, pavement, grassy areas, gravel, will be identified. Land use activities will be related to the industrial categories identified herein.

J. SARA TITLE III, SECTION 313 PRIORITY CHEMICALS

The SWPPP shall include the following for those facilities subject to reporting requirements under SARA Title III, Section 313 for chemicals which are classified as Section 313 water priority chemicals:

1. In areas where Section 313 priority chemicals are stored, processed or otherwise handled, appropriate containment, drainage control and/or diversionary structures will be provided. At a minimum, one of the following preventive systems or its equivalent will be used:

a. Curbing, culverting, gutters, sewers or other forms of drainage control

b. Roofs, covers or other forms or protection to prevent storage piles from exposure to storm water and wind

2. The plan will include a discussion of measures taken to conform with the following applicable guidelines:

a. In liquid storage areas where storm water comes into contact with any equipment, tank container, or other vessel used for Section 313 water priority chemicals,

i. the tank or container must be compatible with Section 313 water priority chemical which it stores and

a. the liquid storage areas shall be operated to minimize discharge of Section 313 chemicals.

b. Material storage areas for Section 313 water priority chemicals, other than liquids, will incorporate features which will minimize the discharge of Section 313 chemicals by reducing storm water contact.

c. Truck and rail car loading and unloading areas for Section 313 liquid chemicals will be operated to minimize discharges of chemicals. Appropriate measures may include placement and maintenance of drip pans for use when making and breaking hose connections; a spill contingency plan; and/or other equivalent measures.

d. In Complex areas where Section 313 chemicals are transferred, processed or handled, piping, processing equipment, and materials handling equipment will be operated so as to minimize discharges of chemicals. Piping and equipment must be compatible with chemicals handled. Additional protection, including covers and guards to prevent exposure to wind, pressure relief vents, and overhangs or door skirts to enclose trailer ends at truck loading docks, will be implemented. Visual inspections or leak tests will be conducted on overhead piping that conveys Section 313 chemicals.

e. For discharges from areas covered by parts 2a, 2b, 2c, or 2d,

i. the drainage should be restrained by manually-operated valves or other positive means to prevent the discharge of a spill or excessive leakage,

ii. flapper-type drain valves can not be used for drainage of containment units,

iii. the final discharge of in-facility storm sewers should be equipped with a diversion system that could, in the event of an uncontrolled spill of a Section 313 chemical, return the spilled material to the facility, and

iv. the records of the frequency and estimated volume (in gallons) of discharges from containment areas will be maintained.

f. Facility site runoff other than from areas covered by parts 2a, 2b, 2c, and 2d from which runoff could contain Section 313 chemicals will incorporate the necessary drainage or other control features to prevent discharge of spilled or improperly disposed material and to ensure the reduction of pollutants in runoff or leachate.

g. All areas of the facility will be inspected at specific intervals for leaks or conditions that could lead to discharges of Section 313 water priority chemicals or direct contact of storm water with raw materials, intermediate materials, waste materials or products. Inspection intervals shall be specified in the plan and shall be based on design and operations experience. Corrective action will be taken promptly when a leak or condition, which could cause significant releases of a chemical is discovered. If corrective action can't be taken immediately, the unit or process will be shut down until the situation is corrected. When a leak or spill has occurred, the contaminated material(s) must be promptly removed and disposed in accordance with Federal, State, and local requirements and as described in the plan.

h. Facilities will have the necessary security systems to prevent accidental or intentionally entry, which could cause a discharge.

i. Facility employees and contract personnel that work in areas where SARA title III, Section 313 water priority chemicals are used or stored will be trained in and informed of preventive measures at the facility. Employee training shall be conducted at least once per year in the pollution control laws and regulations and in the storm water prevention plan. The plan shall designate a person who is accountable for spill prevention at the facility and who will set up the necessary spill emergency procedures and reporting requirements.

j. The SWPPP for a facility subject to SARA Title III, Section 313 requirements will be reviewed and certified by a responsible corporate officer in accordance to Part I.D.1 (Monitoring Results) of this permit. The corporate officer will certify the plan every three years thereafter, or as soon as practical, after significant modifications are made to the facility. Certification will in no way relieve the owner or operator of a facility covered by the plan of their duty to prepare and fully implement such plan.

3. "Section 313 water priority chemicals" means the following chemicals or chemical categories:

a. listed at 40 CFR 372.65 pursuant to Section 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986, also titled the Emergency Planning and Community Right-to-Know Act of 1986;

b. present at or above threshold levels at a facility subject to SARA Title III, Section 313 reporting requirements; and

c. meeting at least one of the following criteria:

i. listed in Appendix D of 40 CFR 122 on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols) or Table V (certain toxic pollutants and hazardous substances);

ii. listed as a hazardous substance pursuant to section 311(b)(2)(A) of the CWA at 40 CFR 116.4; or

iii. designated as pollutants for which EPA has published acute or chronic toxicity criteria.

ATTACHMENT I

USDOE-Oak Ridge Y12 Complex
NPDES Permit TN0002968

Storm Water Pollution Prevention Plan Requirements
Fabricated Metal Products Industry

Storm Water Pollution Prevention Plan Requirements for Storm Water Discharges Associated With Industrial Activity From Fabricated Metal Products Industry

I. CONTENTS OF PLAN.

The plan shall include, at a minimum, the following items:

A. Pollution Prevention Team. Each plan shall identify a specific individual or individuals within the facility organization as members of a storm water Pollution Prevention Team that are responsible for developing the storm water pollution prevention plan and assisting the facility or Complex manager in its implementation, maintenance, and revision. The plan shall clearly identify the responsibilities of each team member. The activities and responsibilities of the team shall address all aspects of the facility's storm water pollution prevention plan.

B. Description of Potential Pollutant Sources. Each plan shall provide a description of potential sources which may reasonably be expected to add significant amounts of pollutants to storm water discharges or which may result in the discharge of pollutants during dry weather from separate storm sewers draining the facility. Each plan shall identify all industrial activities and significant materials which may potentially be significant pollutant sources. Each plan shall specifically identify the physical features of the facility that may contribute to storm water runoff. Each plan shall include, at a minimum:

C. Drainage

1. A site map indicating the outfall locations and types of discharges contained in the drainage areas of the outfalls, an outline of the portions of the drainage area of each storm water outfall that are within the facility boundaries, each existing structural control measure to reduce pollutants in storm water runoff, surface water bodies, locations where significant materials are exposed to precipitation, locations where major spills or leaks identified under Spills and Leaks (below) of this permit have occurred, and the locations of the following activities where such activities are exposed to precipitation: raw metal storage areas, finished metal storage areas, scrap disposal collection sites, equipment storage areas, retention and detention basins, temporary diversion dikes or berms, permanent diversion dikes or berms, right-of-way or perimeter diversion devices, any sediment traps or barriers, vehicle and equipment maintenance and/or cleaning areas, loading/unloading areas, locations used for the treatment, storage or disposal of wastes, liquid storage tanks, processing areas including outside painting areas, wood preparation, recycling and raw material storage.

2. For each area of the facilities that generates storm water discharges associated with industrial activity with a reasonable potential for containing significant amounts of pollutants, a prediction of the direction of flow, and an identification of the types of pollutants which are likely to be present in storm water discharges associated with industrial activity. Factors to consider include the toxicity of chemical; quantity of chemicals used, produced or discharged; the likelihood of contact with storm water; and history of significant leaks or spills of toxic or hazardous pollutants. In addition, flows with a significant potential for causing erosion shall be identified such as heavy equipment use areas, drainage from roofs, parking lots, etc.

D. Inventory of Exposed Materials — An inventory of the types of materials handled at the site that potentially may be exposed to precipitation. Such inventory shall include a narrative description of significant materials that have been handled, treated, stored or disposed in a manner to allow exposure to storm water between the time of 3 years prior to the effective date of this permit; method and location of onsite storage or disposal; materials management practices employed to minimize contact of materials with storm water runoff between the time of 3 years prior to the effective date of this permit; the location and a description of existing structural and nonstructural control measures to reduce pollutants in storm water runoff; and a description of any treatment the storm water receives.

E. Spills and Leaks — A list of significant spills and significant leaks of toxic or hazardous pollutants that occurred at areas that are exposed to precipitation or that otherwise drain to a storm water conveyance at the facility

after the date of 3 years prior to the effective date of this permit. Significant spills that should be considered for the fabricated metals industry include, but are not limited to, chromium, toluene, pickle liquor, sulfuric acid, zinc and other water priority chemicals and hazardous chemicals and wastes. Such list shall be updated as appropriate during the term of the permit.

F. Sampling Data — A summary of existing discharge sampling data describing pollutants in storm water discharges from the facility, including a summary of sampling data collected during the term of this permit.

G. Risk Identification and Summary of Potential Pollutant Sources — A narrative description of the potential pollutant sources from the following activities: loading and unloading operations for paints, chemicals and raw materials; outdoor storage activities for raw materials, paints, empty containers, corn cob, chemicals, scrap metals; outdoor manufacturing or processing activities such as grinding, cutting, degreasing, buffing, brazing, etc.; significant dust or particulate generating processes; and onsite waste disposal practices for spent solvents, sludge, pickling baths, shavings, ingots pieces, refuse and waste piles. The description shall specifically list any significant potential source of pollutants at the site and for each potential source, any pollutant or pollutant parameter (e.g., biochemical or chemical oxygen demand, chromium, total suspended solids, oil and grease, etc.) of concern shall be identified**.**

H. Measures and Controls. Each facility covered by this permit shall develop a description of storm water management controls appropriate for the facility, and implement such controls. The appropriateness and priorities of controls in a plan shall reflect identified potential sources of pollutants at the facility. The description of storm water management controls shall address the following minimum components, including a schedule for implementing such controls:

I. Good Housekeeping — Good housekeeping requires the maintenance of areas which may contribute pollutants to storm water discharges in a clean, orderly manner. Permittees should address the following areas in the manner described.

J. Raw Steel Handling Storage - Include measures controlling or recovering scrap metals, fines, and iron dust, including measures for containing materials within storage handling areas.

K. Paints and Painting Equipment - Consider control measures to prevent or minimize exposure of paint and painting equipment from exposure to storm water.

L. Preventive Maintenance — Preventive maintenance measures shall include timely inspection and maintenance of storm water management devices (e.g., cleaning oil/water separators, catch basins) as well as inspecting and testing facility equipment and systems to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters, and ensuring appropriate maintenance of such equipment and systems.

M. Spill Prevention and Response Procedures — Areas where potential spills which could contribute pollutants to storm water discharges may occur, and their accompanying drainage points shall be identified clearly in the storm water pollution prevention plan. Where appropriate, specifying material handling procedures, storage requirements, and use of equipment such as diversion valves in the plan should be considered. Procedures for cleaning up spills shall be identified in the plan and made available to the appropriate personnel. The necessary equipment to implement a clean up should be available to personnel. The following areas should be addressed:

1. Metal Fabricating Areas - Include measures for maintaining clean, dry, orderly conditions in these areas. Use of dry clean-up techniques should be considered in the plan.

2. Storage Areas for Raw Metal - Include measures to keep these areas free of conditions that could cause spills or leakage of materials. Storage areas should be maintained for easy access in case spill clean up is necessary. Stored materials should be able to be identified correctly and quickly.

3. Receiving, Unloading, and Storage Areas - Include measures to prevent spills and leaks; plan for quick remedial clean up and instruct employees on clean-up techniques and procedures.

4. Storage of Equipment - Include measures for preparing equipment for storage and the proper method to store equipment including protecting with covers, storing indoors. The plan should include clean-up measures for equipment that will be stored outdoors to remove potential pollutants.

5. Metal Working Fluid Storage Areas - The plan should include measures that identify controls particularly for storage of metal working fluids.

6. Cleaners and Rinse Water - The plan should include measures to control and cleanup spills of solvents and other liquid cleaners; control sand buildup and disbursement from sand-blasting operations, prevent exposure of recyclable wastes; and employ substitute cleaners when possible.

7. Lubricating Oil and Hydraulic Fluid Operations - Consider using devices or monitoring equipment to detect and control leaks and overflows, including the installation of perimeter controls such as dikes, curbs, grass filter strips, or other equivalent measures.

8. Chemical Storage Areas - Identify proper storage that prevents storm water contamination and prevents accidental spillage. The plan should include a program to inspect containers, and identify proper disposal and spill controls.

N. Inspections — Qualified facility personnel shall be identified to inspect designated equipment and areas of the facility at appropriate intervals specified in the plan. Metal fabricators shall at a minimum include the following areas for inspection: raw metal storage areas, finished product storage areas, material and chemical storage areas, recycling areas, loading and unloading areas, equipment storage areas, paint areas, fueling and maintenance areas, and waste management areas. A set of tracking or follow-up procedures shall be used to ensure that appropriate actions are taken in response to the inspections. Records of inspections shall be maintained.

O. Employee Training — Employee training programs shall inform personnel responsible for implementing activities identified in the storm water pollution prevention plan or otherwise responsible for storm water management at all levels of responsibility of the components and goals of the storm water pollution prevention plan. Training should address topics such as spill response, good housekeeping, and material management practices. The pollution prevention plan shall identify periodic dates for such training.

P. Recordkeeping and Internal Reporting Procedures — A description of incidents (such as spills, or other discharges), along with other information describing the quality and quantity of storm water discharges shall be included in the plan required under this part. Inspections and maintenance activities shall be documented and records of such activities shall be incorporated into the plan.

Q. Non-storm Water Discharges

1. The plan shall include a certification that the discharge has been tested or evaluated for the presence of non-storm water discharges. The certification shall include the identification of potential significant sources of non-storm water at the site, a description of the results of any test and/or evaluation for the presence of non-storm water discharges, the evaluation criteria or testing method used, the date of any testing and/or evaluation, and the onsite drainage points that were directly observed during the test. Certifications shall be signed in accordance with 40 CFR 122.22, by a general partner or proprietor, or a principal municipal executive officer or ranking elected official, or his duly authorized representative. A discharger that is unable to provide the certification required by this paragraph must notify the Division of Water Pollution Control.

2. Sources of non-storm water that are combined with storm water discharges associated with industrial activity must be identified in the plan. The plan shall identify and ensure the implementation of appropriate pollution prevention measures for the non-storm water component(s) of the discharge. Any non-storm water discharges that are not permitted under an individual NPDES permit should be brought to the attention of the Division's local Environmental Assistance Center.

3. Failure to Certify — Any facility that is unable to provide the certification required (testing for non-storm water discharges), must notify the Division of Water Pollution Control 180 days after the effective date of this permit. If the failure to certify is caused by the inability to perform adequate tests or evaluations, such notification shall

describe: the procedure of any test conducted for the presence of non-storm water discharges; the results of such test or other relevant observations; potential sources of non-storm water discharges to the storm sewer; and why adequate tests for such storm sewers were not feasible. Non-storm water discharges to waters of the State which are not authorized by an NPDES permit are unlawful, and must be terminated.

R. Sediment and Erosion Control — The plan shall identify areas which, due to topography, activities, or other factors, have a high potential for significant soil erosion. The plan shall identify structural, vegetative, and/or stabilization measures to be used to limit erosion. These shall include but not be limited to grass swales, filter strips, treatment works, or other equivalent measures. Metal fabricators must include in their plan measures to minimize erosion related to the high volume of traffic from heavy equipment for delivery to and from the facility and for equipment operating at the facility on a daily basis such as forklifts, cranes, etc.

S. Management of Runoff — The plan shall contain a narrative consideration of the appropriateness of traditional storm water management practices (practices other than those which control the generation or source(s) of pollutant(s) used to divert, infiltrate, reuse, or otherwise manage storm water runoff in a manner that reduces pollutants in storm water discharges from the site. The plan shall provide that measures that the permittee determines to be reasonable and appropriate shall be implemented and maintained. The potential of various sources at the facility to contribute pollutants to storm water discharges associated with industrial activities shall be considered when determining reasonable and appropriate measures. Appropriate measures may include: vegetative swales and practices, reuse of collected storm water (such as for a process or as an irrigation source), inlet controls (such as oil/water separators), snow management activities, infiltration devices, and wet detention/retention devices.

T. Comprehensive Site Compliance Evaluation. Qualified personnel shall conduct site compliance evaluations at least once a year. Such evaluations shall include:

1. Visual inspection of areas contributing to a storm water discharge for evidence of, or the potential for, pollutants entering the drainage system. Inspection shall address areas associated with the storage of raw metals, storage of spent solvents and chemicals, outdoor paint areas, drainage from roof, unloading and loading areas, equipment storage areas, recycling areas, and retention ponds (sludge). Potential pollutants include chromium, zinc, lubricating oil, solvents, aluminum, oil and grease, methyl ethyl ketone, steel, and other related materials. Measures to reduce pollutant loadings shall be evaluated to determine whether they are adequate and properly implemented in accordance with the terms of the permit or whether additional control measures are needed. Structural storm water management measures, such as detention basins and channels, gutters or drains to direct discharge flow, oil/water separators in storm drains, containment structures, concrete pads, sediment and erosion control measures, and other structural pollution prevention measures identified in the plan shall be observed to ensure that they are operating correctly. A visual inspection of equipment needed to implement the plan, such as spill response equipment and containment drums, shall be made to determine if the equipment is functioning properly and that drums are not in a corrosive or deteriorating state.

2. Based on the results of the evaluation, the description of potential pollutant sources identified in the plan in accordance with Description of Potential Pollutant Sources and pollution prevention measures and controls identified in the plan (Measures and Controls) shall be revised as appropriate within 2 weeks of such evaluation and shall provide for implementation of any changes to the plan in a timely manner, but in no case more than 12 weeks after the evaluation.

3. A report summarizing the scope of the evaluation, personnel making the evaluation, the date(s) of the evaluation, major observations relating to the implementation of the storm water pollution prevention plan, and actions taken shall be made and retained as part of the storm water pollution prevention plan for at least 3 years from the date of the inspection. The report shall identify any incidents of noncompliance. Where a report does not identify any incidents of noncompliance, the report shall contain a certification that the facility is in compliance with the storm water pollution prevention plan and this permit. The report shall be signed in accordance with Part I.D.1 (*Monitoring Requirements*) of this permit.

4. Where compliance evaluation schedules overlap with inspections required above, the compliance evaluation may be conducted in place of one such inspection.

II. STORMWATER MONITORING

A. Metal Fabrication Outfalls

These cut-off concentrations are applicable to outfalls to be identified in the SWPPP which discharge stormwater from areas in which Metal Fabrication operations are conducted per Sector AA. Monitoring for each outfall will be conducted on a rotating basis, such that each outfall is monitored at least once during the life of the three-year permit.

Specific outfalls will be identified in the SWPPP for metal fabrication activities requiring monitoring.

Parameters of Concern	Cut-Off Concentration [mg/L]
Total Recoverable Aluminum	***0.75***
Total Recoverable Iron	***5.0***
Total Recoverable Zinc	***0.395***
Nitrate plus Nitrite Nitrogen	***0.68***

B. Monitoring Requirements for **Outfall S30** at the New Salvage Yard
Sector N - TMSP for Industrial Activity from Scrap Recycling and Waste Recycling Facilities

Parameters of Concern	Cut-Off Concentration [mg/L]	Sector Median Value [mg/l]]
Chemical Oxygen Demand (COD)	***120***	***79***
Total Suspended Solids (TSS)	***200***	***72***
Total Recoverable Aluminum	***0.75***	***2.08***
Total Recoverable Copper	***0.0636***	***0.091***
Total Recoverable Iron	***5.0***	***3.7***
Total Recoverable Lead	***0.156***	***0.058***
Total Recoverable Zinc	***0.395***	***0.243***

Outfall will be sampled annually.

C. Monitoring Requirements for **Outfall S17, S18, and S26**
Sector L - TMSP for Industrial Activity from Landfills and Land Application Sites

Parameters of Concern	Cut-Off Concentration [mg/L]	Sector Median Value [mg/l]]
Total Suspended Solids (TSS)	***200***	***47***
Total Recoverable Iron	***5.0***	***2.2***

Monitoring for each outfall will be conducted on a rotating basis, such that each outfall is monitored at least once during the life of the three-year permit.

D. Monitoring Requirements for **Outfall S06**

Sector K – TMSP for Industrial Activity from Treatment, Storage and Disposal Facilities (TSDF)

Parameters of Concern	**Cut-Off Concentration [mg/l]**	**Sector Median Value * [mg/L]**
Ammonia	4.0 mg/L	0.21
Total Recoverable Magnesium	0.0636 mg/L	1.41
Chemical Oxygen Demand (COD)	120.0 mg/L	20
Total Recoverable Cadmium	0.0159 mg/L	0.010
Total Cyanide**	0.0636 mg/L	0.010
Total Recoverable Lead	0.156 mg/L	0.016
Total Recoverable Mercury	0.0024 mg/L	0.0002
Total Recoverable Selenium	0.2385 mg/L	0.100
Total Recoverable Silver	0.0318 mg/L	0.009

Monitoring will be conducted annually.

Monitoring will be conducted on three levels:

Stormwater Sector-outfalls:

Outfalls selected for future testing are those watersheds in the concentrated industrial area of the facility which contain operations relating to Sectors K, L, N, and AA. The SWPPP will include monitoring for designated outfalls to be analyzed on a rotating basis over the three-year renewed permit. Grab samples will be collected within the first 30 minutes of the discharge attributable to the rain event.

Instream Stormwater Survey:

In addition, the SWPPP will contain an annual stormwater survey of four instream stations in East Fork Poplar Creek: C03, C05, C08, and C11, as shown on the map "Y-12 Complex In-Stream Monitoring".

Storm event sampling will include flow measurements at each station, along with analyses for, as a minimum, *pH, mercury, PCB, metals, TSS, Total Phosphorus, Nitrate –Nitrite, TKN, e. coli, uranium, hexane extractables, and surfactants*. Additional parameters may be added to the SWPPP based on historical analyses. In-stream samples will be collected from the water column as flow-proportional aliquots in a composite sample.

A separate grab sample of stream baseload sediment will be collected at each instream station during the first 30 minutes of the rain event sampling, as close as possible to the stream bottom. The sediment samples will be analyzed for *mercury, PCB, and metals*. Reasonable attempts should be made to time the storm runoff survey in late summer or early fall should be as close to low-flow conditions as feasible. This timing is important to capture pollutant loadings from runoff events with longer intervals between storms and to assess the busiest construction and demolition period.

Stormwater Outfall Sampling:

Reasonable attempts should be made to time the annual sampling of three outfalls and raw water with the Instream Stormwater Survey above. Sampling will be performed at Outfalls

200, 109, 021, and the Clinch River Raw Water Discharge. These point source outfalls are selected because they collect stormwater from the major drainage areas of the Y-12 Complex. Outfall samples will be analyzed for *pH, mercury, PCB, metals, TSS, Total Phosphorus, Nitrate –Nitrite, TKN, e. coli, uranium, hexane extractables, and surfactants* based on a composite sample (except for pH).

III. REPORTING

The effectiveness of this SWPPP will be investigated after the results of the storm water runoff monitoring have been obtained. At that time, should the results so dictate, the division maintains the authority to institute specific numeric limitations for the monitored parameters. Monitoring data will be presented in an annual report to address verification of SWPPP effectiveness, to define pollutant loadings, and to adjust future SWPPP monitoring efforts. The report should be submitted to TDEC/WPC with the December DMR.

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RATIONALE

US Department of Energy, Oak Ridge Y12 Complex

NPDES PERMIT NO. TN0002968
Oak Ridge, Anderson County, Tennessee

Permit Writer: Mr. Bob Alexander

I. DISCHARGER

US Department of Energy (USDOE)-Oak Ridge Y12 National Security Complex Bear Creek Road
Oak Ridge, Anderson County, Tennessee

Official Contact Person:
Mr. William J. Brumley
Manager, Y-12 Complex Site Office
US Department of Energy
P.O. Box 2001
Oak Ridge, TN 37831-8723

Nature of Business

-- production of nuclear weapon assemblies and components,
-- safe secure storage of nuclear materials,
-- dismantlement and disposition of weapon components,
-- support of national priorities

SIC Code(s):	**3499**
Industrial Classification:	**Primary**
Discharger Rating:	**Major**

PRIMARY INDUSTRY CATEGORY means any industry category listed in the NRDC Settlement Agreement (Natural Resources Defense Council v. Train, 8 ERC 2120 [D.D.C. 1976], modified 12 ERC 1833 [D.D.C. 1979]).

USDOE-Oak Ridge Y-12 Complex Missions:

Y12 National Security Complex (Y-12 Complex) is a national defense facility, a manufacturing and development facility, a repository for the supply of enriched uranium, and supports the nation's nuclear deterrent through nuclear weapons stockpile stewardship and management.

- **Stockpile stewardship** refers to the activities associated with research, design, development and testing of nuclear weapons and the assessment and certification of their safety and reliability.
- **Stockpile management** refers to the activities associated with production, maintenance, surveillance, refurbishment and dismantlement of the nuclear weapons stockpile.
- **Nuclear manufacturing** includes the manufacture or remanufacture of nuclear weapon components for the nation's long-term defense capabilities. Precision metal fabrication is employed. Nuclear manufacturing includes Depleted and Enriched Uranium Operations; Special Materials Operations; and the Assembly, Disassembly, and Storage Operations.
- **Weapon dismantlement**, storage and evaluation includes primarily the disassembly of returned weapons components and quality evaluation for the existing weapons stockpile with surveillance of weapons.
- **Uranium and lithium materials** research, development and processing and the country's assembly and disassembly Complex for nuclear weapon secondary components.
- **Enriched uranium material** warehousing and management oversees the secure management and storage of special nuclear materials as weapons are retired from the national stockpile or returned for dismantlement under strategic arms reduction treaties.
- **Management and storage of nuclear materials** that are returned to Y-12 from other DOE sites, including DOE-owned nuclear material from universities and other research facilities, both domestically and internationally.
- **Processing of enriched uranium** for various applications, including enriched uranium processing and storage for DOE's Central Scrap Management Office.
  (Source: http://www.y12.doe.gov/bwxt/y12/y12-missions.html)
- **Environmental Management** Programs to address legacy contamination, operation of waste water treatment facilities, and waste disposal.

SIC code: 3499, Fabricated Metal Products, Not Elsewhere Classified
Industry category: Miscellaneous Fabricated Metal Products

Industry Classification: Primary
Discharge rating: Major

II. PERMIT STATUS

NPDES Permit TN0002968 Issued April 28, 1995

Last modified `September 28, 1999`

Permit Modification Issued May 31, 1996 (added outfall 05A)
Application for additional Outfalls 550 and 551 dated April 28, 1998
Consent Order resolved appeal of mercury limits and compliance schedule, Sept. 29, 1999
Draft Modification to incorporate Consent Order terms, October 14, 1999
Application for Renewal received October 29, 1999.

Expired April 27, 2000
Application for renewal received October 29, 1999

Watershed Scheduling

Environmental Assistance Center: Knoxville
Primary Longitude: -84.239722 Primary Latitude: 35.995556
Hydrocode: 6010207 Watershed Group: 3
Watershed Identification: Clinch-Lower
Target Reissuance Year: 2008

III. FACILITY DISCHARGES AND RECEIVING WATERS

This section describes the DOE operations and discharges to surface streams. Major outfalls and stormwater discharges are identified. Appendix 1 lists receiving stream information and stream use classifications. Brief excerpts describing the major water quality issues are also included for background information. Figure 1 and Figure 2 illustrate NPDES outfall locations at the Y-12 Complex (as prepared by BWXT Y-12 Water Compliance Section).

A. FACILITY DISCHARGES

USDOE-Oak Ridge Y-12 Complex discharges steam condensate, ground water, boiler blowdown, cooling tower blowdown, cooling waters, treated process wastewaters, and storm water runoff containing both radiological and nonradiological compounds. These discharges enter East Fork Poplar Creek (EFPC), McCoy Branch, Bear Creek, and minor tributaries, all of which are within the Clinch River watershed. Y-12 Complex also discharges domestic wastewater to the City of Oak Ridge Wastewater Treatment Facility.

The water quality of surface streams in the vicinity of Y-12 is affected by current and past operations. Despite efforts to treat all wastewater from the Complex processes, to remove and/or isolate legacy contaminants from previous activities, to reroute discharge pipes, and to minimize solids transport in stormwater, discharges from Y-12 Complex are a major influence on water quality and flow in streams.

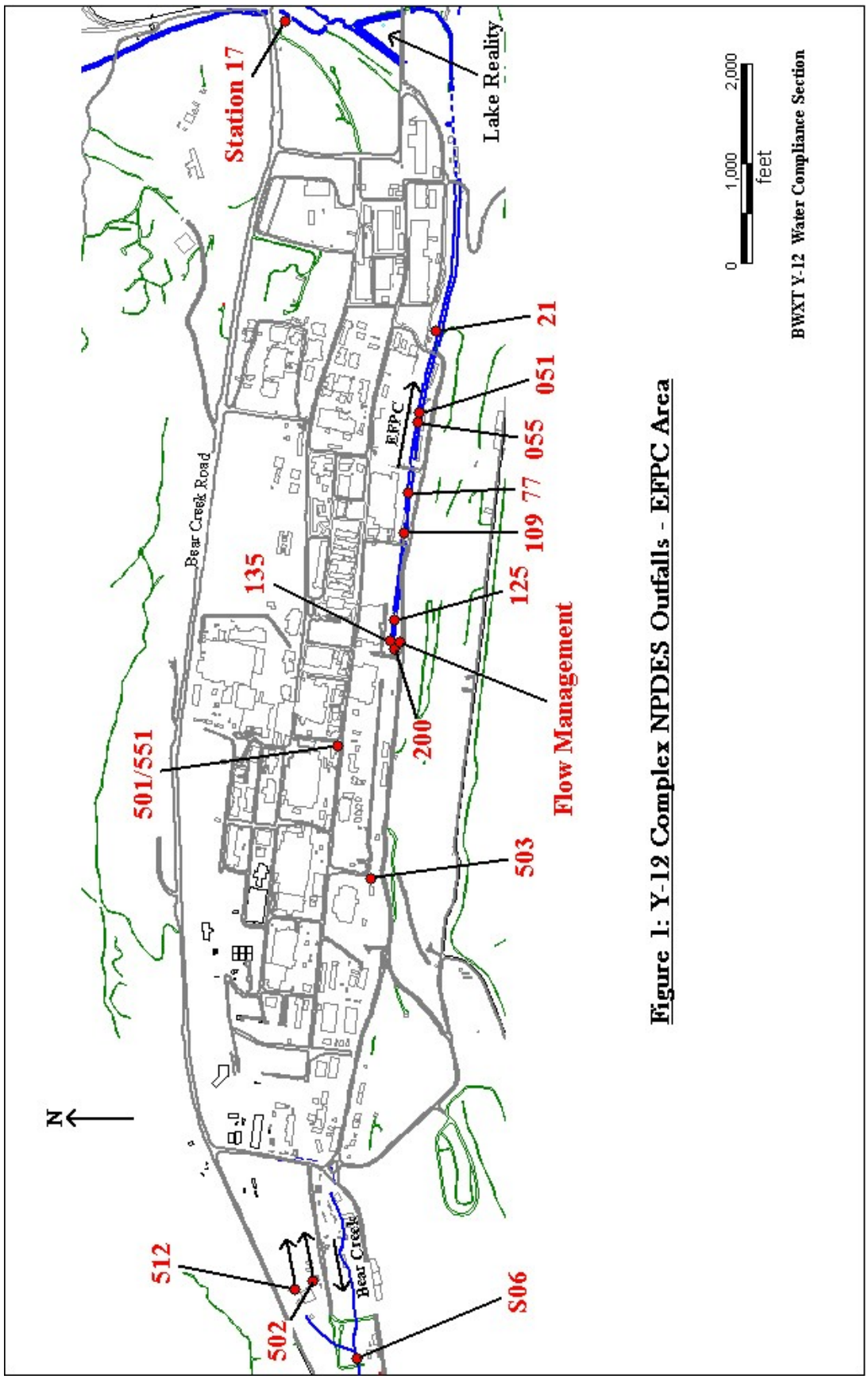

Figure 1: Y-12 Complex NPDES Outfalls - EFPC Area

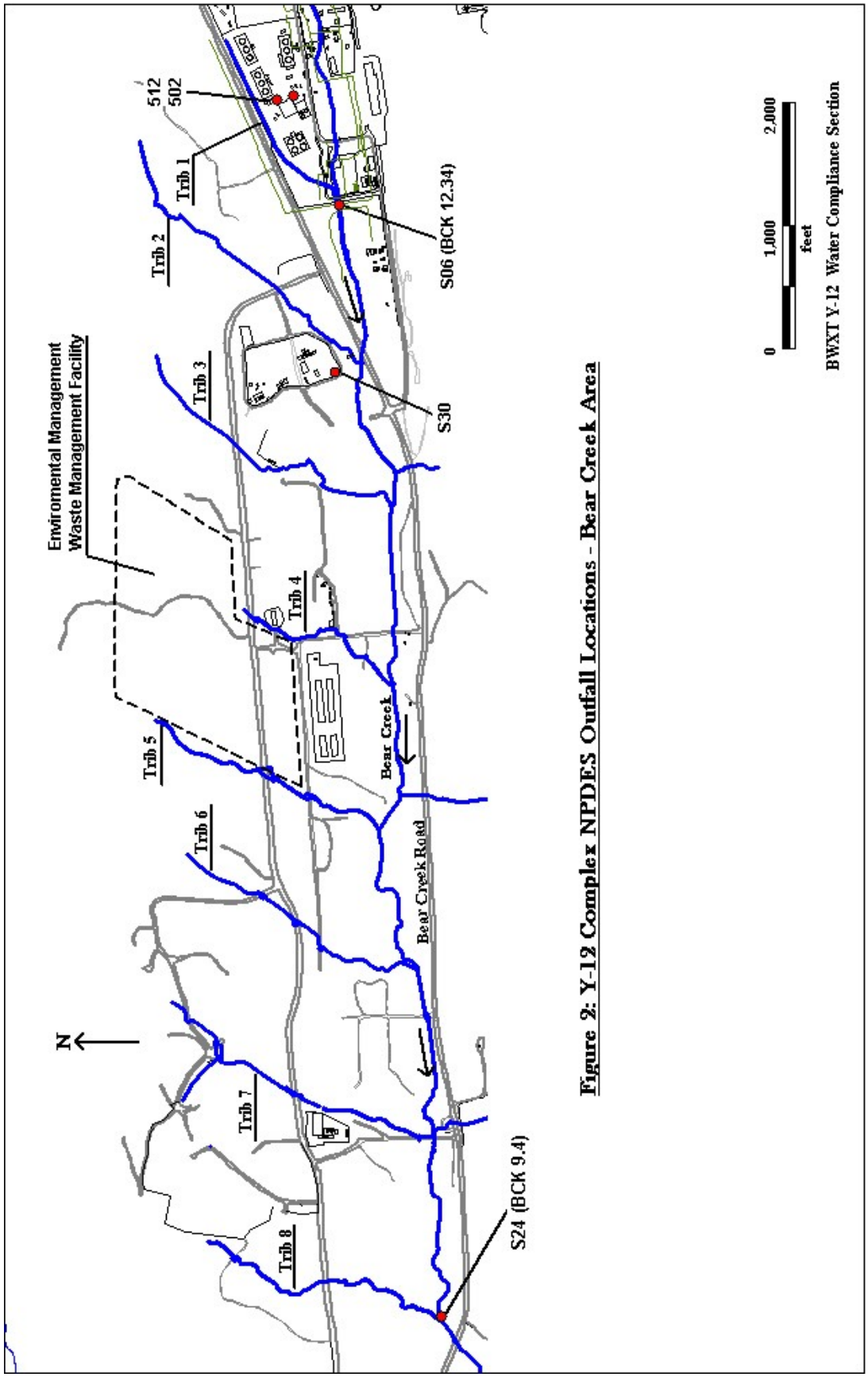

Figure 2: Y-12 Complex NPDES Outfall Locations - Bear Creek Area

Facility Discharges (Continued)

Storm water discharges, ground water discharges (either directly to the stream channel or collected in building sumps and discharged) and wastewater discharges contribute specific contaminants to Upper EFPC (UEFPC). Surface water contaminants include suspended solids, metals, particularly mercury and uranium, PCBs, and radionuclides (especially isotopes of uranium). Water quality in Bear Creek is influenced significantly by ground water hydraulic connection directly to Bear Creek or to tributaries of Bear Creek. Contaminants in the Bear Creek watershed from formerly used burial trenchs and pits include nitrates, metals (e.g. uranium), radionuclides (e.g. uranium isotopes) and chlorinated organics.

Y-12 Complex has a total of 53 outfalls as described herein:

- 7 outfalls associated with wastewater treatment facilities,
- 41 outfalls for process and cooling wastewater, and stormwater
- 5 instream monitoring points

Outfall Eliminated Since the Previous Permit Issuance

Numerous outfalls have been eliminated from the previous permit. Only those outfalls identified in this Rationale are considered currently applicable for effluent limits and/or monitoring requirements.

B. WASTEWATER TREATMENT FACILITIES

There are seven (7) wastewater treatment facilities located at the Y-12 Complex. These outfalls are designated as treatment systems numbered in the 500-series. The effluent from all of these facilities, except one, is discharged through the storm drain system, above the headwaters of East Fork Poplar Creek through Outfall 200 (known as the North/South Pipes) or the adjacent Outfall 135. The East End Mercury Treatment System (Outfall 550) is discharged to EFPC from Building 9201-2 further downstream.

Sanitary wastewaters are discharged to the City of Oak Ridge municipal wastewater system. Sludge generated at the City WWTP is returned to the DOE Reservation for disposal by land application.

Pretreated steam Complex wastes and coal storage area runoff are also discharged to the City sanitary sewer. While there is no current discharge to surface waters, the permitee has requested that Outfall 503 for this facility remain in effect.

Outfall 501 – Central Pollution Control Facility (CPCF)

The CPCF is designed to treat and pre-treat wastewater generated by the Y-12 Complex and other DOE Oak Ridge Operations' waste streams as required. Typical waste streams treated include (a) dilute wastewater/mop waters generated from cleaning and rinsing operations, (b) concentrated wastewaters – nitric acid pickling bath wastewater, enriched uranium recovery wastes, and hydrogen fluoride scrubber wastes, and (c) metal plating rinsewaters (inactive in recent years). Co-located inside the CPCF building is the Central Mercury Treatment System.

The CPCF consists of Building 9623 and ancillary equipment. The CPCF consists of the:

- Mop Water Treatment System (MTS)
- Concentrated Batch Treatment System (CBTS)

Volume: 0.009 mgd , Max. 0.0229 mgd, Min. 0.0023 mgd, measured per batch (1997-2004)

CPCF is capable of treating listed, characteristic, and mixed wastewater as follows:

- Receives, pumps, and treats concentrated batch-generated wastewater delivered by tanker trucks, drums, or other containers with batch discharge over a period of hours.
- Batch treats unique wastewater that does not meet acceptance requirements of other onsite treatment facilites (West End Treatment Facility or Central Neutralization Facility at East TN Technology Park) and that requires an individually developed treatment process.
- Pretreats concentrated nitrate-bearing waste for further treatment at the West End Treatment Facility (WETF).
- Treats hydrogen fluoride (HF) scrubber solutions from the HF Scrubber in the enriched uranium recovery process.

Treatment of the waste streams depends upon wastewater analyses. Based on the analyses, wastewater is treated as “dilute” or “concentrated”. All wastewater is processed through the same carbon filtration, pH adjustment and sediment filters before being discharged. Compliance monitoring of Outfall 501 for the permit will be performed at the discharge to the storm sewer system.

Mopwater Treatment System (MTS)
MTS is used to treat dilute oily waste streams which are RCRA characteristic or low-level radioactive wastewaters (LLW).

Treatments consists of an oil/water separator, chemical neutralization/precipitation, clarification, and sand filtration.

Concentrated Batch Treatment System (CBTS)
CBTS treates concentrated or dilute waste streams from chemical operations at the Y-12 Complex. Waste can be strongly acidic or basic with metals to be removed or cyanides to be destructed. Waste streams can be low-level radioactive wastewaters (LLW), RCRA listed waste, and/or characteristic wastes in batch volumes that range from carboy or drum to tanker load sizes. Decanted liquids from nitrate-bearing wastewater is transferred to WETF for nitrate destruction.

Treatment in CBTS consists of cyanide destruction, pH adjustment, chemical precipitation (hydroxide and sulfide based), clarification, sand filtration, adsorption and/or ion exchange.

CPCF wastewater is monitored at Outfall 501 prior to entering the storm sewer system through the North/South Pipes which discharge approximately one-half mile east to EFPC at Outfall 200.

Outfall 502 – West End Treatment Facility (WETF)

The WETF is designed to treat nitrate-bearing wastewater and other wastewater generated by the Y-12 Complex and other DOE Oak Ridge Operations as required. Typical waste streams treated include nitric acid wastes, nitrate-bearing rinsewaters, mixed acid wastes, mop waters, and caustic wastewaters. Wastewaters received at WETF typically contain low concentrations of heavy metals and uranium. These wastes are delivered in tanker trailers, intermediate bulk

containers, drums, carboys, and other small containers with batch discharge over a period of weeks.

WETF is located in the western end of the Y-12 Complex; adjacent to the Ground Water Treatment Facility.

The WETF consists of three treatment steps:

- Head End Treatment System (HETS)
- West Tank Farm for bio-denitrification and bio-oxidation (WTF)
- Effluent Polishing System (EPS)

Head End Treatment System
HETS provides precipitation of heavy metals, sludge settling, and decanting from one of six aboveground tanks. Waste batches from these tanks are combined as appropriate for hydroxide precipation of heavy metals, then transferred for settling and decanting. Sludge is concentrated and denitrified prior to dewatering, characterization and disposal.

West Tank Farm
The bio-denitrification process and bioxidation processes occur in aboveground tanks known as the West Tank Farm.

Effluent Polishing System
The EPS removes highly soluble metals and uranium, trace organics, and suspended solids prior to discharge. EPS consists of pH adjustment, degasification, ferric sulfate addition, flocculation, clarification, filtration, carbon adsorption, micron filtration, and final pH adjustment.

Treatment of the waste streams depends upon wastewater analyses. Compliance monitoring of Outfall 502 for the permit will be performed at the discharge to the storm sewer system.

Volume: 0.0145 mgd average, 0.066 maximum, 0.00001 minimum, per batch 1997-2004

WETF discharges are monitored at Outfall 502 prior to entering the storm sewer system through the North/South Pipes and discharging to EFPC at Outfall 200.

Outfall 503 – Steam Complex Wastewater Treatment Facility (not discharging)

Outfall 503 previously discharged treated wastewater from coal pile runoff, boiler blowdown, and regeneration wastewater from demineralizers through the North/South Pipes at Outfall 200. In recent years this discharge has been rerouted through the sanitary sewer for treatment by the City of Oak Ridge wastewater Complex. Stormwater flow is collected in a trench for pretreatment and discharge to the sanitary sewer. Permittee requests this outfall be retained.

Outfall 512 – Groundwater Treatment Facility (GWTF)

The GWTF is designed to treat contaminated ground water and leachate collected from several ongoing environmental restoration activities, primarily from the Bear Creek burial grounds.

Wastewater is collected in tanks at the Liquid Storage Facility, partially treated using gravity separation and filtration, and transported via tanker truck to GWTF.

Primary contaminants include soluble iron, volatile and non-volatile organic compounds, trace amounts of oil contaminated with PCBs, and uranium. Batch treatment is provided by air stripping of volatile organics with carbon adsorption for removal of non-volatile organics and PCBs.

Volume: 0.011mgd average, 0.0464 maximum, 0.000003 minimum, 1997-2004

GWTF discharges are monitored at Outfall 512 prior to entering the storm sewer system through the North/South Pipes and discharging to EFPC at Outfall 200 approximately one mile eastward.

Outfall 520, Lithium Process Steam condensate

This system provides pH adjustment and effluent holding for monitoring prior to discharge of condensate associated with the lithium process. Condensation from evaporation of the salt solution is the wastewater source, which contains some carryover lithium chloride.

Volume: flow rate and volume are measured, recorded, and retained at the facility.

Effluent Type: steam condensate from evaporation of a lithium chloride salt solution.

Treatment: The pH is adjusted with a solution of powdered NaHCO3 or a few drops of HCl if the pH is high. Effluent is collected, pH is further adjusted if necessary and then discharged via Outfall 520 into the storm sewer going to East Fork Poplar Creek through Outfall 135.

Outfall 550, East End Mercury Treatment System (EEMTS)

EMTS provides treatment of ground water contaminated with mercury which accumulates in sumps within the basement of building 9201-2, a former mercury-use building. Flow is collected and pumped to treatment units located on the first floor. Treatment consists of filtration and granular activated carbon adsorption.

Volume: 0.014mgd average, 0.045 maximum, 0.000011 minimum, 1997-2004

Treatment equipment is sized at 30 gpm with provisions for filtration and bypass of excess flow to Outfall 55. EEMTF discharges are monitored at Outfall 550 prior to discharging to EFPC.

EEMTS is being replaced with a larger capacity system which will treat flow from a large spring entering EFPC adjacent to Outfalls 550 and 55. The system is being constructed under the CERCLA program and should be operational in 2005.

Outfalls 51 and 55

Outfall 51 discharges approx. 0.4 mgd ground water contaminated with mercury from the large spring at the southeast corner of Building 9102-2 just downstream of Outfall 550, EEMTS and Outfall 55. Outfall 55 discharges stormwater and the bypass from EEMTS of ground water contaminated with mercury during periods of excessive flow in rain events.

Outfall 551, Central Mercury Treatment System (CMTS)

CMTS provides treatment for ground water contaminated with mercury which accumulates is sumps within the basement of Building 9201-4, 9201-5, and an underground equalization tank near Building 9201-4, which are former mercury-use buildings. Sump water from 9404-4 is collected in poly tanks and transported to CMTS, while flow from the other buildings is pumped directly to the CMTS, which is located in the same building as the CPCF described above.

The CMTS process consists of equalization tanks, filtration, granular carbon adsorption, neutralization, and carbon dewatering. Flow rate is designed at 50 gpm.

Volume: 0.01mgd average, 0.062 maximum, 0.0003 minimum, 1997-2004

C. OTHER OUTFALLS

Outfall 200 – North/South Pipes – Headwaters of East Fork Poplar Creek (EFPC)

Outfall 200 conveys treated process wastewater, cooling water, infiltrated ground water, and stormwater from 57 identified upstream outfalls. Outfall 200 is located in the central portion of the complex and consists of 4' to 5'-diameter drain pipes which extend approximately 2000 feet west from the emergence point. These drains were installed during the construction of the Y-12 Complex in the 1940's and were laid in the tributary channels. Smaller pipes were placed in the feeder stream channels, and the entire network was covered with fill material. Upper EFPC originates from baseflow (ground water) in the subsurface storm drain system in the western part of the complex.

Radiological compounds, especially uranium, are released through Outfall 200. Significant materials stored in the watershed are located at the Old Salvage Yard, which stores uranium-contaminated metal and equipment.

Immediately adjacent to Outfall 200 is the discharge point for raw water addition for flow augmentation. Raw water from the Clinch River is obtained from the City of Oak Ridge for addition to EFPC. Until June 2005, approximately 4.5 mgd of prechlorinated water was added with a typical chlorine concentration of 0.2-0.6 ppm. Y-12 Complex dechlorinated the Clinch River water near Outfall 200 using sodium bisulfite or other appropriate chemical with the feed rate controlled by a downstream monitor for a planned level of zero chlorine. In June 2005, the City of Oak Ridge converted the prechlorination system to the use of potassium permanganate which should reduce potential chlorine toxicity in the stream.

Volume: 2.3 mgd average, 116.38 maximum, 0.12 minimum, 1997-2004

Station C11- Former Outfall 201 – Instream Monitoring Point

Former Outfall 201 is relocated and renamed Station C11. Outfall 201 was designated an Instream Monitoring Point in the existing permit. It was located approximately 100 feet downstream from Outfalls 200, 135, and the discharge point for raw water addition. Outfall 201 was the monitoring point for water quality parameters and was used as the point at which the effectiveness of dechlorination is measured to afford an area for mixing.

However, recent studies have determined this location is too far upstream to provide a representative sample of stream conditions. Therefore this location will be replaced by instream monitoring point Station C11 which is approximately 215 feet downstream from 201. Monitoring Point 201 will remain in its present location and will be considered to be "abandoned-in-place."

Station C11 will afford better mixing of the upstream outfalls and will provide for more representative sampling. C11 will be used as the point for determining TRC compliance for Outfalls 200, 125, and 135.

Outfall 135 and 125

Also located at the discharge of the North/South Pipes, Outfall 135 conveys cooling waters, steam condensate from the Outfall 520 (Lithium Process), boiler blowdown, and stormwater. Outfall 125 dicharges cooling water(dechlorination is utilized), ground water, steam condensate, and stormwater.

Additional Significant Outfalls	**Type of Discharge**
Outfall 109	Major stormwater outfall draining central portion of complex
Outfall 077	ground water (sump water from 9404-2)
Outfall 055	cooling water, ground water, stormwater
Outfall 021	steam condensate, cooling water (dechlorination is utilized), stormwater for eastern complex

Stormwater Outfalls

Additional stormwater outfalls are monitored under the existing permit and are classified according to the type of runoff, potential for discharge of pollutants, volume of flow and other factors. These outfalls are identified in the Storm Water Pollution Prevention Plan and are monitored on a rotating basis over a 3-year cycle.

S-numbered outfalls are located in Bear Creek watershed and unnamed tributaries to the Clinch River. These discharges convey stormwater runoff from CERCLA cleanup facilities and operating facilities such as exterior storage areas, a tank farm, abandoned quarry and sediment basins at landfills. Two (2) of the S-numbered outfalls are in-stream monitoring points in Bear Creek. Four (4) of the S-outfalls drain to tributaries to the Clinch River south of the Y-12 Complex complex. A list of current and former S-numbered outfalls and their status in the renewed permit is found in the Section VII New Permit Limits.

Outfall S19

Outfall S19 is located at Rogers Quarry on McCoy Branch, a tributary to the Clinch River in Melton Hill Lake. McCoy Branch was used from the 1950's to July 1993 for disposal of fly ash and bottom ash from the coal-fired boiler Complex at Y-12 Complex. In 1989, the ash slurry

pipeline was extended from an ash pond directly to Rogers Quarry until 1993. Rogers Quarry, which is reported over 100 feet deep, was also used for disposal of components and materials.

D. RECEIVING WATERS

East Fork Poplar Creek HUC 06010207026-2000

East Fork Poplar Creek is listed as impaired in the State of TN 2004 303(d) List for PCBs, mercury, Pathogens, Siltation, Nutrients, and alteration of stream-side or littoral vegetative cover due to DOE's Oak Ridge facilities. EFPC from Poplar Creek to mile 15 is posted for a Fish Consumption Advisory to alert the public that fish should not be eaten and water contact should be avoided. Contaminants causing this fish advisory are mercury and PCBs. EFPC is posted as deemed-not-suitable-for-recreation-activities due to the presence of pathogens, disease-causing organisms, originating from sources in the Oak Ridge area.

East Fork Poplar Creek (EFPC) originates on the Y-12 Complex complex at the point of emergence of the North/South Pipes as described above at Outfall 200. EFPC flows approximately 15 miles to the southwest prior to entering Poplar Creek near East TN Technology Park and the Clinch River.

Background Information on Stream Flow and Water Quality

(Note: Some information shown below is extracted from documents prepared under CERCLA in response to listing of the entire DOE Oak Ridge facility on the Superfund National Priorities List.)

"The flow volume [on EFPC] in the underground portion increases with contribution from 60 outfalls feeding the central drain line (North/South Pipe)…After emergence, surface water flows 5400 feet in an above-ground channel before being directed through about 900 feet of drain line in the eastern portion of the complex. Flow is then aboveground to Station 17, located near Bear Creek Road where the stream exists federal property.

"The above-ground portion of UEFPC [Upper East Fork Poplar Creek] was originally diverted …into New Hope Pond, a sediment and flow control basin. In 1989, New Hope Pond was closed and capped under RCRA, and Lake Reality, a 2.5-acre, lined retention basin, was constructed along with a concrete-lined distribution channel. Flow was routed around the former New Hope Pond site via a concrete-lined distribution channel and into Lake Reality. Annual evaluation of mercury in UEFPC indicated that Lake Reality, over time, had entrapped sediments, which were acting as a secondary source of contamination to the creek. To address the issue of additional mercury flux from Lake Reality, the distribution channel was modified in July 1998 to allow unrestricted flow of UEFPC to Station 17. Capability remains to direct UEFPC into Lake Reality should an emergency need (e.g., spill containment) arise to contain flow.

"Major changes to the creek hydraulics occurred with the implementation of flow management. Elimination of process and once-through cooling water discharges to UEFPC over time resulted in a decrease of flow at Station 17 from the historical rate of about 7 mgd." The previous permit mandated raw water from the Clinch River be pumped "and discharged near the North/South Pipes as needed to maintain flow at Station 17 at about 7 mgd." …" A stable water addition of about 4.5 mgd as been maintained since January 1997" (ROD for

Phase I Interim Source Control Actions in the UEFPC Characterization Area, USDOE, May 2002).

"Surface water contamination in UEFPC is the result of commingling of releases from multiple point sources. The storm drain system provides a pathway for these contaminants to migrate to UEFPC. In addition, nonpoint runoff from contaminated soils and groundwater discharge to the creek are contributors to surface water contamination. The principal contaminants detected in surface water include mercury…and uranium. Principal contaminants detected in sediment and biota are mercury, uranium, and PCBs". (2004 Remedial Effectiveness Report prepared by DOE for the CERCLA program).

Biological Integrity

The condition of biological communities is measured by the use of "biometrics" which interpret existing narrative biological criteria based on regional reference data. Biological criteria are based on macroinvertebrate monitoring at reference streams grouped into bioregions for assessment purposes. Seasonal variability of macroinvertebrate populations is considered and numeric biocriteria are based on a multi-metric index compared to historic targeted and probabilistic monitoring.

TN biocriteria are described in the WPC report Development of Regionally-Based Numeric Interpretations of Tennessee's Biological Integrity Criterion, by Deborah H. Arnwine and Gregory M. Denton, TDEC/WPC, October 2001. Areas are identified as ecogions which have relatively similar soil, hydrology, vegetation and related characteristics. The report defines an ecoregion or Bioregion 67 f, known as Southern Limestone/Dolomite Valleys and Low Rolling Hills, which includes the Lower Clinch River watershed and East Fork Poplar Creek.

Scores for East Fork Poplar Creek are presented below from TDEC data collected in 2003 and 2004 at four stations. These data indicate the conditions of EFPC as "Partially supporting – Moderately Impaired" for use by fish and aquatic life. Further information regarding biological criteria is provided in a later section of this permit Narrative under the heading Biological Monitoring and Abatement Program.

Metric Values, Scores, and Biological Condition Ratings for ORR streams, Spring 2003.

	East Fork Poplar Creek				Bear Creek	
METRIC	EFK 24.4	EFK 23.4	EFK 13.8	EFK 6.3	BCK 12.3	BCK 10.3
Taxa Richness	19 (2)	19 (2)	33 (6)	20 (2)	23 (4)	30 (4)
EPT Richness	3 (0)	3 (0)	6 (2)	4 (2)	3 (0)	5 (2)
% EPT	13.4 (0)	7.9 (0)	32.3 (4)	38.4 (4)	8.9 (0)	22.7 (2)
% OC	78.1 (0)	81.5 (0)	56.4 (2)	45.3 (4)	75.0 (2)	58.7 (2)
NCBI	3.01 (6)	3.98 (6)	5.23 (4)	4.26 (6)	4.28 (6)	5.44 (4)
% Dominant	19.6 (6)	36.0 (4)	12.3 (6)	19.2 (6)	27.6 (6)	19.2 (6)
% Clingers	17.9 (0)	25.3 (2)	31.8 (2)	53.5 (4)	20.3 (2)	27.9 (2)
INDEX SCORE	(14)	(14)	(26)	(28)	(20)	(22)
RATING	**C**	**C**	**B**	**B**		

Key:

A - Fully Supporting - Non-impaired……	>= 32
B - Partially Supporting - Slightly Impaired……	21 - 31
C - Partially Supporting - Moderately Impaired……	10 - 20
D - Non-Supporting - Severely Impaired……	< 10

Metric Values, Scores, and Biological Condition Ratings for ORR streams, Spring 2004.

	East Fork Poplar Creek				Bear Creek	
METRIC	EFK 24.4	EFK 23.4	EFK 13.8	EFK 6.3	BCK 12.3	BCK 9.6
Taxa Richness	13 (2)	19 (2)	24 (4)	16 (2)	25 (4)	19 (2)
EPT Richness	4 (2)	4 (2)	2 (0)	5 (2)	3 (0)	6 (2)
% EPT	18 (2)	12 (0)	9 (0)	36 (4)	7 (0)	44 (4)
% OC	76 (0)	65 (2)	53 (2)	47 (4)	82 (0)	8 (6)
NCBI	4.88 (4)	5.13 (4)	5.36 (4)	4.74 (6)	5.89 (4)	4.46 (6)
% Dominant	28 (6)	36 (4)	15 (6)	20 (6)	18 (6)	28 (6)
% Clingers	36.3 (2)	59.3 (6)	29.0 (2)	59.8 (6)	16.9 (0)	52.5 (4)
INDEX SCORE	(18)	(20)	(18)	(30)	(14)	(30)
RATING	**C**	**C**	**C**	**B**	**C**	**B**

A - Fully Supporting - Non-impaired……	>= 32
B - Partially Supporting - Slightly Impaired……	21 - 31
C - Partially Supporting - Moderately Impaired……	10 - 20
D - Non-Supporting - Severely Impaired……	< 10

Bear Creek HUC 06010207026-0600

Bear Creek originates in the western portion of the built-up areas of the Y-12 Complex complex and flows southwest for approximately 5 stream miles. When Bear Creek reaches TN Highway 95 or White Wing Road, it turns north and flows to its confluence with East Fork Poplar

Creek just above its confluence with Poplar Creek. Bear Creek flow is maintained by inputs from tributary streams flowing in from the north (mostly) from Pine Ridge.

Flow in Bear Creek is further supplemented by discharges from several springs at the base of Chestnut Ridge which enter Bear Creek from the south. The channel of Bear Creek is less modified than that of EFPC but several short reaches have been relocated to accommodate road construction. Portions of Bear Creek are known as a "losing reach" where surface flow goes underground and reappears downstream during dryer seasons. Two significant areas are between Tributaries 2 and 3 and between Tributaries 7 and 8.

Located in the Bear Creek drainage is the large CERCLA waste storage facility, the Environmental Management Waste Management Facility (EMWMF). This facility is a permanent site for CERCLA radioactive, hazardous, and mixed wastes serving the entire Oak Ridge Reservation. Initial construction in 2000-02 created a capacity of 400,000 cubic yards, with an ultimate capacity of 2 million CY in 2015 on approximately 100 acres. Stormwater runoff from this facility is exhibited in stations S09 and S10 on the tributaries to Bear Creek.

Background Information on Stream Flow and Water Quality

Water quality in Bear Creek and its tributaries near the headwaters is affected by radiological (uranium), VOCs, inorganic contaminants (nitrates), and metals including cadmium and mercury. Sources are historic disposal sites: the Boneyard/Burnyard, S-3 Ponds, and the Bear Creek Burial Grounds. Migration pathways are both surface runoff and contaminated groundwater plumes which enter surface water at large individual springs or groups of springs.

The 2004 Remediation Effectiveness Report for the DOE Oak Ridge Reservation stated that the shallow groundwater system connects with Bear Creek through an "interconnected system of stream channel and underlying karst [which] acts as the principal hydraulic drain for the valley". Ongoing CERCLA cleanup actions and surface water monitoring programs indicate ambient water quality criteria were exceeded in 2003 for mercury, nickel, thallium and numerous VOCs. Heavy metal concentrations exceeded the human health risk criteria for arsenic, beryllium, cadmium, manganese, and uranium. Radionuclides exceeded these same criteria for technetium-99 and uranium isotopes.

For biological integrity, Bear Creek data shown above indicate conditions as "Partially supporting – Moderately to Slightly Impaired" for use by fish and aquatic life.

IV. APPLICABLE EFFLUENT LIMITATIONS GUIDELINES

Effluent guidelines are national standards for wastewater discharges to surface waters EPA established effluent guidelines for categories of existing industrial sources under Title III of the Clean Water Act. The standards are technology-based (i.e. based on the performance of treatment and control technologies); they are not based on risk or impacts upon receiving waters.

EPA's effluent guidelines are based on the Standard Industrial Classification (SIC) codes that are applicable to an industry. A number of SIC codes have historically been applied to activities at the Y-12 Complex site. The Standard Industrial Classification (SIC) code for USDOE-Oak Ridge Y12 Complex is 3499, Fabricated Metal Products, Not Elsewhere Classified, Industry category: Miscellaneous Fabricated Metal Products, Subpart A - Metal Finishing. Process wastewater discharged through Outfalls 501, 502, and 503 are regulated by

40 CFR Part 433. Appendix 2 lists the applicable best practicable control (BPT) and best available technology (BAT) effluent limitations guidelines for Subpart A.

The facility is one which is defined as having "storm water associated with industrial activity" under the storm water regulations in 40 CFR Part 122.26(b)(14). Therefore, this industry category must meet the applicable storm water requirements in 40 CFR Part 122.26.

V. PREVIOUS PERMIT LIMITS AND MONITORING REQUIREMENTS

Appendix 3 lists the permit limitations and monitoring requirements as defined in the previous permit.

VI. HISTORICAL MONITORING AND INSPECTION

A summary of the data reported on Discharge Monitoring Report forms during 1997 - 2004 is presented in Appendix 4. This summary is prepared with assistance of the staff of Water Compliance Program at BWXT Y-12. The conclusions reached by reviewing this data summary are presented below with discussions of the proposed permit limits and related monitoring issues.

During the previous permit term, the Division's personnel from the Environmental Field Office - Knoxville performed a Compliance Evaluation Inspection (CEI) of the USDOE-Oak Ridge Y12 Complex. The CEI was performed by Woodson Smith and Allen Wilkinson, Knoxville FO and assisted by Kathleen Kitzmiller and Roger Petrie of the TDEC DOE Oversight Division on June 15-16, 2004. The overall conclusion of the inspection report was satisfactory with all operations carried out in a professionsl manner.

The CEI report addressed recent issues and permit excursions as follows:

- Outfall 55 exceeded the mercury limit twice in February 03 and bypassed the East End Mercury Treatment System during heavy rainfall in May, '03.
- Approximately 10 pounds of mercury was observed and removed from two stormwater catch basins following the May '03 storm event.
- Outfall 55 exceeded the chlorine limit in November '03, requiring investigation and relocation of air conditioner drain lines.
- Monitoring Point 201 exceeded the permit limit in January, '03 due to equipment problems in the upstream dechlorination system.
- Outfall 200 exceeded the oil and grease limit in April '03 – cause unknown.
- An overflow of stormwater occurred at the steam coal pile collection ditch (former Outfall 503) following heavy rainfall in February '04; the collection ditch is required to route runoff through treatment for discharge to the sanitary sewer.
- Near Outfall 20, EFPC exhibited a visible oil sheen in March '04 – cause unknown.
- A review of stormwater outfalls and receiving streams reported discharges were generally clear following a period of considerable rain.
- Operation and maintenance of dechlorinators was being properly performed.
- Operation and maintenance of wastewater treatment facilities is being properly performed.

Dechlorination of raw water addition and once-through cooling water discharges represents not only a constant operational challenge to the facility and but also potential impacts to surface water quality. In 2002, a fish kill occurred on East Fork Poplar Creek due to

operational failure of the dechlorination system. Followup operational changes to the system have prevented recurrence of this problem.

Compliance with this permit is generally acceptable for point source discharges as documented in Appendix 4. Reported effluent monitoring from 1997 to 2004 documented an almost 100% compliance rate for the thousands of parameters reported yearly. However, these effluents plus historic releases and stormwater discharges continue to cause serious water quality impacts.

VII. NEW PERMIT LIMITS AND MONITORING REQUIREMENTS

A. OVERVIEW OF PROCEDURES FOR ESTABLISHING NEW PERMIT LIMITS

Permit limitations are set at the most stringent value developed by consideration of the following three factors:

1) consideration of water quality requirements of the receiving waters that will protect all the designated uses for those waters,
2) selection of a technology-based limit and evaluating if that limit protects the water quality of the receiving stream. If the technology-based limit would cause violations of water quality, the water quality-based limit is chosen. The technology-based limit is determined from EPA effluent limitations guidelines if applicable (see Part IV); or from State of Tennessee maximum effluent limits for effluent limited segments per Rule 1200-4-5-.03(2); or by way of operational and/or treatability data. Furthermore, effluent limitations in this permit must comply with any approved Total Maximum Daily Load (TMDL) studies.
3) consideration of previous permit limits.

Where a pollutant is not covered under regulations and there is no water quality standard or criteria, permit limits may be based on the 96 hour acute toxicity level for that parameter if reliable toxicity data are available for a species that should be present in the receiving waters and that are sensitive to that pollutant. Where treatment systems have been demonstrated or designed to meet a certain level of treatment, the permit limits may be based upon that level of treatment. Otherwise, permit limitations are set at a level determined by the best professional judgment of the permit writer based upon discharges with similar characteristics.

B. PROCEDURES FOR WATER QUALITY BASED EFFLUENT STANDARDS

The following procedure is used to calculate the allowable instream concentrations for permit limitations. If monitoring for a particular pollutant indicates that the pollutant is not present (i.e., consistently below detection level), then the division may drop the monitoring requirements in the reissued permit.

1. The most recent background conditions of the receiving stream segment is compiled. This information includes:

   * 7Q10 of receiving stream (4.73 mgd)
   * Calcium hardness (25 mg/l, default)
   * Total suspended solids (10 mg/l, default)
   * Background metals concentrations (or ½ water quality criteria)
   * Other dischargers impacting this segment (none)
   * Downstream water supplies, if applicable

   Note on receiving stream flow: 4.73 mgd, which is the flow of the Clinch River raw water addition, is selected

2. The *chronic* water quality criteria are converted from total recoverable metal at lab conditions to dissolved lab conditions for the following metals: cadmium, copper, lead, nickel and zinc. Then translators are used to convert the dissolved lab conditions to total recoverable metal at ambient conditions.

3. The *acute* water quality criteria is converted from total recoverable metal at lab conditions to dissolved lab conditions for the following metals: cadmium, copper, lead, nickel, zinc, silver and mercury. Then translators are used to convert the dissolved lab conditions to total recoverable metal at ambient conditions for the following metals: cadmium, copper, lead, nickel, silver and mercury.

4. The chronic criteria for *Chromium* (T) is given in the total recoverable form and is not converted to a dissolved lab condition or to the total recoverable ambient condition.

5. A standard mass balance equation determines the total allowable concentration (permit limit) for each pollutant. This equation also includes a percent stream allocation of 100%.

The following formulas are used to evaluate water quality protection:

$$Cm = \frac{QsCs + QwCw}{Qs + Qw}$$

where:

Cw = concentration of pollutant in wastewater
Cm = resulting in-stream concentration after mixing
Cs = stream background concentration
Qw = wastewater flow
Qs = stream low flow

To protect water quality:

$$Cw \leq \frac{(S_A)\,[Cm\,(Qs + Qw) - QsCs]}{Qw}$$

where (S_A) is the percent “Stream Allocation”.

Calculations for this permit have been done using a standardized worksheet, titled "Water Quality Based Effluent Calculations" and are shown in Appendix 5A.

Division policy dictates the following procedures in establishing these permit limits:

1. The critical low flow values are determined using USGS data:

Fish and Aquatic Life Protection
7Q10 - Low flow under natural conditions
1Q10 - Regulated low flow conditions

Other than Fish and Aquatic Life Protection
30Q2 - Low flow under natural conditions

2. Fish & Aquatic Life water quality criteria for certain Metals are developed through application of hardness dependent equations. These criteria are combined with dissolved fraction methodologies in order to formulate the final effluent concentrations.

3. For criteria that are hardness dependent, chronic and acute concentrations are based on a Hardness of 142 mg/l (from Clinch River Raw Water data) and Total Suspended Solids (TSS) of 10 mg/l, the minimum limit on the TSS value used for water quality calculations.

4. Background concentrations are determined from the Clinch River TDEC Ambient Stream Monitoring Program sampling station located at CRM 66.3.
5. If the measured background concentration is greater than the chronic “In-stream Allowable” water quality criteria, then the measured background concentration is used in lieu of the chronic “In-stream Allowable” water quality criteria for the purpose of calculating the appropriate effluent limitation (Cw). Under these circumstances, and in the event the “stream allocation” is less than 100%, the calculated chronic effluent limitation for fish and aquatic life should be equal to the chronic “In-stream Allowable” water quality criteria. These guidelines should be strictly followed where the industrial source water is not the receiving stream. Where the industrial source water is the receiving stream, and the measured background concentration is greater than the chronic “In-stream Allowable” water quality criteria, consideration may be given as to the degree to which the permittee should be required to meet the requirements of the water quality criteria in view of the nature and characteristics of the receiving stream.

The spreadsheet has fourteen (14) data columns, all of which may not be applicable to any particular characteristic constituent of the discharge. A description of each column is as follows:

Column 1: The "Stream Background" concentrations of the parameters of concern in the effluent.

Column 2: The "Chronic" Fish and Aquatic Life Water Quality criteria. For Cadmium, Copper, Lead, Nickel, and Zinc, this value represents the criteria for the dissolved form at laboratory conditions. The Criteria Continuous Concentration (CCC) is calculated using the equation:

$$CCC = (\exp \{ m_C [\ln (\text{stream hardness})] + b_C \}) (CCF)$$

CCF = Chronic Conversion Factor

This equation and the appropriate coefficients for each metal are from Tennessee Rule 1200-4-3-.03 and the EPA guidance contained *in The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996). Values for other metals are in the total form and are not hardness dependent; no chronic criteria exists for silver. Published criteria are used for non-metal parameters.

Column 3: The "Acute" Fish and Aquatic Life Water Quality criteria. For Cadmium, Copper, Lead, Nickel, Silver, and Zinc, this value represents the criteria for the dissolved form at laboratory conditions. The Criteria Maximum Concentration (CMC) is calculated using the equation:

$$CMC = (\exp \{ m_A [\ln (\text{stream hardness})] + b_A \}) (ACF)$$

ACF = Acute Conversion Factor

This equation and the appropriate coefficients for each metal are from Tennessee Rule 1200-4-3-.03 and the EPA guidance contained in *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996). Values for other metals are in the total form and are not hardness dependent; no acute criteria exists for Total Chromium. Published criteria are used for non-metal parameters.

Column 4: The “Fraction Dissolved” converts the value for dissolved metal at laboratory conditions (columns 2 & 3) to total recoverable metal at in-stream ambient conditions (columns 5 & 6). This factor is calculated using the linear partition coefficients found in *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996) and the equation:

$$\frac{C_{diss}}{C_{total}} = \frac{1}{1 + \{ [K_{po}] [ss^{(1+a)}] [10^{-6}] \}}$$

ss = in-stream suspended solids concentration [mg/l]

Linear partition coefficients for streams are used for unregulated (7Q10) receiving waters, and linear partition coefficients for lakes are used for regulated (1Q10) receiving waters. For those parameters not in the dissolved form in columns 2 & 3 (and all non-metal parameters), a Translator of 1 is used.

Column 5: The "Chronic" Fish and Aquatic Life Water Quality criteria at in-stream ambient conditions. This criterion is calculated by dividing the value in column 2 by the value in column 4.

Column 6: The "Acute" Fish and Aquatic Life Water Quality criteria at in-stream ambient conditions. This criterion is calculated by dividing the value in column 3 by the value in column 4.

Column 7: The "Chronic" Calculated Effluent Concentration for the protection of fish and aquatic life. This is the chronic limit.

Column 8: The "Acute" Calculated Effluent Concentration for the protection of fish and aquatic life. This is the acute limit.

Column 9: The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Organism Consumption (Recreation).

Column 10: The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Water and Organism Consumption. These criteria are only to be applied when the stream use classification for the receiving stream includes both “Recreation” and “Domestic Water Supply.”

Column 11: The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Domestic Water Supply.

Column 12: The Calculated Effluent Concentration associated with Organism Consumption.

Column 13: The Calculated Effluent Concentration associated with Water and Organism Consumption.

Column 14: The Calculated Effluent Concentration associated with Domestic Water Supply.

The calculated chronic water quality effluent concentrations from Column 7 should be compared, individually, to the values calculated in Columns 12, 13, and 14 in order to determine the most stringent chronic permit limitations. The calculated acute water quality effluent concentrations from Column 8 should then be compared, individually, to values equal to two (2) times the values presented in Columns 12, 13, and 14 in order to determine the most stringent acute permit limitations. These water quality based limits should then be compared to any technology based (CFR or Tennessee "Rules") effluent limitations, and/or any previous permit limitations, for final determination of the permit limits.

C. REVIEW OF EFFLUENT LIMITATIONS FOR EACH OUTFALL

Appendix 5a presents the water quality calculations and Appendix 5b lists proposed effluent limitations and monitoring requirements to be included in the new permit. Effluent characteristics limited in the renewed permit along with monitoring requirements are discussed individually by outfall below. Revisions to monitoring frequencies are shown with applicable parameters.

In the submittal of updated effluent data dated March, 2005, the permittee requested a reduction on monitoring frequencies for selected parameters and outfalls. The justification for the reductions were based upon guidelines presented in “Interim guidance for Performance-Based Reductions of NPDES Permit Monitoring Frequencies” issued by the US EPA on April 19, 1996.

The Division agrees with the permittee’s assertion that all criteria to be used were satisfied when determining if a particular facility is eligible for reductions, and if so, the amount of these reductions,. The facility has demonstrated ability to reduce most pollutants in the discharge well below the level necessary to meet existing permit requirements. [The exception is the mercury discharge, which meets permit limits but mercury loadings in EFPC do not appear to be dropping.] The monitoring frequency in itself does not ensure a superior performance of the facility’s wastewater treatment system, but is a tool for evaluating

compliance with effluent limitations, which are designed to be inherently protective of designated uses of a receiving stream.

Special conditions to address unique situations and special studies, along with other permit conditions for the facility that are not outfall specific, are defined in latter sections of this Narrative. These special conditions deal with chronic mercury contamination, radiological monitoring, biological monitoring, and stormwater.

1. OUTFALL CLASSIFICATION AS CATEGORY I, II, III,AND IV

All point source outfalls listed in the previous permit were categorized from I to IV, based on their potential for water quality impacts including stormwater runoff, with Category IV considered the most significant impact. The following section describes each category and the proposed permit limits applicable. We have proposed substantial reductions in monitoring based on discussion with Y-12 Complex Water Compliance staff along with redirected monitoring efforts to effluent toxicity and instream quality.

For all outfalls, pH measurements must comply within a range of 6.0 to 9.0, versus a range of 4.0 to 9.0 or 6.0 to 10.0 from the existing permit. Long-term effluent monitoring shown in Appendix 4 indicates all outfalls meet these criteria. Flow monitoring will be conducted with all Category I, II, and III outfalls being measured/estimated one time per year on the same day, as recommended by the permittee. pH and TRC samples, as applicable, will be grab samples.

CATEGORY I outfalls currently have monitoring requirements for pH and Flow on a semi-annual (once per 6 months) basis. Proposed monitoring will be conducted once per year.
.

Category I Outfalls: 003, 006, 007~~, 008, 009, 011~~, 033, 041, 044, 045, 046, 057, 058, 062, 063, 064, 086, 087, 102, 110, 134, ~~S01, S03, S04,~~ S06, ~~S07, S09~~, S26 and S18. (Strikethrough outfalls are deleted from the renewed permit.)

CATEGORY II outfalls currently have monitoring requirement on a quarterly basis for Flow and pH, and a TRC limit of 0.5 mg/l daily maximum. Proposed monitoring will be conducted semi-annually.

Category II Outfalls: 002, 004, ~~010~~, 014, 016, 019, 020, 047, 048, 054, 067, 083, 088, 099, 126, ~~S02, S08, S10, S11, S12, S13 & Instream Monitoring Points S17, S20, S22~~, S24, ~~S25, S27, S28, S29~~.

The relocated Station C11 (formerly 201-see below) will be used to monitor for TRC data.

CATEGORY III outfalls currently have monitoring requirement on a monthly basis for Flow and pH, and a TRC limit of 0.5 mg/l daily maximum. Proposed monitoring will be conducted semi-annually.

Category III Outfalls: 034, 042, 071, 113, 114, ~~S05, S14.~~

CATEGORY IV outfalls have specific permit requirements and include wastewater treatment facilities and major storm water drainage discharges. These outfalls are located on Figure 1: Y-12 Complex NPDES Outfalls – EFPC Area except for S19 shown on Figure 2.

Category IV Outfalls: ~~05A, 017~~, 021, 051, 055, 109, 125, 135, 200, Station C11 (former 201), S19, 501, 502, 503, 512, 520, 550, AND 551.

Outfalls 05A and 017 are deleted as described below.

2. PROCESS WASTEWATER AND MERCURY TREATMENT - CATEGORY IV OUTFALLS.

Outfall 501

Central Pollution Control Facility (CPCF) discharges to a storm sewer which emerges at headwaters of EFPC at Outfall 200. Treatment is made in batches which are released over several hours. Effluent data summaries from 1997 to 2004 have been reviewed in preparing the following discussion of relevant parameters*. Unless noted below, monitoring frequencies are once/batch.*

Previous permit limits were expressed in mg/l from Effluent Limitations Guidelines (ELG) per 40 CFR 433 as shown in App. 2, and in pounds per day, lb/day, which were based on the 1985 permit quantities. The renewed permit will continue to reflect the ELG concentrations, and the daily and monthly quantities will be based on the previous permit.

The Outfall 501 effluent has an average flow of 0.009 mgd which is diluted with approximately 2.3 mgd cooling water, condensate, stormwater and ground water. Accordingly, the potential effects of this discharge on instream concentrations of EFPC are likely to be minimal.

Flow

Flow of batch discharges shall be reported as monthly average and daily maximum in Million Gallons per Day (MGD) as shown in Part 1.A of the Permit. Measurement frequency shall be continuous by recorder. These requirements are unchanged from the previous permit. The number of batches discharged during the month shall also be reported on the bottom of the DMR form.

NOTE: For the monitoring and reporting of measurements of FLOW from batch discharges, the "Monthly Avg." shall be the average of the set of daily flow values measured over a period of 24 hours during the release of each batch. The "Daily Max." shall be the total flow volume for the day reported as the largest discharge in MGD during the reporting period. Example: 3 discharges of 15,000 gallons/day and 1 discharge of 20,000 gallons/day during a 1-month period results in a Monthly Avg. of 65,000 gallons/4 days, or 16,250 gallons/day (to be reported as 0.016 MGD). The Daily Max. to be reported for this example is 20,000 gallons/day or 0.020 MGD.

Oil and Grease (as Hexane Extractable Material or HEM)

An oil and grease limitation is applied to this outfall because oily wastes are treated from the mop water wastes. In 1999, the EPA analytical method 1664A was approved to identify "hexane extractable materials". The limits established at 10 mg/l monthly average and 15 mg/l daily maximum will remain in place using the currently approved method.

Temperature

Temperature will not be required for monitoring under the renewed permit. The dilution of average daily flows by the average discharge at Outfall 200 is approximately 2.10/.0088 = 238:1. Under the worst case conditions of minimum flows in Outfall 200 with maximum flow of Outfall 501, the dilution is approximately 0.12/0.0229 = 5.2 : 1.

Total Suspended Solids

Previous permit limits of 31 mg/l monthly average and 40 mg/l daily maximum will be retained in the renewed permit. Data for the filtered effluent has averaged less than 3 mg/l over the reporting period.

pH

The limitations will be continued within the range of 6.0-9.0. Monitoring history has shown one exceedance of 9.2 in 97 samples.

Total Toxic Organics

Of 7 annual samples, the reported values range from 0 to <0.01 as compared to an effluent limit of 2.13 mg/l daily maximum concentration. Accordingly, the limitation per EPA

guidance will continue at the present limit of 2.13 mg/l daily maximum. Analyses will be made immediately prior to a carbon column replacement. The permit writer agrees with the permittee's request to delete from the permit the requirement for an annual TTO/MBAS/PCB test "whether the carbon column is replaced or not." Otherwise, the permittee would have been required to sample a portion of a batch awaiting discharge to meet a calendar year requirement, which does not conform to the intent of the permit in monitoring actual discharges.

Heavy Metals

As shown in Appendix 4, historical data on Outfall 501 effluent quality indicates compliance with existing permit limits for the following parameters having EPA effluent guidelines: silver, cadmium, chromium, copper, cyanide, nickel, lead, and zinc. The present permit limits will remain in effect as shown in the Appendix.

Fluoride

Fluoride is reported at 1 mg/l and is not a concern to surface water quality at this outfall, given the large dilution afforded at Outfall 200. Fluoride will be dropped from the permit for this outfall.

Iron

Iron is reported at <0.5 mg/l and is not a concern to surface water quality at this outfall, given the large dilution afforded at Outfall 200 (9,000 gpd mixed with flow of 2.3 mgd). Iron will be dropped from the permit for this outfall.

Nitrate/Nitrite

Nitrate discharges are reported at 14 mg/l and are significantly less than permit limits of 100 mg/l. Effluent limit will be dropped in the renewed permit.

Phosphorus

Elemental phosphorus is toxic to aquatic life. The aquatic concern for phosphates is typically for nutrient loading of the receiving waters, although many phosphate compounds may also have an associated toxicity. The phosphorus in this discharge should not consist of elemental phosphorus but of phosphates.

The maximum phosphate value reported for 1997-2004 was 13.7 mg/l for the CPCF effluent with an average of <1 mg/l. Wastewaters high in phosphate are more appropriately treated in a biological system such at the WETF.

Limitation will not be set for phosphates at this time. Monitoring will be made 1/batch. Wastewater analysis before a treatment option is chosen should include analysis for Phosphate, as P, and if phosphate is high, the wastewater may be better sent through the WETF.

Radioactivity

The outfall will be addressed as part of the radiological monitoring plan.

Sulfate

The concern for sulfates is primarily for the contribution it makes to the dissolved salts content of the receiving waters and for geochemical interactions with stream sediments which may mobilize some metals such as mercury. The receiving waters are freshwater and high salt content in the water will affect fish and aquatic life. Effluent data reported an average of 1700 mg/l for 1997-2004; however, dilution prior to discharge at Outfall 200 is over 200:1. Sulfate values in Clinch River Raw Water added at Outfall 200 average from 20-25 mg/l.

No limitation will be set at Outfall 501 for sulfate, but monitoring will be required. If sulfate is found to be high enough to cause problems in the creek, sulfate may need to be addressed by limits at the treatment facilities. Frequency will be 1/batch for sampling.

Total Dissolved Solids

Monitoring of several compounds will no longer be required because the data record from 1997 – 2004 indicates effluent concentrations which are not likely to create water quality impacts: Calcium, Phosphate, Sodium, Potassium, Total Chlorides, Magnesium and Potassium. These parameters will be replaced by Total Dissolved Solids; monitoring frequency will be 1/batch based on a composite sample.

Surfactants

The term 'surfactant' is used for a wide variety of compounds. Many are toxic to aquatic organism and some are resistant to biodegradation. Surfactants may cause unsightly foaming in receiving waters. Analyses for surfactant is by either the methylene blue active substances (MBAS) analysis or by the cobalt thiocyanate active substances (CTAS) analysis. The analysis to be used depends on the particular surfactant(s) present.

No limitation will be set for surfactant at this outfall. Surfactants discharged at a long-term concentration of <0.2 mg/l are of little concern at the outfall and monitoring will only be required on an annual basis. Analysis of MBAS should be timed just prior to carbon replacement in the carbon columns.

Boron

Boron was not limited in the previous permit, but was monitored once per batch. The concentration of < 4 mg/l boron in the discharge is not enough to create reasonable potential to create toxic conditions in the receiving stream. Monitoring–only limits will be continued in the reissued permit.

PCB's

As in the previous permit, limitation will be set for total PCBs at 0.001 mg/l as a daily maximum. Effluent data since 2001 indicates concentrations of 0.0005 mg/l. Monitoring will be performed and reported for total PCB at a measurement frequency of at least 1/year.

The discharge is treated using carbon filters to remove PCB and it is most likely that PCB will be seen immediately prior to change-out of the carbon in the filters. PCB has been routinely tested at CPCF and has been rarely above detection. Changing carbon in the filters is based on bleed through of phenols. Analysis for PCB will be required immediately before replacement of the carbon in the filters. Thus, if carbon is changed three times during a year, there will be three analyses for PCB.

Toxicity Testing

Reported effluent toxicity values for the period 1999-2004 vary for the 48-hr LC50 for Ceriodaphnia from approximately 65% to 100% as shown in Appendix 4. The previous permit required toxicity testing based on quarterly composite samples.

Outfall 501 is considered an intermediate monitoring point and comparison of data with downstream toxicity conditions below Outfall 200 is difficult. Outfall 200 represents the first accessible place to consider the combined effect of all upstream releases to headwaters of UEFPC. Flow from Outfall 501, which averages less than 10,000 gpd, is combined with over 2 mgd from stormwater, cooling water and groundwater at Outfall 200.

Because of the difficulty in relating Outfall 501 data to instream conditions, future toxicity testing will be discontinued pending data on toxicity testing at Outfall 200. Should Outfall 200 exhibit toxic conditions, this intermediate monitoring point will be investigated as to its contribution.

Outfall 502 West End Treatment Facility (WETF)

WETF discharges to the same storm sewer (North/South Pipes) which emerges at headwaters of EFPC as Outfall 200. Wastewaters received at WETF for treatment include nitrate-bearing wastes, heavy metals and uranium. Treatment is made in batch mode.

Effluent data from 1997 to 2004 have been reviewed in preparing the following discussion of relevant parameters. These data indicate excellent performance in meeting limits and reduction in monitoring is approved. See Appendix 5 for revised monitoring frequencies in addition to the following discussion.

Flow

Since release of a batch can take up to two weeks, flow shall be reported three times per week in Million Gallons per Day (MGD) as daily maximum flow for the month and a monthly average flow. Measurement frequency shall be continuous by recorder. These requirements are unchanged from the previous permit.

NOTE: For the monitoring and reporting of measurements of FLOW from batch discharges, the "Monthly Avg." shall be the average of the set of daily flow values measured over a period of 24 hours during the release of each batch. The "Daily Max." shall be the total flow volume for the day reported as the largest discharge in MGD during the reporting period. Example: 3 discharges of 15,000 gallons/day and 1 discharge of 20,000 gallons/day during a 1-month period results in a Monthly Avg. of 65,000 gallons/4 days, or 16,250 gallons/day (to be reported as 0.016 MGD). The Daily Max. to be reported for this example is 20,000 gallons/day or 0.020 MGD.

pH

The limitations will be continued within the range of 6.0-9.0, measured weekly.

Oil and Grease (as Hexane Extractable Material or HEM)

An oil and grease limitation is applied to this outfall because oily wastes are treated from the mop water wastes. In 1999, the EPA analytical method 1664A was approved to identify "hexane extractable materials". The permittee has monitored and reported a concentration of 5.7 mg/l with very little variance. The limits established at 10 mg/l monthly average and 15 mg/l daily maximum will remain in place using the currently approved method.

Temperature

Temperature will not be required for monitoring under the renewed permit. The dilution of average daily flows by the average discharge at Outfall 200 is approximately 2.10/.0145 = 144:1. Under the worst case conditions of minimum flows in Outfall 200 with maximum flow of Outfall 502, the dilution is approximately 0.066/0.011 = 6.5:1.

Total Suspended Solids

Previous permit limits of 31 mg/l monthly average and 40 mg/l daily maximum will be retained in the renewed permit, measured weekly. Data for the filtered effluent has averaged less than 5 mg/l over the reporting period.

Heavy Metals

As shown in Appendix 4, historical data on Outfall 502 effluent quality indicates compliance with existing permit limits for the following parameters having EPA effluent guidelines: silver, cadmium, chromium, copper, cyanide, nickel, lead, and zinc. The present permit limits will remain in effect and will be reported on a weekly sample.

Beryllium

Beryllium is reported at <0.006 mg/l. No state water or EPA quality criterion exists for beryllium. Accordingly, monitoring for beryllium will be dropped from the renewed permit.

Boron

Boron is reported at <0.6 mg/l. No state water or EPA quality criterion exists for boron. Accordingly, monitoring for boron will be dropped from the renewed permit.

Cyanide

Cyanide is reported at <0.01 mg/l during 294 samples. Accordingly, monitoring for cyanide will be dropped from the renewed permit.

Fluoride

Fluoride monitoring from 1997 – 2004 results in effluent concentrations of 7 mg/l on average, with a peak value of 21 mg/l. This concentration is further diluted by additional flows in Outfall 200. No state criterion for surface waters exists for fluoride (except for water supply use) and EPA ECOTOX values for aquatic toxicity range above 100 mg/l for potential aquatic impacts. Accordingly, fluoride testing will be dropped from the renewed permit.

Iron

Iron is reported at <0.8 mg/l and is not a concern to surface water quality at this outfall, given the large dilution afforded at Outfall 200 (14,500 gpd mixed with flow of 2.3 mgd). Iron will be dropped from the permit for this outfall.

Mercury

Effluent data indicates concentrations of <0.0002 mg/l (200 parts per trillion). Monitoring frequency will be reduced from 3/week to weekly. The State Water Quality Criterion for the recreation stream use classification is 0.051 ug/l or 51 parts per trillion.

Nitrate/Nitrite

Wastewaters containing nitrate/nitrite are treated at WETF and significant amounts of nitrate/nitrate are not discharged. Average effluent concentration is <6 mg/l. Existing permit limits will be retained in the renewed permit and reported on a weekly sample.

Manganese

Manganese is reported at <0.6 mg/l. No state water or EPA quality criterion exists for manganese. Accordingly, monitoring for manganese will be dropped from the renewed permit.

PCB

PCB concentrations of <0.0005 have been reported as compared with a permit limit of 0.001 mg/l. Accordingly, monitoring will be reduced from monthly to quarterly in the renewed permit.

Selenium

Selenium is reported at 1.2 mg/l. Accordingly, selenium will be reported on a composite sample collected 1/batch.

Total Dissolved Solids

Monitoring of several compounds will no longer be required because the data record from 1997 – 2004 indicates effluent concentrations which are not likely to create water quality impacts: Calcium, Phosphate, Sulfate, Total Chlorides, Magnesium and Potassium. These parameters will be replaced by Total Dissolved Solids to be monitored and reported monthly on a composite sample.

Total Toxic Organics

Of 43 samples, the reported values range from 0 to 0.02 as compared to an effluent limit of 2.13 mg/l daily maximum concentration. Analyses for TTO shall be conducted annually on a composited sample, but the volatile organics part of the TTO shall be collected as a grab sample. Accordingly, the limitation per EPA guidance will continue at the present limit of 2.13 mg/l daily maximum ~~and 1.3 lb/day quantity~~.

Toxicity Testing

Reported effluent toxicity values for the period 1999-2004 vary for the 48-hr LC50 for Ceriodaphnia from approximately 20% to 50% as shown in Appendix 4, indicating the effluent contains compounds which would be toxic in a zero-flow stream. The previous permit required toxicity testing based on quarterly composite samples.

Outfall 502 is considered an intermediate monitoring point and comparison of data with downstream toxicity conditions below Outfall 200 is difficult due to the effects of dilutions mentioned above. Outfall 200 represents the first accessible place to consider the combined effect of all upstream releases to headwaters of UEFPC. Flow from Outfall 502, which averages less than 75,000 gpd, is combined with over 2 mgd from stormwater, cooling water and groundwater at Outfall 200.

Because of the difficulty in relating Outfall 502 data to instream conditions, future toxicity testing will be discontinued pending data on toxicity testing at Outfall 200. Should Outfall 200 exhibit toxic conditions, this intermediate monitoring point will be investigated as to its contribution.

Radiological Compounds

Outfall 502 will be addressed as needed in the Radiological Monitoring Plan.

Outfall 503 Steam Plant Wastewater Treatment Facility

The Steam Plant Wastewater Treatment Facility (SPWTF) currently provides pretreatment of coal pile stormwater, boiler blowdown, ion exchange regenerator waste, and ash handling wastewater for discharge to the City of Oak Ridge domestic wastewater treatment Complex. Y-12 Complex has requested that Outfall 503 be retained on the permit for future planning purposes. Outfall 503 could discharge to the storm drain which is released to surface water at Outfall 200.

Existing permit limits will be retained, except for:

a. iron (total recoverable) which will be set at 5.0 mg/l, which is the cut-off concentration for steam electric power generating facilities.
b. Whole Effluent Toxicity testing will be dropped, per the same rationale as Outfalls 501 & 502 regarding dilution with Outfall 200 discharge.

OUTFALL 512 Ground Water Treatment Facility

The GWTF treats wastewater originating from cleanup actions, primarily in the Bear Creek area. Wastewater contains soluble iron, volatile and non-volatile organic compounds, trace amounts of oil contaminated with PCBs, and uranium. Treated effluent flows eastward in the storm drains for approximately one mile to Outfall 200.

Flow

Flow is reported continuously and reported as daily maximum and monthly average – these criteria will continue in the renewed permit.

Iron

Effluent data for 1997-2004 indicate compliance with numerical limits for pH, Iron, and PCB. Permittee request the iron limit be dropped or changed. Iron concentrations are reported at <0.2 mg/l. No State water quality criterion exists for iron. EPA water quality criterion for chronic exposure is 1 mg/l. Considering the dilution afforded by Outfall 200, iron has very low potential for adverse impacts on water quality. Accordingly, iron will be dropped from the renewed permit.

pH

Effluent pH values range from 6.6 to 8.7 with no exceedances. Monitoring frequency will be reduced from 3/week to monthly to coincide with metals monitoring shown below.

Effluent Toxicity

Effluent toxicity data averages >71% effluent for Ceriodaphnia and 41% for Fathead Minnows. Because of the difficulty in relating Outfall 512 data to instream conditions, future toxicity testing will be discontinued pending data on toxicity testing at Outfall 200. Should Outfall 200 exhibit toxic conditions, this intermediate monitoring point will be investigated as to its contribution.

Manganese

Manganese is reported at <0.52 mg/l. No State water quality criterion exists for manganese. Monitoring for manganese will be dropped from the renewed permit.

Lead and copper

Copper is reported at <0.02 mg/l as compared to the chronic State criterion of 0.009 mg/l. Lead is reported at <0.1 mg/l versus a chronic State criterion of 0.0025. Accordingly, monitoring of lead and copper will continue monthly on a composite sample.

PCB

PCB concentrations of <0.0005 have been reported as compared with a permit limit of 0.001 mg/l. Accordingly, monitoring will be reduced from monthly to quarterly in the renewed permit.

Radiological Compounds

Outfall 512 discharges uranium at a concentration of <0.02 mg/l. Outfall 512 will be addressed as needed in the Radiological Monitoring Plan.

Outfall 520, Lithium Process Steam Condensate

This system provides pH adjustment and effluent holding for monitoring prior to discharge of condensate associated with the lithium process. Condensation from evaporation of the salt solution is the wastewater source, which contains some carryover lithium dioxide. Discharge is through the storm sewer system to Outfall 135. Data on the flow rate is maintained at the facility.

pH and Total Dissolved Solids (TDS)

Effluent data for pH indicates no exceedances in the reported data range of 6.0-9.0. Average concentrations are reported for dissolved solids of <41 mg/l. Existing permit conditions for weekly grab samples will be retained.

Effluent Toxicity

Effluent toxicity data will only be required in the renewed permit as described in Section X. Because of the difficulty in relating Outfall 520 data to instream conditions, future toxicity testing will be discontinued pending data on toxicity testing at Outfall 135. Should Outfall 135 exhibit toxic conditions, this intermediate monitoring point will be investigated as to its contribution.

Radiological Compounds

Outfall 520 will be addressed as needed in the Radiological Monitoring Plan.

Outfall 550, East End Mercury Treatment System (EEMTS)

EEMTS discharges approx. 0.014 mgd of treated ground water contaminated with mercury from legacy sources to EFPC. Outfall 550 currently discharges the filtered bypass of EEMTS during high wet weather flows.

EEMTS is being replaced with a larger capacity system which will also treat flow from a large spring known as Outfall 051 entering EFPC adjacent to Outfalls 550 and 55. The system should be operational in 2005. Existing permit limits will remain in place pending elimination of Outfall 550.

Flow

Flow will be reported weekly and reported in mgd as the daily maximum flow.

pH

Effluent pH values range from 6.6 to 8.7 with no exceedances. Monitoring frequency will be remain weekly with limits of 6 to 9.

Mercury

Average effluent mercury concentration is <0.0002 mg/l (non detectable) as compared to the permit limit of 0.004 mg/l. Added discussion of mercury discharges is provided in a following separate section of the Rationale.

Effluent Toxicity

No data is available to evaluate toxicity in this discharge.

Radiological Compounds

Outfall 550 will be addressed as needed in the Radiological Monitoring Plan.

OUTFALL 551, CENTRAL MERCURY TREATMENT SYSTEM (CMTS)

CMTS discharges approx. 0.010 mgd of greated ground water contaminated with mercury to the same storm sewer as the CPCF building/Outfall 501. This storm drain discharges at Outfall 200 to EFPC.

Flow

Flow will be reported weekly and reported in mgd as the daily maximum flow.

Mercury

Average effluent mercury concentration is <0.0004 mg/l; exceedance of the mercury effluent limit of 0.004 mg/l is reported four times in 2001 but none since then. Added discussion of mercury discharges is provided in a following separate section of the Rationale.

Effluent Toxicity

As shown in Appendix 4, the quarterly toxicity test data since 1996 has shown no toxicity. Accordingly, this test will be discontinued.

Radiological Compounds

Outfall 551 will be addressed as needed in the Radiological Monitoring Plan.

Outfalls 51 And 55 – Mercury-Contaminated Ground Water

Outfall 51

Outfall 51 discharges mercury-contaminated ground water from the large spring at the southeast corner of Building 9201-2 just downstream of Outfall 550/EEMTS and Outfall 55. Outfall 51, with an average reported flow since 2001 of 0.661 mgd, is also reported as the largest source of mercury discharge to EFPC. Under the CERCLA program, construction is nearing completion at this writing of a mercury removal system which will treat the groundwater flow and replace the sump water treatment provided by EEMTS/Outfall 550. Pending elimination of this outfall, the exsting provisions will remain in effect.

Flow

Daily maximum and monthly average estimates will be reported weekly.

pH

Monitoring frequency for pH will be reduced to monthly.

Mercury

Average effluent concentration is 0.002 mg/l. Outfall 051 permit limits for flow, pH, and mercury will be retained. Monitoring frequency for mercury will remain weekly.

Outfall 55

Outfall 55 discharges once-through cooling water and storm water from roof drains, and serves as the bypass point for sump water from Outfall 550/EEMTS mercury removal system. The bypass occurs during periods of excessive flow in rain events or when Complex capacity is exceeded. Dry weather flow (cooling water) has reduced to 0.02 mgd following 2003 changes in building occupancy.

Flow is to be reported monthly.

Mercury

Data collected twice weekly from 1997 – 2004 indicates three exceedances in 988 samples of the mercury limit of 0.004 mg/l which occurred in late 2002/early 2003. Average concentrations are approximately 0.0003 mg/l, or 300 ppt. Mercury monitoring in the renewed permit will be reduced from 2/week to monthly. In addition, reporting and monitoring of bypass flow and mercury concentration is required for each bypass of the EEMTS treatment system.

Total Residual Chlorine

Reported data indicates TRC values of near detection of 0.05 with only one exceedance of the 0.5 limit. Effluent concentration averages <0.06 mg/l with very low variability and well below the previous permit limit of 0.5 mg/l. Monitoring frequency in the renewed permit will be reduced from 2/week to annual basis.

pH

Reported data indicates pH of 7-8 consistently; monitoring frequency is monthly.

Radiological Compounds

Outfalls 51 & 55 will be addressed as needed in the Radiological Monitoring Plan.

3. COOLING WATER AND TOTAL RESIDUAL CHLORINE

The water balance from the renewal application indicates approximately 2.5 mgd of once-through cooling water are discharged to UEFPC. This flow represents over 25% of the total discharges from the facility.

Aquatic toxicity concerns due to Total Residual Chlorine (TRC) required installation and operation of dechlorination systems. In most cases, these systems have functioned properly and outfall data indicates TRC at or near the detection limit of 0.05 mg/l.

Toxicity concerns also resulted in listing of dozens of outfalls in the previous permit with TRC monitoring provisions. We are modifying TRC monitoring requirements based on the multi-year monitoring data base shown in Appendix 4. Over thirty (30) outfalls have been monitored from 1997 to the present and TRC values are primarily found at or near the detection limit of 0.05 mg/l. These outfalls are listed in the previous permit as Category II or III outfalls, with TRC report-only requirements. The total average flows from Category III and II outfalls are 0.69 mgd and 0.93 mgd , respectively, for a total flow of 1.62mgd.

To address these toxicity concerns, permit limits are required for major outfalls 200, 125, 135, 109, and 021. Report-only monitoring requirements will be applicable to Outfalls 200, 125, and 135. Outfall 109 limits for TRC are 0.05 mg/l daily maximum and 0.03 monthly average. For Outfall 021, are 0.188 mg/l daily maximum and 0.1 mg/l monthly average. Subsequent sections of this Rationale present more details on how these limits are derived.

Permit limits are calculated based on an in-stream limit of 0.019 mg/l (acute) and 0.011 (chronic) per TCAC 1200-4-3 for streams assigned the Fish and Aquatic Life use classification.

TRC Monitoring

TRC monitoring in the renewed permit will consist of routine measurements at the major outfalls along with in-stream measurements at four locations. TRC Monitoring frequencies for Category III outfalls are reduced from monthly to semi-annually, and for Category II outfalls from quarterly to annually.

An instream survey of TRC concentrations will be performed quarterly at four downstream locations Stations C03, C05, C08, and C11. Sampling locations are shown on “Figure 3 - Y-12 Complex In Stream Monitoring”. Permit limits established for these four Instream Monitoring Points represent the water quality criteria for TRC, which are 0.019 mg/l daily maximum and 0.011 monthly average. If findings from the monitoring at any station indicate an exceedance of these criteria, followup monitoring of upstream dechlorination systems and outfalls will be immediately required to identify and reduce TRC values to comply with these criteria.

Detection Limit – Revised permit language has been developed as follows: "The acceptable methods for analysis of TRC are any methods specified in Title 40 CFR, Part 136 as amended. The method detection level (MDL) for TRC shall not exceed 0.05 mg/l unless the permittee demonstrates that its MDL is higher. The permittee shall retain the documentation that justifies the higher MDL and have it available for review upon request. In cases where the permit limit is less than the MDL, the reporting of TRC at less than the MDL shall be interpreted to constitute compliance with the permit limit.."

4. MAJOR POINT SOURCE DISCHARGES

Outfall 200 - North/South Pipes – Headwaters Of East Fk Poplar Creek (Efpc)

Outfall 200 conveys treated process wastewater, cooling water, infiltrated ground water, and stormwater from dozens of upstream inputs to storm drains. Flow from Outfall 200 has averaged approx. 2.3 mgd from 1997-2004. Numeric permit limits were attained for oil-and-grease and hexane extractable compounds, with only two exceedances during the reported period.

Efffect of Multiple Discharges

Outfall 200 is located adjacent to two other significant Outfalls 135 (0.23 mgd) and Outfall 125 (0.45 mgd). The combined effect of these discharges forms such a significant effect on the waters of EFPC that they should be considered as one single discharge. The discussion below regarding toxic discharges is based upon the combined effect of the three outfalls.

TN Water Quality Criteria allow for a mixing zone for the combined effect of these outfalls where dilution of the discharge takes place with the Clinch River water. Within the mixing zone, a limited area or volume of water is established to allow water quality criteria to be exceeded, but acute toxicity must not occur to harm aquatic biota, nor must harmful or offensive conditions be created. Compliance with chronic toxicity criteria must be attained at the downstream limit of the mixing zone. Based on discussions with Complex personnel regarding these outfalls, the permit writer believes the mixing zone of these outfalls extends from Outfall 200 (North/South Pipes) to approximately 100 yards near the first downstream bridge. This location is shown on Figure 3 as Station C11.

Flow

Reported flow values indicate a mean flow of approx. 2.3 mgd, with peak flows during storm events of over 50 mgd in 2003, based on 3/week measurements. With this large quantity of data, baseline flow conditions have been well documented. Frequency of flow monitoring will be reduced from 3/week to weekly in the renewed permit and reported for the daily maximum and monthly value averages.

Permittee indicates measurement of flow in Outfall 200 is affected by backflow from the adjacent Clinch River water addition. Flow at Outfall 200 will be based upon measurement of total flows from Station C11 and all other upstream discharges. This procedure allows calculation of Outfall 200 flows by subtraction of upstream flows from the instream flow measured at Station C11.

Supplemental Flow is Authorized

Flow has been supplemented by diverting Clinch River water from the raw water line serving the Oak Ridge Water Treatment Complex . The raw water is discharged near Outfall 200, shown on Figure 1, from a “southern” pipe which traverses the southern portion of Y-12 Complex. As described earlier, the addition of Clinch River water required under the previous permit has been performed near the emergence of Outfall 200 to become the headwaters of EFPC. For operational considerations, such as required should the “southern” pipe need repair, discharge from a “northern” pipe may be needed. This northern pipe exists along Bear Creek road. Raw water flow from this pipe would be routed through the storm sewer system emerging at Outfall 200 and is authorized in the renewed permit.

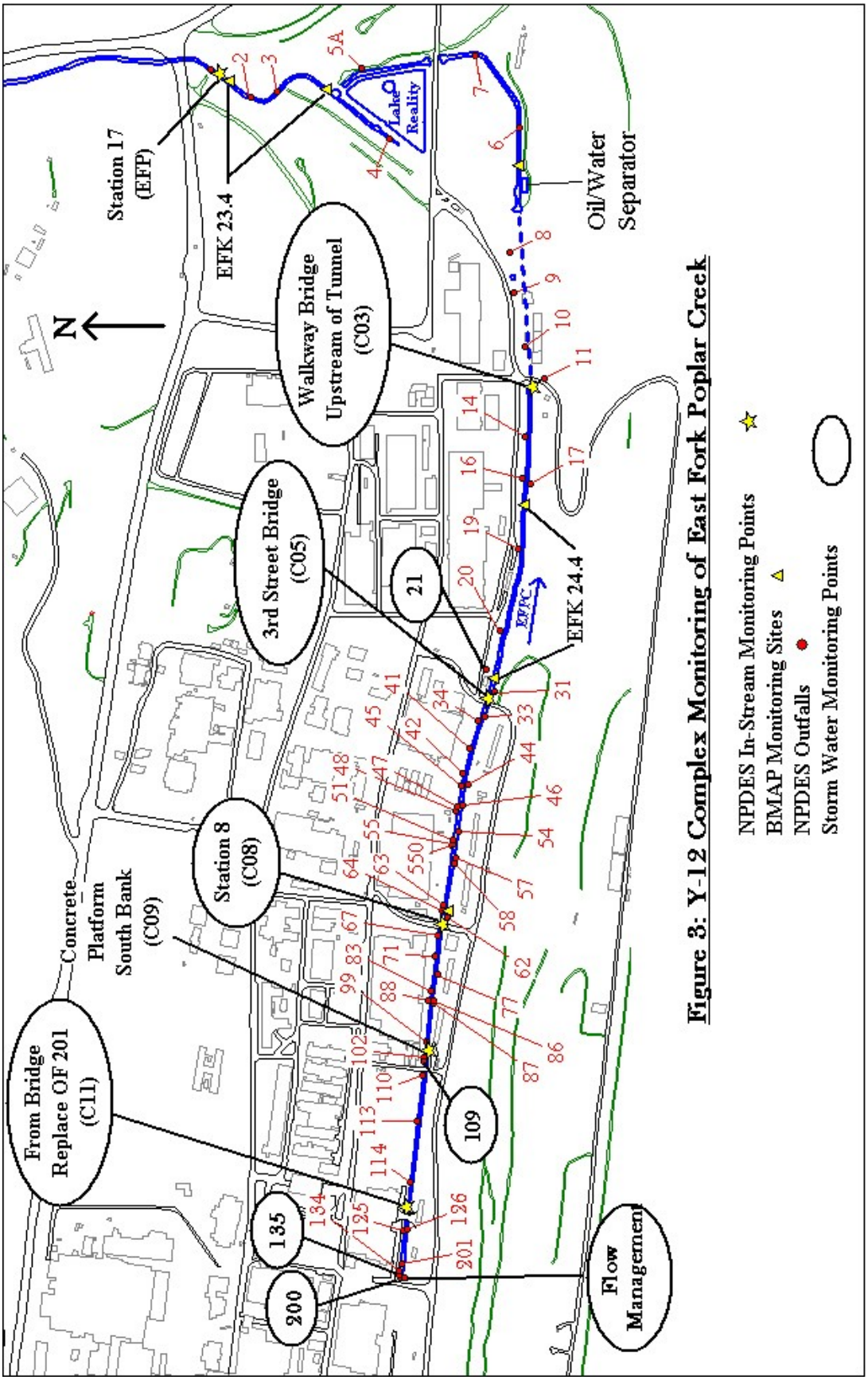

Figure 3: Y-12 Complex Monitoring of East Fork Poplar Creek

Y-12 Complex has requested reduction in the required minimum flow of 7.0 mgd to 5.5 mgd as measured at Station 17. Additional information is required regarding potential impacts on aquatic communities and changes in pollutant transport due to different hydraulic conditions before we can properly review this request.

Total Residual Chlorine

Data shown in Appendix 4 indicate toxic conditions are present in discharges released to Outfall 200, especially discharges which are not treated for chlorine removal. Based on these data, effluent limits at Outfall 200 for Total Residual Chlorine (TRC) are required.

There are no technology-based TRC effluent criteria applicable to the current discharges. Permit limits are calculated based on an in-stream limit of 0.019 mg/l (acute) and 0.011 (chronic) per TCAC 1200-4-3 for streams assigned the Fish and Aquatic Life use classification.

The mass-balance equation discussed previously will calculate the TRC concentration required to attain the above in-stream limit..

$$Cm = \frac{QsCs + QwCw}{Qs + Qw}$$

To protect water quality:

$$Cw = \frac{(S_A)\,[Cm\,(Qs + Qw) - QsCs}{Qw}$$

where:

Cw = concentration of TRC in 3 outfalls necessary to protect water quality

(S_A) is the percent "Stream Allocation" of 90% assigned to the mixture of 200/135/125 and the remaining 10% will be assigned to Outfall 109 downstream.

Cm = resulting in-stream concentration after mixing = 0.019 mg/l daily max.
= 0.011 mg/l mo'ly. ave.

Cs = stream background concentration (Clinch River water) = 0.0 mg/l (following dechlorination)

Qs = stream flow of Clinch River water added = 4.73 mgd

Qw = wastewater flow = 2.3 + 0.23 + 0.45 = 2.98 mgd
(This represents the combined flow of Outfall 200 and two other major Outfalls 135 (0.23 mgd) and 125 (0.45 mgd), which also discharge chlorinated wastewater.)

Daily maximum concentration:

$$Cw = \frac{(0.9)0.019(4.73+2.98) - 4.73(0.0)}{2.98} = \frac{(0.9)\,0.146}{2.98} = 0.044 \text{mg/l}$$

Monthly average concentration:

$$Cw = \frac{(0.9)0.011(4.73+2.98) - 4.73(0.0)}{2.98} = \frac{(0.9)\,0.085}{2.98} = 0.025 \text{ mg/l}$$

The permit limit for TRC of 0.044 mg/l daily maximum concentration and 0.025 mg/l monthly average represents the allowable concentrations required to meet the criteria for fish and aquatic life per TCAC 1200-4-3. Compliance can not be measured at the end-of-pipe because the dechlorination procedure, which is performed at the discharge point, would not

have completed the reaction yet. Compliance with TRC limits will be based at the margin of the mixing zone at instream monitoring point Station C11. Applicable limits will be the State WQ criteria of 0.011 monthly average and 0.019 mg/l daily maximum. Since these values are below the current method detection limit of 0.05 mg/l,values reported should remain below detection. Compliance monitoring will be performed 2/monthly for TRC on a grab sample.

Iron

Effluent data for 1997-2004 indicate concentrations are reported at <0.4 mg/l. No State water quality criterion exists for iron. EPA water quality criterion for chronic exposure is 1 mg/l. Considering these data, iron has low potential for adverse impacts on water quality. Accordingly, iron will be dropped from the renewed permit.

Metals

Metals including cadmium, copper, lead, and zinc are included in the previous permit and reported on a monthly composite sample. Mercury is also reported on a weekly basis.

To assess the instream concentration of these and other metals of concern, the Division uses a spreadsheet calculation described earlier *and shown in Appendix 5a*. Input for the spreadsheet calculation for flow and stream conditions is shown below. Note that the Waste Flow of 2.98 mgd represents the combined effect of Outfalls 200, 135, and 125, which are the most significant releases at the headwaters of EFPC.

Stream (7Q10)	Stream (30Q2)	Waste Flow	Ttl. Susp. Solids	Hardness (as CaCO3)	Stream Allocation
[MGD]	[MGD]	[MGD]	[mg/l]	[mg/l]	[%]
4.730	4.730	2.980	10	142	90

	1	2	3	4	5	6	7	8
	Stream	Fish/Aqua. Life		Effluent	Fish & Aquatic Life Water Quality Criteria (7Q10)			
	Bckgrnd.	Water Quality Criteria		Fraction	In-Stream Allowable		Calc. Effluent Concentration	
EFFLUENT	Conc.	Chronic	Acute	Dissolved	Chronic	Acute	Chronic	Acute
CHARACTERISTIC	[ug/l]	[ug/l]	[ug/l]	[Fraction]	[ug/l]	[ug/l]	[ug/l]	[ug/l]
Cadmium *	1.00	0.31	2.83	0.25	1.24	11.21	**1.47**	**24.68**
Copper *	5.00	12.08	18.70	0.35	34.77	53.80	**73.81**	**118.13**
Lead *	4.00	3.68	94.40	0.18	20.00	513.32	**40.86**	**1189.56**
Nickel *	10.00	69.97	629.94	0.43	161.84	1457.12	**362.56**	**3378.64**
Silver *	1.00	NA	5.88	1.00	NA	5.88	**N/A**	**12.26**
Zinc *	5.90	159.01	157.72	0.29	552.14	547.66	**1277.25**	**1266.82**
Mercury, (T) **	0.20	0.91	1.69	1.00	0.91	1.69	**1.83**	**3.65**
Chromium (T) **	1.00	100.00	NA	1.00	100.00	N/A	**231.42**	**N/A**
Cyanide (T) **	0.00	5.20	22.00	1.00	5.20	22.00	**12.11**	**51.22**

* Denotes metals for which Fish & Aquatic Life Criteria are expressed as a function of total hardness. The Fish & Aquatic Life criteria for this metal are in the dissolved form at laboratory conditions. The in-stream allowable criteria and calculated effluent concentrations are in the total recoverable form.
** The criteria for these parameters are in the total form.
Stream Background Concentrations are based on Clinch River analyses from CRM 66.3.

To evaluate potential impacts on water quality, the following comparison of selected metals is shown using actual effluent data (from Appendix 4 and the permit application) with calculated effluent concentrations in mg/l:

	ACTUAL EFFLUENT CONCENTRATION (average 97-04)			**CALCULATED EFFLUENT LIMITS**	
	Outfall 200	Outfall 125	Outfall 135	**Mo. Ave.**	**Daily Max**
Metal	mg/l	mg/l	mg/l	mg/l	mg/l
Cadmium	0.008	<0.004	<0.005	0.001	0.025
Chromium (T) *	<0.009	<0.011	<0.009	0.231	N/A
Copper	0.02	<0.011	0.032	0.074	0.118
Lead	0.07	<0.014	<0.036	0.041	1.19
Mercury, (T)	0.0008	<0.0002	<0.0002	note 1	note 1
Nickel	0.05	<0.024	<0.017	0.363	3.379
Zinc	0.09	0.1	0.456	1.277	1.267

***from Permit application.**
1. See Mercury discussion in subsequent Rationale Section.

This comparison identifies reasonable potential for water quality impacts especially from cadmium (Outfalls 200, 125, 135) and lead (outfall 200). Existing permit requirements for monitoring and reporting of cadmium and lead will be replaced with the above limits on a report-only basis. Requirements will be added for effluent toxicity. Sampling will be reported monthly on a 24-hour composite sample.

Mercury

Mercury concentrations in Outfall 200 shown in Appendix 4 are above 0.0002 mg/l, or 200 parts-per-trillion (ppt) since 1999 and increasing to a current level of approximately 1000 ppt in recent data. A separate discussion of mercury discharges and permit limits is provided near the end of this permit Rationale.

Toxicity Testing

Measurement for effluent toxicity is a concern for Outfall 200 because this is the beginning point of East Fork Poplar Creek. Although these waste flows are initially diluted by

the addition of Clinch River Water at this point, biological data indicates impairment of the stream in the EFPC downstream of these outfalls.

Reasonable potential exists for this discharge to cause an in-stream excursion of criterion for aquatic toxicity because reported and calculated effluent quality for metals compounds exceed established criteria for fish and aquatic life. Data provided by Y-12 Complex for toxicity testing at locations in the upper Outfall 200 stormwater drainage area indicate chlorinated cooling water and stormwater discharges can be toxic to aquatic life. These data are listed in Appendix 4 which present toxicity results for both chlorinated and dechlorinated effluents as applicable.

Accordingly, effluent limits for chronic Whole Effluent Toxicity are required. These limits are described in Rationale Section X, Biomonitoring Requirements, Chronic and in Part III of the permit.

During diversion of raw water addition from near Outfall 200 while the southern pipe is being repaired, addition will occur at outfalls approximately one-half mile downstream. During this downstream diversion of raw water addition, toxicity testing will be performed on a weekly basis from a sample at Station C08.

Note: Ambient toxicity data collected previously at instream monitoring point former Outfall 201 has not identified toxicity of samples in the receiving water. This data may be influenced by the lack of rapid and complete mixing. and does not explain the biological impairments identified in downstream benthic macroinvertebrates.

Uranium

Due to the significant quantity of flow from Outfall 200, uranium will not be limited but will be monitored.

Radiological Compounds

Outfall 200 will be addressed as needed in the Radiological Monitoring Plan.

Fluoride

Fluoride monitoring from 1997 – 2004 results in effluent concentrations of 0.84 mg/l on average, with a peak value of 1.3 mg/l as reported in the 1999 application. No state criterion for surface waters exists for fluoride and EPA ECOTOX values for aquatic toxicity range above 100mg/l for potential aquatic impacts. Accordingly, fluoride testing will be dropped from the renewed permit.

Nitrate/Nitrite

Monthly effluent data indicates <6 ppm average concentration with a range of <0.05 to 56 mg/l. No limit will be established but monthly monitoring will reduced to quarterly based on a 24-hour composite sample.

Oil and Grease

Oil and Grease effluent data has averaged <5.2 mg/l. Only two (2) of over 1200 samples have exceeded the permit limt of 15 mg/l. Since reported effluent data range <50% of the permit limit, the monitoring frequency is reduced from 3/week to once/week on a grab sample. Effluent limits will remain at 10 mg/l monthly average and 15 mg/l daily maximum. Existing treatement system effluents continue to meet this limit. Other discharges such as stormwater should meet the limit through application of best management practices.

Phosphate and Sulfate Replaced with Total Dissolved Solids

Monthly effluent data indicates average concentrations approx. 1 mg/l phosphate and approx. 44 mg/l sulfate. These parameters will be replaced with measurement of Total Dissolved Solids using quarterly monitoring of a 24-hour composite sample.

Polychlorinated Biphenyl (PCB) compounds

Because EFPC is listed as impaired and posted for a fish consumption advisory for PCB's and Outfall 200 represents a significant effect on water quality, PCB's will be monitored on a grab sample collected and reported quarterly.

Station C11 (formerly Outfall 201) – Instream Monitoring Point

At a location approximately 100 feet downstream from Outfalls 200 and 135 and the discharge point for Clinch River raw water addition, Outfall 201 was an Instream Monitoring Point to assess the mixed flows from these discharges. Outfall 201 has been the point at which the effectiveness is measured of dechlorination employed at Outfalls 135 and 200.

The permittee has recommended renaming it as Station C11 and relocating the monitoring point to a bridge crossing further downstream near Outfall 126 to account for mixing of the major outfalls with Clinch River water. Outfall 201 will be abandoned in place and a new instream monitoring point designated as Station C11 will be established as noted on Figure 3.

Station C11 will be used for both routine, i.e., monthly compliance monitoring, as well as an instream monitoring point for annual stormwater tests. Stormwater monitoring is described later in this rationale.

Flow

Flow measurement will be performed 2/month and reported as daily maximum and monthly average flow in mgd.

ph

Revised pH values of 6.0 – 9.0 are in effect for wadeable streams classified for Fish and Aquatic Life per TCAC 1200-4-3. The reported data range is 6.6 to 9.3 for the period 1997 – 2004, with no exceedances since 2000 at this location. Measurement frequency will be reduced to 2/month on a grab sample.

Temperature

Maximum temperature of 30.5° C shall be set as a permit limitation. Measurement frequency will be reduced to 2/month on a grab sample.

Manganese

Due to the replacement of chlorine in the raw water with potassium permanganate, the only potential water quality concern is toxicity from manganese. Manganese is not defined in TN or EPA rules as having an acute or chronic concentration required to protect water quality. Accordingly, monitoring and reporting for manganese will not be required.

Lead and Cadmium

To protect water quality, measurement of instream concentrations of lead and cadmium must be accomplished for comparison with state water quality standards. Based on mixing zone calculations of the effect of the combined discharges at or near Outfall 200, compliance with instream lead and cadmium concentrations should be attained at Station C11. Sampling will be conducted monthly and reported on a *composite* sample.

Total Suspended Solids (TSS)

TSS effluent data averaged 6.4 mg/l with a range of <1 to 80 mg/l. These values indicate low TSS concentrations in the EFPC headwaters. Previous permit requirement for report-only for TSS will be retained in the renewed permit. Measurement frequency will be reduced to 2/month, based on a composite sample.

Total Residual Chlorine (TRC)

TRC monitoring continues to be necessary at this Instream Monitoring Point to document compliance with toxic substance criteria per TCAC 1200-4-3. As noted above, the upstream dechlorination treatment system plus the abundance of chlorinated once-through cooling water discharges create potential for toxic concentrations of chlorine. TN water quality criteria for TRC are 0.011 monthly average and 0.019 mg/l daily maximum for chronic and acute

toxicity, respectively. These criteria will be retained in the renewed permit as permit limits. Monitoring frequency will be 2/month, based on a grab sample.

Toxicity Testing

Many years of toxicity testing in the mixture of EFPC and Clinch River water indicate the absence of toxic conditions. This data reflect the results of dilution following flow management in 1997. Long-term biological data of EFPC at the nearest downstream station (almost one mile downstream) indicate, however, continued adverse biological impacts from these releases. Toxicity testing for Station C11 (old 201) will be not be applied to the instream monitoring point but will apply to upstream locations: Outfalls 200, 135, and 125.

Outfall 135

Also located near the discharge of the North/South Pipes or Outfall 200 and the point for addition of Clinch River water, Outfall 135 conveys cooling waters, steam condensate from Outfall 520 (Lithium Process), blowdown, and stormwater. For the period 1997 – 2004, flow averaged 0.23 mgd.

Flow and pH

Flow monitoring will be reduced from 3/week to monthly based on flow estimates. pH monitoring will be added at a frequency of monthly on a grab sample.

Metals

To assess the instream concentration of these and other metals of concern, the Division uses a spreadsheet calculation described above at Outfall 200, which combines flows with Outfalls 125/135/200.

		CALCULATED EFFLUENT LIMITS	
Metal	Outfall 135 Effluent Conc'n.*	**Mo. Ave** Conc'n.	**Daily Max** Conc'n.
Cadmium	<0.005	0.002	0.027
Chromium*	<0.009	0.26	n/a
Copper	0.032	0.082	0.131
Lead	<0.036	0.05	1.326
Mercury	<0.0002	0.002	0.004
Nickel	<0.017	0.403	3.75
Zinc	0.456	1.42	1.41

*From permit application

Permit requirements for monitoring and reporting of heavy metals will be added for with the above limits for Cadmium and Lead) and requirements will be added for effluent toxicity. Sampling will be reported monthly on a composite sample.

Effluent limits for Whole Effluent Toxicity are required for Outfall 135 because there is reasonable potential to contribute to an in-stream excursion of the narrative water quality criterion for toxic substances. The toxicity test will be conducted quarterly as described later in Section X, Biomonitoring Requirements, Chronic and in Part III of the permit.

Total Residual Chlorine TRC)

The recurring discharge of chlorinated cooling water plus documented water quality impacts on this stream segment requires a TRC limit to be established for Outfall 135. The permit limit is established using procedures for calculating in-stream concentrations shown previously for combined Outfalls 200, 135, and 125.

The permit limit for TRC represents the allowable concentrations required to meet the criteria for fish and aquatic life per TCAC 1200-4-3. This permit limit requires report-only monitoring and applies to instream monitoring point Station C11. Compliance monitoring will be performed 2/monthly for TRC on a grab sample.

Toxicity Testing

Effluent limits for Whole Effluent Toxicity are required for Outfall 135 because there is reasonable potential to contribute to an in-stream excursion of the narrative water quality criterion for toxic substances. The toxicity test will be conducted quarterly as described later in Section, Biomonitoring Requirements, Chronic and in Part III of the permit.

Radiological Compounds

Based on reported finding of radioactive compounds in the discharge, Outfall 135 will be addressed as needed in the Radiological Monitoring Plan.

Outfall 125

Also located just downstream of the discharge of the North/South Pipes or Outfall 200 and the point for addition of Clinch River water, Outfall 125 conveys once-through cooling waters, ground water sumps containing mercury, and stormwater. For the period 1997 – 2004, flow averaged 0.45 mgd. Dehlorination is performed by adding sodium bisulfite.

Flow and pH

Flow monitoring will be performed monthly, based on flow estimates, to coincide with TRC measurements. pH monitoring will be performed monthly based on a grab sample.

Total Residual Chlorine

Reported maximum effluent values have exceeded the 0.5 mg/l daily maximum permit limit once in 114 samples since 1999. Average TRC concentrations are 0.06 mg/l.

The recurring discharge of chlorinated cooling water plus documented water quality impacts of chlorine on this stream segment require a TRC limit to be established for Outfall 125. The permit limit is established using procedures for calculating in-stream concentrations shown previously for combined Outfalls 200, 135, and 125.

The permit limit for TRC of 0.044 mg/l daily maximum concentration and 0.025 mg/l monthly average represents the allowable concentrations required to meet the criteria for fish and aquatic life per TCAC 1200-4-3. This permit limit is a report-only limit and applies to instream monitoring point Station C11. Compliance monitoring will be performed 2/monthly for TRC.

Metals

To assess the instream concentration of these and other metals of concern, the Division uses a spreadsheet calculation described above at Outfall 200, which combines flows with Outfalls 125/135/200.

Metal	Outfall 125 Effluent Conc'n.*	**CALCULATED EFFLUENT LIMITS** **Mo. Ave** Conc'n.	**Daily Max** Conc'n.
Cadmium	<0.004	0.002	0.027
Chromium*	<0.011	0.26	n/a
Copper	<0.011	0.082	0.131
Lead	<0.014	0.05	1.326
Mercury	<0.0002	0.002	0.004
Nickel	<0.024	0.403	3.75
Zinc	0.1	1.42	1.41

*From permit application

Existing permit requirements for monitoring and reporting of heavy metals will be replaced with the above limits for Cadmium and Lead (based on maximum concentrations of lead exceeding 0.05 mg/l). Requirements will be added for effluent toxicity. Metals results will be reported monthly on a composite sample.

Toxicity Testing

Effluent limits for Whole Effluent Toxicity are required for Outfall 125 because there is reasonable potential to contribute to an in-stream excursion of the narrative water quality criterion for toxic substances. The toxicity test will be conducted quarterly as described later in Section X, Biomonitoring Requirements, Chronic and in Part III of the permit.

Mercury

Mercury concentrations in Outfall 125 have been documented above 0.0002 mg/l, or 200 parts-per-trillion since 1998. The State Water Quality Criterion for the recreation stream use classification is 0.051 ug/l or 51 parts per trillion. A discussion of mercury discharges is included near the end of this Rationale, which identifies mercury monitoring requirements, on a report-only basis, for a weekly analysis from a flow-paced composite sample. Monthly average concentration will be reported. We will accept data obtained from the CERCLA program at this outfall to satisfy this requirement.

Outfall 109

Flow and pH

Flow monitoring will be performed monthly, based on flow estimates, to coincide with TRC measurements. pH monitoring will be performed quarterly based on a grab sample.

Total Residual Chlorine

The mass-balance equation discussed previously will calculate the TRC concentration required to attain the above in-stream limit.. This analysis assumes the upstream effluents are properly dechlorinated such that instream TRC background concentration is zero.

$$Cm = \frac{QsCs + QwCw}{Qs + Qw}$$

to protect water quality:

$$Cw = \frac{(S_A)\,[Cm\,(Qs + Qw) - QsCs}{Qw}$$

where:

(S_A) is the percent "Stream Allocation" of 10% assigned to Outfall 109 - the remaining 90% is assigned to the mixture of 200/135/125 upstream.

Cw = concentration of TRC in Outfall 109 discharge necessary to protect water quality.
Cm = resulting in-stream concentration after mixing = 0.019 mg/l daily max.
= 0.011 mg/l mo'ly. ave.
Cs = stream background concentration (Clinch River water) = 0.0 mg/l (following dechlorination)

Qs = stream flow of Clinch River water added, Plus flow from major outfalls 200/125/135 = 4.73 + 2.3+0.23+0.45
= 7.73 mgd
Qw = wastewater flow = = 0.274 mgd

Daily maximum concentration:

$$Cw = \frac{(0.1)\ 0.019\ (7.73+0.274) - 4.73(0.0)}{0.274} = \frac{(0.1)\ 0.153}{0.274} = 0.05 \text{ mg/l}$$

Monthly average concentration:

$$Cw = \frac{(0.1)\ 0.011\ (7.73+0.274) - 4.73(0.0)}{0.274} = \frac{(0.1)\ 0.088}{0.274} = 0.03 \text{ mg/l}$$

The permit limit for TRC of 0.05 mg/l daily maximum concentration and 0.030 mg/l monthly average represents the allowable concentrations required to meet the criteria for fish and aquatic life per TCAC 1200-4-3. Average TRC concentrations since 1995 are <0.07 mg/l. Compliance monitoring will be performed quarterly for TRC at Outfall 109.

Outfall 077 to be deleted

This discharge originates from sump water and condensate from air compressor Bldg. 9404-2 on the south side of EFPC. TRC concentrations averaged below the detection limit of 0.05 mg/l as compared to an existing limit of 0.5 mg/l. This outfall will be deleted from the renewed permit and addressed in the BMP Plan with a log kept of visual observations of water discharged.

Outfall 021

This discharge contains steam condensate, cooling water, and stormwater runoff from a large portion of the the eastern Complex area. Average flow is reported as 0.3 mgd.

Flow and pH
Flow monitoring will be reduced from 3/week to quarterly based on flow estimates. pH monitoring will be reduced from 3/week to quarterly on a grab sample.
Supplemental Flow is Authorized

Flow has been supplemented at Outfall 200 by diverting Clinch River water from the raw water line serving the Oak Ridge Water Treatment Complex . Raw water is discharged near Outfall 200 from a "southern" pipe which traverses the southern portion of Y-12 Complex. As described earlier, the addition of Clinch River water required by the previous permit has been performed near the emergence of Outfall 200 to become the headwaters of EFPC.

For operational considerations, such as required should the "southern" pipe need repair, discharge from a "northern" pipe may be needed. This northern pipe runs along Bear Creek

road. Raw water flow from this pipe would be routed through the storm sewer system emerging at Outfall 021 and is authorized in the renewed permit.

Temperature

Temperature data reported during 1997 – 2004 indicates average temperature of 19° C, with no exceedances of the maximum temperature of 30.5°C. Due to the dilution afforded by EFPC and Clinch River water flow of approximately 6 mgd, a dilution factor for Outfall 021 would be 6/0.3 = 20:1. The buffering capacity of the mixed flow will likely protect the stream from adverse temperature effects. Accordingly, temperature monitoring will be deleted from the renewed permit.

Total Residual Chlorine

Effluent data indicates an average TRC discharge concentration of 0.05 mg/l as compared to the permit limit of 0.188 mg/l daily maximum and 0.1 mg/l monthly average.

Due to the recurring discharge of chlorine and documented water quality impacts on this stream segment, a TRC limit is required at this outfall. Accordingly, the existing permit limits of 0.188 mg/l daily maximum and 0.08 monthly average will be retained for this outfall. Based on the low concentrations in the discharge and the record or attaining existing limits, monitoring frequency will be reduced from 3/week to quarterly, based on a grab sample.

Diversion of raw water flow through this Outfall 021 could occur during repairs to the southern pipe and raw water addition would resume at Outfall 200 when repairs are complete. During raw water addition at Outfall 021, TRC measurements will be required under the BMP Plan.

OUTFALL 017 to be deleted

The discharge at Outfall 017 has been a concern due to a previous spill of urea which caused ground water contamination from a former nitrate storage area. Ground water discharges to EFPC were documented to be high in ammonia.

Weekly data has been obtained and is shown for the period 1997 – 2004 in Appendix 4 for flow, pH, ammonia and Total Kjeldahl Nitrogen (TKN). Flow has averaged 0.07 mgd and pH ranged from 6.4 to 7.7. Ammonia averaged 3 mg/l versus the permit limit of 32.4 mg/l monthly average and 64.8 mg/l daily maximum with no exceedances since 1997. TKN averaged 4 mg/l with a maximum of 37 mg/l- these data are higher than the stormwater sample results of 1999 and 2003.

These data show that effects of the former urea spill are not likely to present a threat to water quality. Accordingly, continued monitoring of Outfall 017 is not required in the renewed permit.

OUTFALL 05A at Lake Reality to be deleted

Outfall 05A will not be listed as a permit monitoring point. This outfall was formerly used to pump water collected beneath the liner from Lake Reality and has not been pumped since 2000. Should the outfall be required again, the discharge will be addressed by the Best Management Practices (BMP) Plan.

OUTFALL S19 - Discharge from Rogers Quarry at McCoy Branch

Outfall S19 monitors the stream flow from Rogers Quarry which becomes McCoy Branch. For heavy metals, monitoring data shown in Appendix 4 identify concentrations for Arsenic,

Cadmium, Copper, Lead, and Silver at or near the detection level. Previous water quality concerns included high pH attributed to algal blooms during the summer months. pH values have remained between 6.6 and 8.6 in the last 9 years of data. Based on these findings, water quality monitoring will be reduced to once annually for the following parameters: Flow, pH, TSS, Total Dissolved Solids, mercury, and metals per EPA Method 200.7 on a grab sample.

OUTFALLS 013 AND 031 to be deleted

These outfalls which discharge dechlorinated potable water during line flushing will be included in the Y-12 Complex Best Management Practices Plan.

S-numbered Outfalls in Bear Creek and Tributaries to Clinch River

Review meetings with permittee and TDEC staff have examined the data record for each outfall and related CERCLA development and ongoing monitoring efforts. Each of the S-numbered outfalls is summarized below with notes regarding the status of the outfall in the renewed permit.

For compliance monitoring requirements, Outfalls S06, S19, and S24 will be reported on Discharge Monitoring Reports. For stormwater monitoring, Outfalls S06, S17, S18, S26, and S30, which will be addressed in the SWPPP, are described below.

S01 – To be deleted – S06 will be used to monitor most upstream discharges to Bear Creek, such as the runoff from the West End Treatment Facility.

S02 – To be deleted in favor of S06.

S03 – To be deleted in favor of S06.

S04 – To be deleted in favor of S06.

S05 – To be deleted in favor of S06.

S06 – Will be retained as shown below for stormwater monitoring under Sector K for waste treatment facilities. Small quantities of steam condensate may also be present in the flow as discharged from storm drains in the western end of the complex. Ongoing CERCLA monitoring also occurs at this location. Data for pH and flow from 1997-2004 indicate pH values from 6.0 to 9.0 since 2000. Outfall S06 will also be monitored annually for metals and nitrate-nitrite due to presence of these compounds in previous monitoring. Sample type will be grab.

S07 – will be deleted and replace with a new monitoring point under the SWPPP called S30, located at the southwest corner of the new salvage yard.

S08, S08, S09, S10, S11, S12, S13, S14, S15, S16: – To be deleted.

S17 - will be retained as shown below for stormwater monitoring under Sector L for Land Disposal sites involving application of municipal sludge from City of Oak Ridge. Examination of 2003-4 sludge data from City of Oak Ridge indicates concentrations of metals in sludge being applied are within 10-25% of EPA guidelines. Accordingly, no additional parameters will be added for monitoring beyond those listed for Sector L.

S18 - will be retained as shown below for monitoring stormwater runoff from land disposal activities under Sector L for Industrial Landfills V and VII and from City of Oak Ridge sludge application area.

S19 – will be retained as shown above.

S20 - To be deleted – no ongoing industrial activity.

S22 - To be deleted – limited industrial activity (Landfill IV).

S24 – to be retained as the most downstream monitoring point for Bear Creek. Parameters will include pH, mercury, PCB, metals, TSS, Total Phosphorus, Nitrate –Nitrite, TKN, and uranium. Samples will be collected quarterly. As an alternative, Y-12 Complex can utilize data collected under the CERCLA program from either station BCK 9.2 or 9.47 as shown

in Table C.4 of the "Sampling and Analysis Plan for the Water Resources Restoration Program for FY 2005 Oak Ridge Reservation", BJC/OR/1845, dated 7/1/04. Monthly data generated by this program can be summarized and substituted for this monitoring requirement.

S25 - To be deleted – no ongoing industrial activity (Landfill VI).

S26 - will be retained as shown below for monitoring stormwater runoff from land disposal activities under Sector L for western portion of Industrial Landfill V.

S27-S28-S29 to be deleted in favor of station S-18 (see above), a downstream location from all three of these stations, which have monitored discharges from sediment ponds at Landfills V (east portion) and VII.

S30 – at the new salvage yard to be added only for stormwater monitoring as addressed in the SWPPP.

STATION EFP – EAST FORK POPLAR CREEK AT BEAR CREEK ROAD (also Station 17)

Station EFP, or Station 17, will be retained as an instream monitoring point. Monitoring will be conducted and reported as follows:

Continuous flow measurement, reporting the daily flow for the month as described below;
Daily measurement of pH and Temp;
Weekly – DO and nitrate-nitrite based on a grab sample;
Weekly – TSS, mercury, and metals based on a minimum 24-hour composite sample.
Annual – PCB's

These parameters are selected to coincide with parameters planned for monitoring by DOE for both the NPDES and CERCLA monitoring at this location [based on the Sampling and Analysis Plan for the Water Resources Restoration Program for FY 2005, BJC/OR-1845, dated 7/1/04]. To avoid duplication, we will accept data collected by CERCLA monitoring for purposes of permit compliance.

Reporting of flow data will be performed as follows:

- Flows greater than 10 mgd will be assigned a value of 10 mgd for the purpose of determining compliance with the requirement to maintain a 7 mgd flow per the existing permit.
- Compliance will be determined monthly by calculating an arithmetic mean of the individual daily flow measurements.
- Individual daily flows of less than 7 mgd will not be considered a noncompliance if due to an emergency situation or to operational mishaps such as ruptured water lines or outages of the raw water intakes. Specific details on such flow interruptions will be provided on Monthly Discharge Monitoring Reports (DMR's).
- Monthly DMR's will contain a table of flow values listing the daily measured flow, flows-greater-than-10-mgd replaced with 10 mgd and will display average flows for both columns for comparison.

Potential Offsite Impacts

We note that off-site drainage enters EFPC just upstream of Station EFP. The drainage area contains a mixed commercial and residential area which is in transition and involves construction site runoff. There are no specific data relating this drainage to parameters of primary concern, such as mercury or PCBs, but this offsite contribution should be noted during data review.

Polychlorinated Biphenyl (PCB) compounds

Because EFPC is listed as impaired and posted for a fish consumption advisory for PCB's and Outfall 200 represents a significant effect on water quality, PCB's will be monitored on a grab sample collected and reported annually.

VIII. INDUSTRIAL STORMWATER

Note: This section addresses runoff from operating areas under DOE control. We recognize that future site development will result in cooperative activities being undertaken on the DOE Reservation by local, state, and other federal agencies. Effective control of stormwater requires that each activity conducts proper planning, permitting, and oversight for development and operations. As the host of these activities offering infrastructure support, the Y-12 Complex remains ultimately responsible for water quality effects of tenant activities.

This facility is one which has storm water runoff associated with industrial activity, as defined in 40 CFR 122.26 (b)(14). As stated before, process wastewater, cooling water, and storm water runoff discharged through many facility outfalls, significantly Outfalls 200, 135, 125, 109, and 021, can not be effectively segregated. The ability to adequately characterize dry weather and wet weather discharges is further hampered by the continuous discharge of cooling water through these combined outfalls. Accordingly, two sets of effluent limitations will not be established in the renewed permit.

Storm water runoff parameters to be monitored and reported were determined by comparing effluent limitations and monitoring requirements from the previous permit, the requirements from the Tennessee Storm Water Multi-Sector General Permit for Industrial Activities (TMSP), the data submitted on Discharge Monitoring Report (DMR) forms, and the data contained in the application 2F submitted by the USDOE-Oak Ridge Y12 Complex facility.

There are no effluent guidelines for storm water discharges from the USDOE-Oak Ridge Y12 Complex facility. The previous permit did not have effluent limitations for the facility's storm water runoff. All parameters were monitored on a "Report" only basis. Similarly, the new permit will not establish effluent limitations, but will require reporting of effluent characteristics at Outfalls. Nevertheless, certain "cut-off concentrations" will be established for each of the monitored parameters.

The Division is not assigning limits for these parameters at this time since it is the intent of the division that the permittee institutes a Storm Water Pollution Prevention Plan (SWPPP) in order to minimize the discharge of these pollutants from storm water outfalls. We believe the best method for dealing with potential pollution associated with storm water discharges from the USDOE-Oak Ridge Y12 Complex facility is through implementation of an aggressive SWPPP, coupled with discharge monitoring to verify SWPPP effectiveness. Monitoring of storm water runoff from Outfalls will be required for parameters as shown below on an annual basis.

In order to assist the permittee in the evaluation of the effectiveness of the SWPPP, benchmark values developed for the Tennessee Storm Water Multi-Sector General Permit for Industrial Activities From Fabricated Metal Products Industry are provided herein for comparison. These benchmark values (cut-off concentrations) were developed by the EPA and the State of Tennessee and are based on data submitted by similar industries for the development of the multi-sector general storm water permit. The cut-off concentrations are target values and should not be construed to represent permit limits.

<u>These cut-off concentrations are applicable to outfalls to be identified in the SWPPP which discharge stormwater from areas in which Metal Fabrication operations are conducted per Sector AA.</u> Monitoring for each outfall will be conducted on a rotating basis, such that each outfall is monitored at least once during the life of the three-year permit.

<u>Specific outfalls will be identified in the SWPPP</u> for metal fabrication activities requiring monitoring.

Parameters of Concern	Cut-Off Concentration [mg/L]
Total Recoverable Aluminum	***0.75***
Total Recoverable Iron	***5.0***
Total Recoverable Zinc	***0.395***
Nitrate plus Nitrite Nitrogen	***0.68***

Monitoring Requirements for Outfall S30 at the New Salvage Yard
Sector N - TMSP for Industrial Activity from Scrap Recycling and Waste Recycling Facilities

Parameters of Concern	Cut-Off Concentration [mg/L]	Sector Median Value [mg/l]]
Chemical Oxygen Demand (COD)	***120***	***79***
Total Suspended Solids (TSS)	***200***	***72***
Total Recoverable Aluminum	***0.75***	***2.08***
Total Recoverable Copper	***0.0636***	***0.091***
Total Recoverable Iron	***5.0***	***3.7***
Total Recoverable Lead	***0.156***	***0.058***
Total Recoverable Zinc	***0.395***	***0.243***

Outfall will be sampled annually.

Monitoring Requirements for Outfall S17, S18, and S26
Sector L - TMSP for Industrial Activity from Landfills and Land Application Sites

Parameters of Concern	Cut-Off Concentration [mg/L]	Sector Median Value [mg/l]]
Total Suspended Solids (TSS)	***200***	***47***
Total Recoverable Iron	***5.0***	***2.2***

Monitoring for each outfall will be conducted on a rotating basis, such that each outfall is monitored at least once during the life of the three-year permit.

Monitoring Requirements for Outfall S06
Sector K – TMSP for Industrial Activity from Treatment, Storage and Disposal Facilities (TSDF)

Parameters of Concern	Cut-Off Concentration [mg/l]	Sector Median Value * [mg/L]
Ammonia	4.0 mg/L	0.21
Total Recoverable Magnesium	0.0636 mg/L	1.41
Chemical Oxygen Demand (COD)	120.0 mg/L	20
Total Recoverable Cadmium	0.0159 mg/L	0.010
Total Cyanide**	0.0636 mg/L	0.010
Total Recoverable Lead	0.156 mg/L	0.016
Total Recoverable Mercury	0.0024 mg/L	0.0002
Total Recoverable Selenium	0.2385 mg/L	0.100
Total Recoverable Silver	0.0318 mg/L	0.009

Monitoring will be conducted annually.

* Sector Median Value is a pollutant concentration calculated from all sampling results provided from facilities classified in this sector during the previous permit term. By definition, a median is a statistical term identifying a number that divides numerically ordered data into two equal halves. In easier terms, the median is the middle piece of data when those data are placed in numerical order, or the average of the middle two if there is an even number of items. Therefore, median concentration(s) listed above represent a concentration value typical for and achieved by industries in this sector.

** The MDL for cyanide is 0.02 mg/L per methods 335.1, 335.2, or 335.3.

A. STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

The renewed permit will continue to require a Storm Water Pollution Prevention Plan (SWPPP) developed to regulate storm water runoff. This SWPPP is meant to ensure that runoff from the facility site is not a significant source of pollution to the receiving stream. The discharger will maintain an updated SWPPP per requirements set forth in the TN Storm Water Multi-Sector General Permit for Industrial Activities, Part 3, "Storm Water Pollution Prevention Plan Requirements" for the following industrial sectors:

- Sector *K*, "*Storm Water Discharges Associated with Industrial Activity from HW Treatment, Storage, and Disposal Facilities*"
- Sector *L*, "*Storm Water Discharges Associated with Industrial Activity from Landfills and Land Application Sites*"
- Sector *N*, "*Storm Water Discharges Associated with Industrial Activity from Recycling and Waste Recycling Facilities*"
- Sector AA, "*Storm Water Discharges Associated with Industrial Activity from Fabricated Metal Products Industry*"

ATTACHMENT I of this permit provides an overview of these requirements.

B. STORMWATER MONITORING

Monitoring will be conducted on three levels:

Stormwater Sector-outfalls:

Outfalls selected for future testing are those watersheds in the concentrated industrial area of the facility which contain operations relating to Sectors K, L, N, and AA. The SWPPP will include monitoring for designated outfalls to be analyzed on a rotating basis over the three-year renewed permit. Grab samples will be collected within the first 30 minutes of the discharge attributable to the rain event.

Instream Stormwater Survey:

In addition, the SWPPP will contain an annual stormwater survey of four instream stations in East Fork Poplar Creek, C03, C05, C08, and C11, as shown on the map "Y-12 Complex In-Stream Monitoring".

Storm event sampling will include flow measurements at each station, along with analyses for, as a minimum, pH, mercury, PCB, metals, TSS, Total Phosphorus, Nitrate –Nitrite, TKN, e. coli, uranium, hexane extractables, and surfactants. Additional parameters may be added to the SWPPP based on historical analyses. In-stream samples will be collected from the water column as flow-proportional aliquots in a composite sample.

A separate grab sample of stream baseload sediment will be collected at each instream station during the first 30 minutes of the rain event sampling, as close as possible to the stream bottom. The sediment samples will be analyzed for mercury, PCB, and metals. Reasonable attempts should be made to time the storm runoff survey in late summer or early fall should be as close to low-flow conditions as feasible. This timing is important to capture pollutant loadings from runoff events with longer intervals between storms and to assess the busiest construction and demolition period.

Stormwater Outfall Sampling:

Reasonable attempts should be made to time the annual sampling of three outfalls and raw water with the Instream Stormwater Survey above. Sampling will be performed at Outfalls 200, 109, 021, and the Clinch River Raw Water Discharge. These point source outfalls are selected because they collect stormwater from the major drainage areas of the Y-12 Complex. Outfall samples will be analyzed for pH, mercury, PCB, metals, TSS, Total Phosphorus, Nitrate –Nitrite, TKN, e. coli, uranium, hexane extractables, and surfactants based on a composite samples (except for pH).

C. REPORTING

The effectiveness of this SWPPP will be investigated after the results of the storm water runoff monitoring have been obtained. At that time, should the results so dictate, the division maintains the authority to institute specific numeric limitations for the monitored parameters. Monitoring data will be presented in an annual report to address verification of SWPPP effectiveness, to define pollutant loadings, and to adjust future SWPPP monitoring efforts. The report should be submitted to TDEC/WPC with the December DMR.

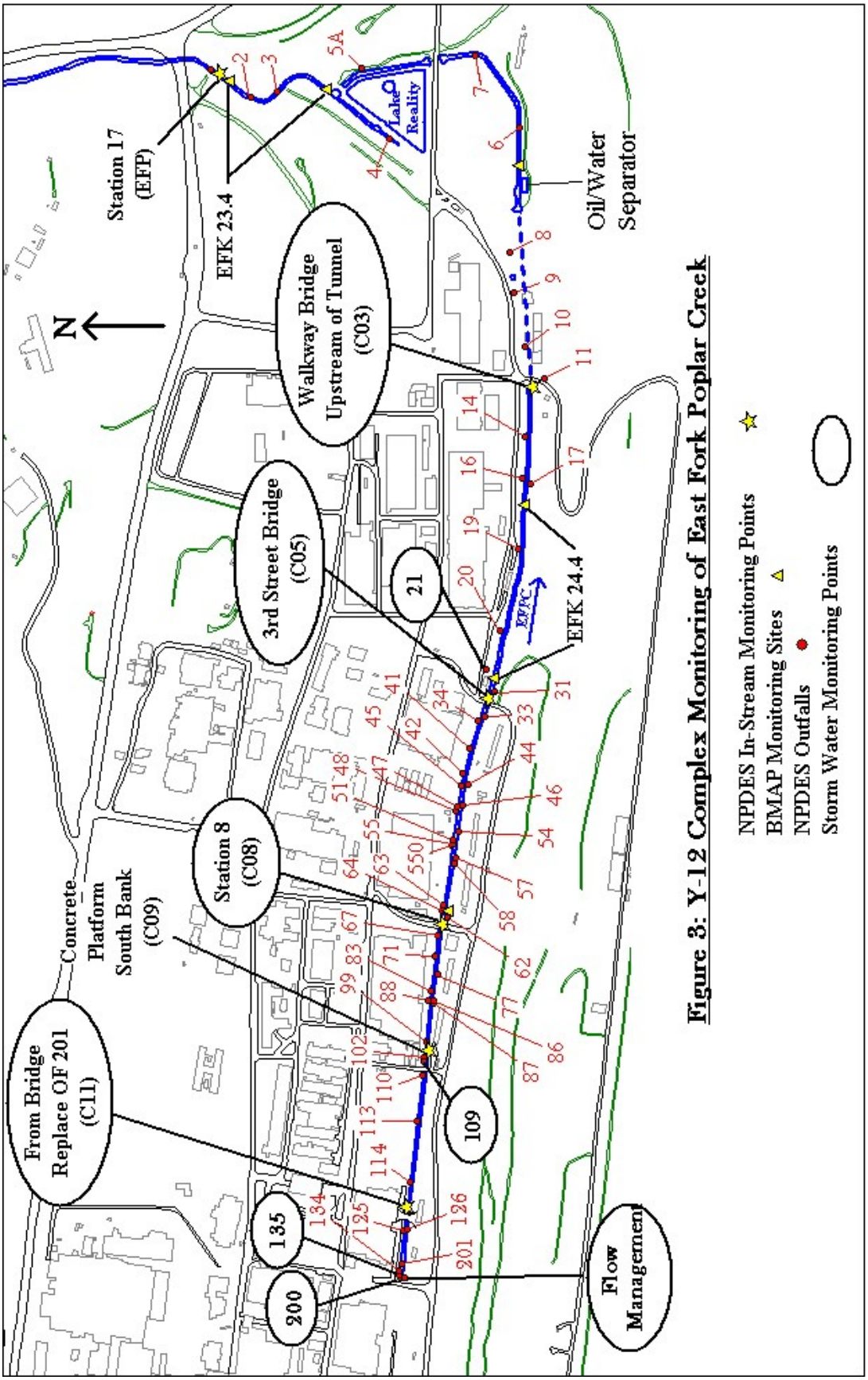

Figure 3: Y-12 Complex Monitoring of East Fork Poplar Creek

IX. BIOLOGICAL MONITORING AND ABATEMENT PROGRAM (BMAP)

The program will be continued under the renewed permit. The plan shall include studies to annually evaluate the biological integrity in comparison to TN Water Quality Criteria for East Fork Poplar Creek. Biological monitoring is conducted in both McCoy Branch and Bear Creek, as stipulated in the CERCLA Records of Decision (Chestnut Ridge Operable Unit 2-Filled Coal Ash Pond and Vicinity, and Bear Creek Valley-Phase I, respectively). Results of these CERCLA programs can be used to meet the biological monitoring requirements of this permit, provided that these monitoring programs are revised to include the State of Tennessee protocol for macroinvertebrate monitoring to assess biological integrity, as described below.

This permit requires assessment of biological integrity of the receiving streams in accordance with the TN Water Quality Criteria for all streams classified for Fish and Aquatic Life per Rule 12020-4-3.03(k). The Biological Monitoring and Abatement Program (BMAP) has been in effect at Y-12 Complex since 1985 with the stated purposes to evaluate toxicity problems, help locate causes of water quality impacts, and to guide remediation and permit decisions.

Since the NPDES permit was issued in 1995, significant changes have been made to TN Division of Water Pollution Control rules as required by EPA policies regarding water-quality-based toxics control procedures. WPC now requires biosurveys as Special Conditions in renewed permits where necessary to implement TN water quality standards.

The condition of biological communities is measured by the use of “biometrics” which interpret existing narrative biological criteria based on regional reference data. Biological criteria are based on macroinvertebrate monitoring at reference streams grouped into bioregions for assessment purposes. Seasonal variability of macroinvertebrate populations is considered and numeric biocriteria are based on a multi-metric index compared to historic targeted and probabilistic monitoring.

TN biocriteria are described in the WPC report Development of Regionally-Based Numeric Interpretations of Tennessee’s Biological Integrity Criterion, by Deborah H. Arnwine and Gregory M. Denton, TDEC/WPC, October 2001. Bioregion 67 f, known as Southern Limestone/Dolomite Valleys and Low Rolling Hills, includes the Lower Clinch River watershed and East Fork Poplar Creek.

Scoring Criteria and target index scores for this region are shown below (from Appendix A, TDEC WPC Quality System Standard Operating System for Macroinvertebrate Surveys, November 2003):

Bioregion 67fhi Target Index Score (January – December) = 32			Method = SQKICK Order = 1, 2, 3, 4, 5	
Metric	**6**	**4**	**2**	0
Taxa Richness (TR)	> 30	21 – 30	10 – 20	**< 10**
EPT Richness (EPT)	> 11	8 – 11	4 – 7	**< 4**
% EPT	> 44.7	29.8 – 44.7	14.8 – 29.7	**< 14.8**
% OC	< 27.0	27.0 – 51.3	51.4 – 75.7	**> 75.7**
NCBI	< 4.69	4.69 – 6.46	6.47 – 8.24	**> 8.24**
% Dominant	< 34.8	34.8 – 56.5	56.6 – 78.3	**> 78.3**
% Clingers	**> 54.1**	**36.1 – 54.1**	**18.0 – 36.0**	**< 18**

where:
Taxa Richness = overall measure of variety of macroinvertebrates
EPT Richness = No. found in taxa including mayflies, stoneflies, caddisflies
%EPT = % of sample of EPT larvae

%OC = % of sample of aquatic worms and midge larvae
NCBI = No. Carolina Biotic Index to compare abundance to overall population
%Dominant = %dominance of single most abundant taxon.
% Clingers = % organisms adapting to attached surfaces
Note: scoring criteria are based on sampling and processing methods found in protocols G, I and J of the SOP.

As shown in the previous discussion on stream water quality, the stream rating of ability to support the designated uses is determined from the total Index Score as shown below:

Rating:	Total Index Score
A - Fully Supporting - Non-impaired……..	>= 32
B - Partially Supporting - Slightly Impaired……..	21 - 31
C - Partially Supporting - Moderately Impaired……	10 - 20
D - Non-Supporting - Severely Impaired……	< 10

The BMAP Plan previously implemented by Y-12 Complex was last approved by WPC in 2001. Changes in policies mentioned above require revisions to the previous BMAP to update monitoring procedures for benthic macroinvertebrates, stream habitat, periphyton, fish community studies, data management, and reporting. The BMAP will produce data usable in the State's ArcView geographic information system.

Reporting

The renewed permit will require an annual report of BMAP data for review along with the raw data, taxa lists, and biometric calculations. The annual report will be in July of each year. copies to the Div. of WPC Permit Section, Knoxville Environmental Field Office, and Div. of DOE Oversight. Format for the data delivery will be addressed during review of the BMAP Plan.

During permit renewal discussions between State and Y-12 Complex staff, revisions to the BMAP Plan are currently being undertaken in order to plan monitoring activities for Fall 2005. Within 60 days from the effective date of the permit, the permittee shall review the existing BMAP and provide an updated Plan.

X. BIOMONITORING REQUIREMENTS, CHRONIC

A. Outfall 200

The discharge of industrial wastewater from Outfall 200 may contain several different pollutants, the combined effect of which has a reasonable potential to be detrimental to fish and aquatic life. The Tennessee Water Quality Standards criteria stipulate that "*The waters shall not contain toxic substances, whether alone or in combination with other substances, which will produce toxic conditions...*".

Since the permittee discharges to a stream with low critical flow conditions, there is a concern for toxicity effects of the discharge on the receiving stream which is relatively unknown. Biomonitoring will provide information relative to the toxicity of the discharge. Calculation of toxicity limits is as follows:

$$\text{Dilution Factor} = DF = \frac{Qs + Qw}{Qw}$$

where **Qw** is a wastewater flow (Qw = 2.3 MGD) and **Qs** is a receiving stream low flow (4.73 MGD is added from Clinch River for controlled flow). Please refer to Appendix 1 for details regarding facility discharge and receiving stream.

Therefore,

$$DF = \frac{4.73 + 2.3}{2.3} = 3.05$$

Since the calculated dilution factor is less than 100:1, and *assuming immediate and complete mixing*, protection of the stream from chronic effects requires calculation of an Instream Waste Concentration (IWC).

The IWC chosen per EPA guidance is the concentration which causes a 25% reduction (Inhibition Concentration 25% or IC_{25}) in survival, growth or reproduction in a biomonitoring test and will effectively become a permit limitation. Where IWC is Instream Waste Concentration and is calculated using the following formula:

$$IWC = IC_{25} = \frac{Qw}{Qs + Qw} \times 100 = \text{Instream Waste Concentration}$$

$$IWC = IC_{25} = \frac{2.3}{4.73 + 2.3} \times 100 = 33.7 \text{ percent effluent}$$

Therefore, WET testing will be required on 34% effluent at Outfall 200 as a Permit Limit. If toxicity is demonstrated in any of the effluent samples specified above, this will constitute a violation of this permit.

B. Outfall 135

Calculation of toxicity limits is as follows:

$$\text{Dilution Factor} = DF = \frac{Qs + Qw}{Qw} = \frac{4.73 + 0.23}{0.23} = 21$$

Since the calculated dilution factor is less than 100:1, and assuming immediate and complete mixing, protection of the stream from chronic effects requires calculation of an instream waste concentration:

$$IWC = IC_{25} = \frac{Qw}{Qs + Qw} \times 100 = = \frac{0.23}{4.73 + 0.23} \times 100 = 4.63$$

Therefore, WET testing will be required on 5% effluent at Outfall 135 as a Permit Limit. If toxicity is demonstrated in any of the effluent samples specified above, this will constitute a violation of this permit. Testing shall be performed quarterly.

C. Outfall 125

Calculation of toxicity limits is as follows:

$$\text{Dilution Factor= DF} = \frac{Qs + Qw}{Qw} = \frac{4.73 + 0.45}{0.45} = 11.5$$

Since the calculated dilution factor is less than 100:1, and assuming immediate and complete mixing, protection of the stream from chronic effects requires calculation of an instream waste concentration:

$$\text{IWC= } IC_{25} = \frac{Qw}{Qs + Qw} \text{ X 100 = } = \frac{0.45}{4.73 + 0.45} \text{ X 100 = 8.68}$$

Therefore, WET testing will be required on 9% effluent at Outfall 125 as a Permit Limit. If toxicity is demonstrated in any of the effluent samples specified above, this will constitute a violation of this permit. Testing shall be performed quarterly.

Summary

The toxicity tests specified herein shall be conducted quarterly (1/Quarter) at Outfalls 200, 135, and 125 Toxicity tests shall begin for Outfalls 200, 135, and 125 no later than 90 days from the effective date of this permit.

Quarterly toxicity testing which has been performed at the internal monitoring points upstream of Outfall 200, i.e., individual outfalls: 501, 502, 512 will be conducted on an as-needed basis in the renewed permit. Should tests fail at Outfall 200 ~~or 135~~, chronic toxicity testing will be required on 100% effluent at Outfalls 501, 502, and 512 in an effort to identify sources of toxic effects.

Details regarding biomonitoring methodology can be found in Part III of the permit.

XI. RADIOACTIVE COMPOUNDS

The Atomic Energy Act of 1954 (AEA) largely exempts DOE from outside regulation of radioactive materials at its facilities, but obligates DOE to manage these materials in a manner protective of the public health and environment. Associated DOE directives are incorporated into contracts with the firms the agency employs to manage and / or implement their projects and monitoring programs. The primary DOE directive addressing environmental issues and the public health is DOE Order 5400.5, Radiation Protection of the Public and Environment. At the time, the 1995 NPDES permit was being negotiated, DOE had proposed to codify DOE Order 5400.5 as 10 CFR 834, which would have prescribed civil and criminal penalties for violations of the rule. Among its provisions, the proposed legislation would have required DOE facilities to develop an Environmental Radiological Protection Plan (ERPP) that was to include a comprehensive description of the radiological monitoring programs at DOE facilities, along with the rational used to develop these programs.

While the state is not authorized to prescribe limits on DOE effluents, monitoring of radiological constituents are required by the NPDES permits. To serve the interests of both the state and DOE, the 1995 permit required the development of a Radiological Monitoring Plan similar to the ERPP that would have been required by 10 CFR 834. The plan was to integrate state requirements with associated provisions of DOE directives, in order provide a more comprehensive perspective on Y-12 radiological monitoring programs and avoid duplication of effort (should it exist). To facilitate the continued development and evolution of this plan, it was

agreed the plan could be modified at any time, with state approval, without a revision of the permit.

Among its provisions, the Radiological Monitoring Plan was required to provide:

- Monitoring of storm water, surface streams, and outfalls as necessary to characterize and assess effluents with the potential to discharge radioactive contaminants to waters of the state.
- Sufficient data collection to allow the determination and analysis of appropriate parameters to be analyzed and reported in the monitoring program.
- Data at least as precise as is necessary to evaluate results relative to DOE's Derived Concentration Guides, with the provision the Division can require greater analytical precision where reasonable.
- Monitoring components and protocol necessary to evaluate the results from the effort:
- Sampling locations, frequencies, and techniques;
- Analytical parameters, methods, and detection limits;
- Data validation procedures and quality control criteria.
- Submission of the results quarterly as an addendum to the Discharge Monitoring Report and as requested by the Division of Water Pollution Control.
- A comprehensive description of the program and the rationale used to develop it.

It is the state's goal to assure radionuclides of concern are identified at DOE facilities, waters of the state are effectively protected, and radionuclides in effluents released to waters of the state are as low as reasonably achievable (ALARA). To this end, the current Radiological Monitoring Plan will conform to Part III of the present NPDES Permit and will remain in affect, subject to review and revision as warranted.

Radiological monitoring of surface water at the Y-12 Complex site is currently conducted in accordance to the Radiological Monitoring Plan for the Oak Ridge Y-12 Complex: Surface Water, Y/TS-1704. This plan addresses sampling locations, frequencies, types, and analysis methods; detection limits and monitoring goals; monitoring methodologies and data management. The plan includes monitoring of in stream locations, treatment system effluents, and stormwater. Data is frequently reviewed to identify any trends and to compare to DOE Order 5400.5 guidelines. The data is also appended to the Discharge Monitoring Report on a quarterly basis. The plan is periodically reviewed to reflect changes and was last updated in October 1997. Past review of radiological data shows that uranium is the most prominent radioactive element measured in Y-12 Complex effluent.

The following is a summary of uranium concentrations at key locations from 1995 to November 30, 2004:

Uranium (total) mg/l

Location	Max	Min	Avg
Outfall 200	0.3	<0.001	<0.04
Outfall 304	0.08	<0.003	0.03
Outfall 501	4.00	<0.001	<0.1
Outfall 502	0.58	<0.001	<0.01
Outfall 512	<0.5	<0.001	<0.03
Outfall 551	0.049	<0.001	<0.01
Station 17	0.10	<0.001	<0.01

As requested by the permittee, monitoring of gross gamma radiation will be deleted from the renewed permit. Historic data has proven these compounds are not present in the discharges at levels of concern. Further, the facility does not perform operations which would likely yield gamma compounds.

XII. MERCURY

Water quality in EFPC is impacted by contamination of soil, groundwater, and stormwater from historic operations at Y-12. This legacy contamination, particularly from mercury, is being addressed by CERCLA remediation managed under DOE's Environmental Management Program.

As described in Section III D., mercury is the primary pollutant of concern. The discharge of mercury has resulted in posting of a Fish Advisory for East Fork Poplar Creek. Mercury concentrations in the receiving stream exceed TN Water Quality Criteria for recreation use of the stream of 0.051 ug/l, or 51 ppt. The mercury originates from legacy sources in soil, ground water, and stormwater. Average mercury discharge concentrations in parts-per-trillion from selected outfalls since 1997 are summarized below:

Outfall No.	Average Mercury Concentration (ppt)
200*	200 – 4,000
135	200-400
125	<200
109	<200
021	<200 - 600
047	<200-800
048	300-600
051	<200 – 17,600
55	200 –10,000
Upstream Releases to Storm Sewer System*	
150*	50 - 200
160*	1,600-7,000 -
163*	920-7,380
169*	990-3,130

*reported in Appendix E (1993 – 2003), 2003 Remedial Effectiveness Report, DOE.

Mercury in fish tissue has remained relatively constant since the late 1980's per the DOE ASER Report, 2003. Concentrations approach the 1.0 mg/kg level. These data prompted TDEC and the TN Dept. of Health to place a Fish Consumption Advisory on East Fork Poplar Creek because fish tissue levels exceed risk-based health criteria. The advisory warns the public that fish in EFPC should not be eaten. Significant reductions in fish tissue levels have not occurred following cleanup actions completed to date.

Concentrations in the water at Station 17 have dropped since 1997 from approximately 0.0015 mg/l to approximately 0.00004 in 2003. Mercury loadings to EFPC in grams per day, however, remain at approximately 18-25 grams per day since 2000. A load-duration analysis of stream flow data and mercury loadings indicates mercury discharges exceed water quality standards at all flow conditions from the very driest low flows to the highest stormflows. As expected, peak loadings which occur during peak flows during the highest storm events could

be addressed by stormwater management. The load-duration analyses also indicates that low-flow or baseflow discharges exceed standards – this requires reduction in mercury from ground water discharges to the surface stream. Future cleanup actions must address all mercury inputs stormwater as well as ground water discharges containing mercury.

A. CERCLA Cleanup of Legacy Mercury Completed to Date

TDEC, EPA, and DOE approved the May 2002 Record of Decision for Phase I Interim Source Control Actions in the Upper East Fork Poplar Creek Characterization Area, Oak Ridge, Tennessee (DOE/OR/01-1951& D3) which specifies several response actions aimed at controlling sources of legacy mercury contamination impacting EFPC. One new mercury contamination control facility, the Big Spring Water Treatment System, has just been completed; several other actions are scheduled for implementation in the next few years.

Since this permit was issued in 1995, extensive efforts have been made to remove mercury sources and reduce mercury discharges. Some storm sewers were relined and streambanks were stabilized to reduce mercury transport. Construction is nearing completion of a 0.5 mgd ground water treatment system at Bldg 9201-2 near Outfall 051. Upon startup, the system has been predicted to remove approximately 2 grams per day, or about 10% of the mercury loading in EFPC.

B. Proposed Cleanup Actions

The 2002 Phase I Record Of Decision identified these remedies to address mercury:

- Hydraulic isolation of the West End Mercury Area
  - Install an asphalt paving cap to reduce infiltration/percolation into mercury contaminated areas;
  - Reline sections of storm sewer and flush to clean out sediments
- Removal of contaminated sediments in UEFPC and Lake Reality
- Treatment of Discharge from Outfall 51 (Big Springs treatment system)
- Temporary ground and surface water treatment using existing facilities
- Land use controls to prevent consumption of fish from UEFPC and to control/monitor access by workers and the public
- Monitoring of surface water.

A Phase II ROD (Upper East Fork Poplar Creek Soil and Scrapyard) is being developed and is scheduled for approval in early 2006. This ROD will address additional source contamination areas, primarily through excavation and disposal. A future ROD will address groundwater contamination. A final ROD on surface water in the UEFPC Characterization Area is also scheduled in the future.

C. Proposed Cleanup Schedule

--Water treatment of Discharge from Outfall 51 —-Treatment begins in Summer of 2005.

--Phase I (Interim Surface Water) work will begin in 2009 and continue through 2016.

--Phase II (Soil and Scrapyard) remedial actions will begin in 2009 and continue through 2013.

--Final CERCLA decisions/actions for Y-12 are planned to occur in 2017 (this will include groundwater and any remaining surface water decisions).

D. Attainment of Cleanup Criteria

The Phase I UEFPC ROD indicates that State Water Quality Criteria will not be attained by the current interim program. Cleanup criteria for interim projects are addressed as follows:

> "The numeric ambient water quality criteria (AWQC) and narrative criteria for the protection of human health and aquatic organisms under Rules of the TDEC Chap. 1200-4-3-.03 are ARARs [Applicable or Relevant and Appropriate Requirements]

that will be addressed as part of the final action for UEFPC. Excavations of contaminated surface soils/streambed sediments and removal of contaminated storm sewer sediments is planned to reduce releases of mercury into UEFPC. However, the selected remedy will not attain instream the Recreation (organisms only) AWQC for mercury (51 ppt), which is the most stringent criterion for mercury. The Recreation (organisms only) AWQC is for protection of human health from consumption of organisms (e.g., fish).

"Under the National Contingency Plan at 40 CFR 300.430(f)(1)(ii)(C)(1), an alternative that does not meet an ARAR may be selected when the alternative is an interim measure and the ARAR will be attained or waived as part of a total (i.e., final) remedial action. Thus, a waiver under CERCLA 121(d)(4)(A) will be invoked as part of this remedy because the AWQC for mercury will not be met in this interim action. On completion of these source control actions, a risk-based surface water remediation goal for mercury (200 ppt) is expected to be met instream at Station 17 in the interim."

Appendix B of the ROD states that cleanup actions are not projected to restore UEFPC for Fish and Aquatic Life or Recreation Use:

"A waiver under CERCLA 121(d)(4)(A) would be invoked because the action is considered an interim measure and compliance with the AWQC would be addressed in subsequent response action decisions."

E. 2001 Phase I ROD and Risk-based Cleanup Goal

"The [Remedial Action Objective] RAO for the selected remedy presented in this ROD is to restore surface water to human health recreational risk-based values at Station 17.

"A risk-based value for the recreational use scenario was developed for mercury by choosing the adult recreational exposure parameters consistent with EPA's AWQC methodology for ingestion of fish to determine an acceptable mercury concentration in fish. Using the EPA ingestion rate of 17.8 g/d [assumes all fish in diets are from East Fork Poplar Creek (EFPC)], the estimated acceptable target concentration of mercury in fish is 0.4 µg/g. A DOE-determined site-specific bioaccumulation factor (BAF) was then used to predict the associated acceptable interim mercury concentration in surface water. Studies show that a total mercury BAF in EFPC is 2000 L/kg (BJC 1999b), which results in an acceptable interim mercury concentration of 200 ppt in surface water"

[ROD, Part 2, Decision Summary, Remedial Action Objective, pg. 2-51].

EPA has since published the BAF factor for mercury uptake which is many times higher than the 2001 ROD factor. EPA's national BAF factor is used as the basis for establishment of the EPA Water Quality Criteria of 0.3 mg/kg in fish tissue.

F. Water Quality-Based Limits for Point Sources Discharges of Mercury

Discharges resulting from on-site CERCLA remediation are not required to be permitted under the Clean Water Act, but will be required to meet discharge limits established as Applicable and Relevant and Appropriate Requirements (ARARs) pursuant to Section 121 of CERCLA. While the interim CERCLA response actions are not expected to reduce mercury sufficiently to meet the water quality criterion, measures appropriate to attaining water quality criteria will be incorporated into subsequent and final remediation decisions as ARARs.

Permit limits would not normally be applicable to discharges to stormwater sewers of mercury which is a legacy pollutant. Under CERCLA, there is authority to determine applicable

standards for a clean up using Clean Water Act-based standards. However the previous permit and this renewed permit will contain these limits per a 1999 Consent Order between DOE and TDEC resulting from an appeal of the previous permit. The Order states that mercury limits "provided for outfalls 550 and 551 in this order and the attached permit (namely 4 ug/L daily maximum and 2 ug/L monthly average) will be retained for the duration of the current permit and will be reevaluated in future NPDES permits…"

Accordingly, the renewed permit will retain the existing mercury limits for Outfalls 051, 055, 550, and 551. No additional limits are proposed. Remaining mercury discharges are addressed on a report-only basis as described for each outfall in this Rationale.

G. Monitoring Requirements Under the Renewed Permit

Monitoring will be performed as shown below:

Location	Frequency	Type Sample
Station EFP (formerly 17)	Weekly	flow-paced composite sample
Outfall 200	Weekly	flow-paced composite sample
Outfall 125	Weekly	flow-paced composite sample
Outfall 055	monthly	grab
Outfall 051	Weekly	grab

Under the CERCLA program, Outfalls 550 and 551 are also monitored for mercury weekly via a grab sample. In addition, the CERCLA program conducts spring and fall surveys of seven stations to support the BMAP program using grab samples at: EFK 6.3, EFK 13.8, ERK 18.2, Station 17, EFK 24.8, Clinch River Raw Water, and Hinds Creek. (Note: EFK numbers correspond to East Fork Poplar Creek stations, measured in kilometers from the mouth.) The CERCLA program also conducts weekly monitoring at Outfall 125.

H. Detection Limit

The Required Detection Level of 0.0002mg./l, or 200 ppt, is published in TN Water Quality Criteria at 1200-4-3-.05(8). EPA has revised the analytical method required for wastewater using EPA Method 1631. Method 1631 allows determination of mercury at a minimum level of 0.5 ppt in the final rule found at 40 CFR Part 136.

In the guidelines establishing this test method, its applicability is made to concentrations between 0.5 and 100 ppt. The range of concentrations identified at this facility have ranged from near the 200 ppt to much higher concentrations, thus, the RDL used per TDEC rules (EPA Method 245.1 and 245.2) remains applicable. Revised permit language will be included as follows: "The acceptable methods for analysis of mercury are any methods specified in Title 40 CFR, Part 136 as amended. The method detection level (MDL) for mercury shall not exceed 0.0002 mg/l. In cases where the permit limit is less than the MDL, the reporting of mercury at less than the MDL shall be interpreted to constitute compliance with the permit limit."

I. Reporting

The permittee shall submit a report summarizing the status of mercury concerns for the Complex site. In 2002, WPC agreed to use the CERCLA Remedial Effectiveness Report to meet this requirement:

> "The Division intends that the CERCLA report also serve the NPDES purposes as well. The Division concurs that submission of a notice with the DMR for October be made to the effect that a CERCLA Remedial Effectiveness Report will be made in March and submitted to the Division. This notice will be considered to meet reporting requirements for mercury abatement status required under the NPDES permit. The Division will expect to receive a copy of the CERCLA report when it is prepared next March" TDEC-WPC letter to A. Lee Watkins, DOE from Saya Qualls, WPC September 3, 2002.

In the renewed permit, a Notice of Report Availability will be included in the April DMR to document that transmission of the RER has been made for NPDES reporting purposes. The April submission allows for flexibility in completion of the RER report for previous year's work.

XIII. WASTEWATER CONTROL

The permittee shall provide the Division a description of the procedures and criteria used to determine which wastewaters are routed to which treatment system. The report shall describe what wastewater acceptance criteria are used to determine which wastewaters are sent for treatment and the procedures used to control influents introduced to the treatment systems.

The report describing these procedures shall include whatever safeguards are in place to prevent introduction of wastewaters into a treatment system which are not appropriate for treatment. The report should also describe how a wastewater would be evaluated if it is of unusual character or different than what has been historically handled by the treatment systems. This description shall include a description of record-keeping and documentation of this process.

The report shall be submitted to the Division within one year of the permit effective date. Documentation of such decisions and operational records for the wastewater systems shall be maintained for at least three years and shall be made available to Department personnel within 15 days if requested.

The permittee may not add significant wasteloads to the existing treatment systems (such as loads that approach the existing design capacity) without the knowledge and approval of the Division. Significant wasteloads will only be added after review of such wasteloads based on the Wastewater Treatability and review by acceptable wastewater control procedures which are in place. Significant revisions to the Wastewater Control procedures for a treatment facility shall be sent to the Division.

The permittee shall keep its site survey of building and area drains up-to-date as part of the Wastewater Control program. If additional drains are added to a building or if drains are removed from service, the survey documentation shall be updated to reflect such changes. Where additional buildings or process areas are constructed and put in service at the site which connect to either the storm sewer system or the sewage collection system, it shall be included in the drain survey documentation.

XIV. TEMPERATURE PROFILE OF EAST FORK POPLAR CREEK

The permittee shall continue to perform a temperature profile during hot summer conditions from Outfall 200 to Lake Reality at least once per year. The purpose of this profile is to see if thermal loadings from cooling waters are in compliance with this permit's limitations in the creek. Sampling points must are indicated on Figure 3 Y-12 Complex Instream Monitoring. Additional sampling points may be chosen as appropriate. Results of the profile will be briefly summarized and reported to the Division with the DMR submittal for the period.

XV. ANTIDEGRADATION

Tennessee's Antidegradation Statement is found in the Rules of the Tennessee Department of Environment and Conservation, Chapter 1200-4-3-.06. This statement outlines

the criteria for the two types of high quality waters. Outstanding National Resource Waters (ONRWs), as designated by the Water Quality Control Board, are commonly referred to as Tier 3 waters. Other high quality waters, as identified by the division, are commonly referred to as Tier 2 waters. Other surface waters not specifically identified and/or designated as high quality are referred to as Tier 1 waters. Some Tier 1 waters may be identified by the division as not meeting existing criteria.

The Division has made a stream tier determination of the receiving waters associated with Y-12 Complex discharges and has found the receiving streams to be neither Tier 2 nor Tier 3 waters. Additionally, this water partially/does not support(s) designated uses due to industrial discharges, contaminated stormwater and ground water, and cooling waters. The discharge from Y-12 Complex contains potentially significant amounts of toxic, radiological, organic, and inorganic materials. The Division, therefore, considers the potential for degradation to the receiving stream from these discharges to be substantial.

XVI. PERMIT DURATION

The proposed limitations meet the requirements of Section 301(b)(2)(A), (C), (D), (E), and (F) of the Clean Water Act as amended. We intend to organize the future issuance and expiration of this particular permit such that other permits located in the same watershed and group within the State of Tennessee will be set for issuance and expiration at the same time. In order to meet the target reissuance date for the Clinch-Lower watershed and following the directives for the Watershed Management Program initiated in January, 1996, the permit will be issued for a 3-year term.

APPENDIX 1

FACILITY DISCHARGES AND RECEIVING WATERS

FACILITY DISCHARGES AND RECEIVING WATERS

OUTFALL 200	
LONGITUDE	LATITUDE
84-15-35	35-59-02

RECEIVING STREAM DISCHARGE ROUTE
East Fork Poplar Creek at emergence of North/South Pipes and Outfall 200

STREAM USE CLASSIFICATIONS				
FISH & AQUATIC LIFE	RECREATION	IRRIGATION	LIVESTOCK & WILDLIFE	DOMESTIC WATER SUPPLY
X	X	X	X	
INDUSTRIAL	NAVIGATION			

FLOW (MGD)	DISCHARGE SOURCE
2.1000	Process wastewater, stormwater, ground water, and cooling water and inlcudes
	Outfalls 200, 501, 502, 512, 551, Outfall 135
2.3600	Remaining Outfalls plus ground water
4.4600	**TOTAL DISCHARGE**

1 * Estimated at "headwaters". Flow is controlled at Station 17 near Y-12 Plant boundary to maintain 7 MGD.

RECEIVING STREAM FLOW RATES

DISCHARGE RECEIVING WATERS	7Q10 FLOW RATE *		30Q2 FLOW RATE *		DOE MINIMUM FLOW (MGD)
	CFS	MGD	CFS	MGD	
East Fork Poplar Creek	14.4	9	20.8	13	7 **
Bear Creek at TN Hwy 95	0.2	0.13	N/A	N/A	N/A

* Reference: Flow Duration and Low Flows of Tennessee Streams through 1992 by George S. Law and Jess D. Weaver. Water Resources Investigations Report 95-4293 prepared by the U.S. Geological Survey in Cooperation with the Tennessee Department of Environment and Conservation and the Tennessee Valley Authority. Nashville, Tennessee, 1996, p. 53, Period of record: 1961-88 and p. 142 for Bear Creek.

** The flow in East Fork Poplar Creek is controlled by the Dept. of Energy addition of water from Clinch River at emergence of North/South Pipes at "headwaters". Flow is maintained at 7 MGD as measured at Station 17 just upstream of the Bear Creek Road bridge on EFPC. Approximately 4.5 MGD is added daily to maintain the 7 MGD flow level.

N/A Not Available

APPENDIX 1 – Continued

METALS CONCENTRATIONS - CLINCH RIVER MI. 66.3
TDEC AMBIENT WATER SAMPLING DATABASE

Sample Date	Cadmium	Copper	Chromium	Lead	Mercury	Nickel	Silver	Zinc
02-25-1999	1U	1U	1U	1U	0.2U	10U	1U	4
06-22-1999	1U	1U	1U	1U	0.2U	10U	1U	3
08-18-1999	1U	2	1U	1U	0.2U	10U	1U	1U
12-28-1999	1U	1U	1U	1U	0.2U	10U	1U	1U
07-02-2003	1U	2	1U	1U		14	1U	8
08-19-2003	1U	1U	1U	1U		10	1U	8
09-17-2003	1U	1U	1U	1U		11	1U	5
10-29-2003	1U	1U	1U	1U		10U	1U	1U
12-03-2003	1U	1U	1U	1U		10U	1U	1
01-06-2004	1	1U	1U	1U		10U	1U	3
02-03-2004	1U	1	1U	1U		10U	1U	6
03-17-2004	1U	2	1U	1U		10U	1U	3
04-12-2004	1U	1U	1U	1U		10U	1U	2
05-05-2004	1U	1U	1U	1U		10U	1U	2
AVERAGE	<1	<1	<1	<1	<.2	<10	<1	4.09
Legend: 1U = Not Detected at _U ug/l.								

APPENDIX 2

APPLICABLE EFFLUENT LIMITATIONS GUIDELINES

FABRICATED METAL PRODUCTS, NOT OTHERWISE CLASSIFIED
CFR PART 433 - SUBPART A - METAL FINISHING

EFFLUENT CHARACTERISTIC	BPT LIMITATIONS MONTHLY AVG. CONC. (mg/l)	BPT LIMITATIONS DAILY MAX. CONC. (mg/l)	EFFLUENT CHARACTERISTIC	BAT LIMITATIONS MONTHLY AVG. CONC. (mg/l)	BAT LIMITATIONS DAILY MAX. CONC. (mg/l)
pH	6.0 - 9.0	6.0 - 9.0			
TSS	31	60			
Oil and Grease	26	52			
Cadmium, total	0.26	0.69	**Cadmium, total**	0.26	0.69
Chromium, total	1.71	2.77	**Chromium, total**	1.71	2.77
Copper, total	2.07	3.38	**Copper, total**	2.07	3.38
Lead, total	0.43	0.69	**Lead, total**	0.43	0.69
Nickel, total	2.38	3.98	**Nickel, total**	2.38	3.98
Silver, total	0.24	0.43	**Silver, total**	0.24	0.43
Zinc, total	1.48	2.61	**Zinc, total**	1.48	2.61
Cyanide, total [1]	0.65	1.2	**Cyanide, total**[1]	0.65	1.2
TTO		2.13	**TTO**		2.13

1. In lieu of total cyanide, analysis may be made for amenable cyanide using 0.86 mg/l as the daily maximum and 0.32 mg/l as the monthly average.

APPENDIX 3

PREVIOUS PERMIT LIMITS AND MONITORING REQUIREMENTS

PREVIOUS PERMIT LIMITS

TREATED PROCESS WASTEWATER

OUTFALL 501 - CENTRAL POLLUTION CONTROL FACILITY

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	1/batch	report	1/batch	report	note 1.	estimate
pH		range 6.0-9.0			1/batch	grab
Total suspended solids	31.0		40.0		1/batch	composite
Temperature	report		report		1/batch	grab
Tot. Toxic Organics, (TTO)			2.13		note 2.	note 2.
Fluoride	report		report		1/batch	composite
Nitrate/nitrite	report		100.0		1/batch	composite
Oil and Grease	10		15.0		1/batch	grab
Phosphate (as P)	report		report		1/batch	composite
Gross alpha	report		report		note 3.	monthly composite
Gross beta	report		report		note 3.	monthly composite
Gross gamma	report		report		note 3.	monthly composite
Sulfate, total	report		report		1/batch	composite
MBAS			report		note 2.	composite
Boron, total	report		report		1/batch	composite
Iron, total	report		report		1/batch	composite
Beryllium	report		report		1/batch	composite
Cadmium, total	0.075	0.16	0.15	0.4	1/batch	composite
Chromium, total	0.5	1.0	1.0	1.7	1/batch	composite
Copper, total	0.5	1.2	1.0	2.0	1/batch	composite
Lead, total	0.1	0.26	0.2	0.4	1/batch	composite
Mercury, total	report		report		1/batch	composite
Nickel, total	2.38	1.4	3.98	2.4	1/batch	composite
Silver, total	0.05	0.14	0.05	0.26	1/batch	composite
Zinc, total	1.48	0.9	2.0	1.6	1/batch	composite
Cyanide, total	0.65	0.4	1.2	0.72	1/batch	grab
Total PCB			0.001		note 2.	composite
Chloride, total	report		report		1/batch	composite
Sodium, total	report		report		1/batch	composite
Potassium, total	report		report		1/batch	composite
Lithium, total	report		report		1/batch	composite
Calcium, total	report		report		1/batch	composite
Magnesium, total	report		report		1/batch	composite
Uranium, total	report		report		1/month	monthly composite
48 hour LC_{50} will be determined as described in Part III-C					quarterly	composite

NOTE 1. The number of batches discharged shall be included as a note on the DMR for the month.

NOTE 2. Analyses for TTO, MBAS and PCBs shall be conducted on a sample immediately prior to a carbon column replacement. The volatile organics part of the TTO shall be collected by grab sample. An analyses must be made at least once per year whether the carbon column is replaced or not. Total toxic organics shall include those parameters listed in 40 CFR Part 433 which have a reasonable expectation of being present.

NOTE 3. Radioactivity results will be reported in pCi/L. The monitoring for the radioactivity and total uranium will be reported with the Discharge Monitoring Data for the following month. For instance, radioactivity monitoring results for the month of June would be reported with the July discharge monitoring data. A report of the isotope specific data will be submitted to the Division each quarter if further investigation of isotope-specific data have been triggered as part of the Radiological Monitoring Plan (see Permit Part III-H). Gross gamma shall be reported on the DMR, but other gamma may be required as specified in the Radiological Monitoring Plan.

APPENDIX 3

PREVIOUS PERMIT LIMITS AND MONITORING REQUIREMENTS

PREVIOUS PERMIT LIMITS

TREATED PROCESS WASTEWATER

OUTFALL 502 WEST END TREATMENT FACILITY

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	1/batch	report		report	3/week	estimate
pH		range 6.0-9.0			3/week	grab
Total suspended solids	31.0	19	40.0	36	3/week	composite
Temperature	report		report		3/week	grab
Tot. Toxic Organics, (TTO)	note 1.		2.13		monthly	composite
Fluoride	report		report		weekly	composite
Nitrate/nitrite	100		100.0		3/week	composite
Oil and Grease	10		15.0		3/week	grab
Phosphate (as P)	report		report		3/week	composite
Gross alpha	report		report		note 2.	monthly composite
Gross beta	report		report		note 2.	monthly composite
Gross gamma	report		report		note 2.	monthly composite
Sulfate, total	report		report		weekly	composite
Manganese, total			report		monthly	composite
Boron, total	report		report		monthly	composite
Iron, total	report		report		monthly	composite
Beryllium	report		report		monthly	composite
Cadmium, total	0.075	0.16	0.15	0.4	3/week	composite
Chromium, total	0.5	1.0	1.0	1.7	1/batch	composite
Copper, total	0.5	1.2	1.0	2.0	3/week	composite
Lead, total	0.1	0.26	0.2	0.4	3/week	composite
Mercury, total	report		report		3/week	composite
Nickel, total	2.38	1.4	3.98	2.4	3/week	composite
Selenium, total			report		3/week	composite
Silver, total	0.05	0.14	0.05	0.26	3/week	composite
Zinc, total	1.48	0.9	2.0	1.6	3/week	composite
Cyanide, total	0.65	0.4	1.2	0.72	3/week	grab
Total PCB			0.001		monthly	composite
Chloride, total	report		report		3/week	composite
Sodium, total	report		report		3/week	composite
Potassium, total	report		report		3/week	composite
Lithium, total	report		report		weekly	composite
Calcium, total	report		report		3/week	composite
Magnesium, total	report		report		3/week	composite
Uranium, total	report		report		monthly	composite
48 hour LC_{50} will be determined as described in Part III-C					quarterly	composite

NOTE 1. Analyses for TTO shall be conducted on a composited sample, but the volatile organics part of the TTO shall be collected by grab sample. TTO shall include those parameters listed in 40 CFR Part 433 which have a reasonable expectation of being present.

NOTE 2. Radioactivity results will be reported in pCi/L. The monitoring for the radioactivity and total uranium will be reported with the Discharge Monitoring Data for the following month. For instance, radioactivity monitoring results for the month of June would be reported with the July discharge monitoring data. A report of the isotope specific data will be submitted to the Division each quarter if further investigation of isotope-specific data have been triggered as part of the Radiological Monitoring Plan (see Permit Part III-H). Gross gamma shall be reported on the DMR, but other gamma may be required as specified in the Radiological Monitoring Plan

APPENDIX 3

PREVIOUS PERMIT LIMITS AND MONITORING REQUIREMENTS

PREVIOUS PERMIT LIMITS

TREATED PROCESS WASTEWATER

OUTFALL 503 STEAM PLANT WASTEWATER TREATMENT FACILITY

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow		report		report	3/week	estimate
pH		range 6.0-9.0			3/week	grab
Total suspended solids	30.0	125	40.0	417	3/week	composite
Temperature	report		report		3/week	grab
Fluoride	report		report		weekly	composite
Oil and Grease	10	63	15.0	83.4	3/week	grab
Sulfate, total	report		report		weekly	composite
Boron, total	report		report		weekly	composite
Iron, total	1.0	4.17	1.0	4.17	monthly	composite
Arsenic, total			report		monthly	composite
Beryllium			report		monthly	composite
Cadmium, total	0.075	0.16	0.15		monthly	composite
Chromium, total	0.2	0.8	0.2	0.8	quarterly	composite
Copper, total	0.2	4.2	0.4	4.2	monthly	composite
Lead, total	0.1		0.2		monthly	composite
Mercury, total	report		report		weekly	composite
Zinc, total	1.48	0.9	2.0	1.6	3/week	composite
Chloride, total	report		report		3/week	composite
Sodium, total	report		report		3/week	composite
48 hour LC_{50} will be determined as described in Part III-C					quarterly	composite

APPENDIX 3

PREVIOUS PERMIT LIMITS AND MONITORING REQUIREMENTS

PREVIOUS PERMIT LIMITS

TREATED PROCESS WASTEWATER

OUTFALL 512 GROUNDWATER TREATMENT FACILITY

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow		report		report	continuous	recorder
pH		range 6.0-9.0			3/week	instant's
Iron. Total	report		1.0		3/week	composite
Manganese, total	report		report		monthly	composite
Copper, total			report		monthly	composite
Lead, total			report		monthly	composite
Total PCB			0.001		monthly	composite
Gross Alpha Radioactivity			report		monthly	monthly composite
Gross Beta Radioactivity			report		monthly	monthly composite
Gross Gamma Radioact'y			report		monthly	monthly composite
48 hour LC_{50} will be determined as described in Part III-C					quarterly	composite

APPENDIX 3

PREVIOUS PERMIT LIMITS AND MONITORING REQUIREMENTS

PREVIOUS PERMIT LIMITS

TREATED PROCESS WASTEWATER

OUTFALL 520 LITHIUM PROCESS STEAM CONDENSATE

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	monitor and maintain records				3/week	estimate
pH		range 6.0-9.0			weekly	grab
Total dissolved solids			report		weekly	grab

Quantity of flow from this facility is classified - flow records shall be made available for review by State and Federal regulatory personnel with appropriate level of clearance.

Outfall 520 shall be included in the Radiological Monitoring Plan (see Permit Part III-H). A summary report of chemical, radiological, and biological data from the discharges related to this outfall will be made once per year.

APPENDIX 3

PREVIOUS PERMIT LIMITS AND MONITORING REQUIREMENTS

PREVIOUS PERMIT LIMITS

NORTH/SOUTH PIPES

OUTFALL 200 - HEADWATERS EF POPLAR CREEK

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		3/week	estimate
Fluoride			report		monthly	composite
Nitrate/nitrite			report		monthly	composite
Oil and Grease	10		15.0		3/week	grab
Phosphate (as P)			report		monthly	composite
Gross alpha	report		report		note 1.	monthly composite
Gross beta	report		report		note 1.	monthly composite
Gross gamma	report		report		note 1.	monthly composite
Sulfate, total	report		report		weekly	composite
Iron, total			report		monthly	composite
Beryllium			report		monthly	composite
Cadmium, total			report		monthly	composite
Copper, total			report		monthly	composite
Lead, total			report		monthly	composite
Mercury, total	report		report		weekly	composite
Zinc, total			report		monthly	composite
Uranium, total			report		monthly	monthly composite

INSTREAM MONITORING POINT

OUTFALL 201

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
pH		range 6.5-8.5			3/week	grab
Total suspended solids	report		report		1/week	composite
Temperature	report		30.5 C		3/week	grab
Total Residual Chlorine	0.011		0.019		3/week	grab
96-hour LC_{50} survival in 100% effluent					quarterly	composite
NOEC, reproduction/growth in 100% effluent					quarterly	composite

APPENDIX 3

PREVIOUS PERMIT LIMITS AND MONITORING REQUIREMENTS

PREVIOUS PERMIT LIMITS

PROCESS WASTEWATER

OUTFALL 550 EAST END MERCURY TREATMENT SYSTEM

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		1/week	instantan's
pH		range 6.0-9.0			1/week	grab
Mercury, total	0.002		0.004		1/week	composite

OUTFALL 551 CENTRAL MERCURY TREATMENT SYSTEM

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		3/week	estimate[1]
pH		range 6.0-9.0			3/week	grab
Temperature	report		30.5 C		3/week	grab
Total Residual Chlorine	0.1		0.188		3/week	grab

GROUND WATER

OUTFALL 051 - INTERIM MERCURY TREATMENT SYSTEM

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		2/week	estimate
pH		range 6.0-9.0			2/week	grab
Mercury, total	report		report		1/week	grab

APPENDIX 3

PREVIOUS PERMIT LIMITS AND MONITORING REQUIREMENTS

PREVIOUS PERMIT LIMITS

PROCESS WASTEWATER

OUTFALLS 077 - STEAM CONDENSATE & COOLING WATER

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		monthly	estimate
pH		range 6.0-9.0			monthly	grab
Total Residual Chlorine			0.5		monthly	grab

OUTFALL125 - STEAM CONDENSATE, COOLING WATER & STORMWATER

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		monthly	estimate
pH		range 6.0-9.0			monthly	grab
Total Residual Chlorine			0.5		monthly	grab
Lead, total			report		quarterly	grab
Mercury, total			report		quarterly	grab

OUTFALL 055 COOLING WATER, SUMP WATER, STORMWATER

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		2/week	estimate
pH		range 6.0-9.0			2/week	grab
Mercury, total			0.004		2/week	grab
Total Residual Chlorine			0.5		2/week	grab

APPENDIX 3

PREVIOUS PERMIT LIMITS AND MONITORING REQUIREMENTS

PREVIOUS PERMIT LIMITS

CATEGORY I - STORMWATER OUTFALLS

Twenty-two (22) Outfalls: 003, 006, 007, 008, 009, 011, 033, 045, 046, 058, 062, 086, 087, 110, 134, S01, S03, S04, S06, S07, S09, and S18 (Instream point)

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		semi-annual	estimate
pH		range 4.0-9.0			semi-annual	grab

OUTFALLS S15 & S16

	MONTHLY		DAILY		REQUIREMENTS	
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		semi-annual	estimate
pH		range 6.0-10.0			semi-annual	grab

APPENDIX 3

PREVIOUS PERMIT LIMITS AND MONITORING REQUIREMENTS

PREVIOUS PERMIT LIMITS

CATEGORY II - STORMWATER OUTFALLS

Twenty-five (25) Outfalls: 004, 010, 014, 016, 019, 020, 041, 044, 057, 063, 064, 067, 083, 088, 099, 126, S02, S08, S10, S11, S12, S13 & Instream Monitoring Points S17, S20, S24

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		quarterly	estimate
pH		range 4.0-9.0			quarterly	grab
Total Residual Chlorine			0.5		quarterly	grab

Six (6) Outfalls: S22, S25, S26, S27, S28, S29

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		quarterly	estimate
pH		range 6.0-10.0			quarterly	grab

CATEGORY III - STORMWATER OUTFALLS

Twelve (12) Outfalls: 002, 034, 042, 047, 048, 054, 071, 109, 113, 114, S05, S14

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		monthly	estimate
pH		range 4.0-9.0			monthly	grab
Total Residual Chlorine			0.5		monthly	grab

The acceptable methods for detection and reporting of total residual chlorine are referenced in Part I, Section B. Monitoring Procedures, subsection 3. Test Procedures, paragraph b.

APPENDIX 3

PREVIOUS PERMIT LIMITS AND MONITORING REQUIREMENTS

PREVIOUS PERMIT LIMITS

CATEGORY II - STORMWATER OUTFALLS

OUTFALL S19

EFFLUENT CHARACTERISTIC	MONTHLY		DAILY		REQUIREMENTS	
	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow				report	monthly	estimate
pH		range 6.0-9.0			monthly	grab
Aluminum, total			report		monthly	composite
Antimony, total			report		monthly	composite
Arsenic, total			report		monthly	composite
Barium,total			report		monthly	composite
Boron, total			report		monthly	composite
Beryllium			report		monthly	composite
Cadmium, total			report		monthly	composite
Calcium, total			report		monthly	composite
Cobalt, total			report		monthly	composite
Chromium, total			report		monthly	composite
Copper, total			report		quarterly	composite
Iron, total			report		monthly	composite
Lead, total			report		monthly	composite
Lithium, total			report		monthly	composite
Magnesium, total			report		monthly	composite
Molybdenum, total			report		monthly	composite
Nickel, total			report		monthly	composite
Potassium, total			report		monthly	composite
Silver, total			report		monthly	composite
Strontium, total			report		monthly	composite
Thallium, total			report		monthly	composite
Vanadium, total			report		monthly	composite
Zinc, total			report		monthly	composite

APPENDIX 3

PREVIOUS PERMIT LIMITS AND MONITORING REQUIREMENTS

PREVIOUS PERMIT LIMITS

PROCESS WASTE, COOLING WATER & STORMWATER

OUTFALL 135

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report	NA	report	NA	3/week	estimate

OUTFALL 021

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		3/week	estimate[1]
pH		range 6.0-9.0			3/week	grab
Temperature	report		30.5 C		3/week	grab
Total Residual Chlorine	0.1		0.188		3/week	grab

Note 1. Outfall 021 is to be sampled at a point which combines points designated as Outfalls 021, 022, and 023 in the application.

GROUND WATER & STORMWATER

OUTFALL 017

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		1/week	estimate
pH		range 6.0-9.0			1/week	grab
Ammonia, as N	32.4		64.8		1/week	grab
Total Kjeldahl Nitrogen	report		report		1/week	grab

APPENDIX 4

HISTORICAL MONITORING AND INSPECTION

OUTFALL 501

Parameter	Limits	Average (a)	Maximum (a)	Minimum (a)	Count	Exceed-ances	Quantity Average (b)	Quantity Maximum (b)
48-Hour Toxicity Test with Ceriodaphnia	d	>92.1	>100.0	64.8	27	d	d	d
48-Hour Toxicity Test with Fathead Minnows	d	>100.0	>100.0	>100.0	1	d	d	d
Flow, mgd	d	0.0088	0.0229	0.0023	95	d	d	d
pH, Std Unit	9/ 6(e)	d	9.2	6.1	97	1	d	d
TEMPERATURE, deg C	d	22.4	29.8	11.7	97	d	d	d
Silver	0.05	<0.02	<0.2	<0.0004	95	0	0.00	0.01
Alpha activity, pCi/L	d	96	6000	-81	85	d	3193344.00	519372000.00
Boron	d	<4	38.8	<0.2	94	d	0.29	2.84
Beryllium	d	<0.002	<0.01	<0.0002	95	d	0.00	0.00
Beta activity, pCi/L	d	66	990	-20	85	d	2195424.00	85696380.00
Calcium	d	371	1000	2.47	94	d	27.18	73.27
Cadmium	0.15	<0.02	<0.1	<0.0005	95	0	0.00	0.01
Chloride	d	103	446	2.6	94	d	7.55	32.68
Chromium	1	<0.04	<0.2	0.0029	95	0	0.00	0.01
Copper	1	<0.04	<0.2	0.0061	95	0	0.00	0.01
Cyanide	1.2	<0.01	0.0789	<0.005	94	0	0.00	0.01
Iron	d	<0.5	3.9	<0.05	94	d	0.04	0.29
Fluoride	d	1	5.9	0.2	94	d	0.07	0.43
Gamma Activity, pCi/L	d	19	290	-11	85	d	632016.00	25102980.00
Mercury	d	<0.0003	0.0056	<0.0001	94	d	0.00	0.00
Potassium	d	<28	74	<3.0	94	d	2.05	5.42
Lithium	d	<2.	12.4	<0.08	94	d	0.15	0.91
Magnesium	d	<3	10.8	<0.2	94	d	0.22	0.79
Sodium	d	483	3390	41.7	94	d	35.39	248.38
Nickel	3.98	<0.1	<0.5	0.0324	95	0	0.01	0.04
Nitrogen	100	<14.	290	<0.05	94	3	1.03	21.25
Oil and Grease	15	<5.1	15	<2.0	94	0	0.37	1.10
Lead	0.2	<0.03	<0.1	<0.0002	95	0	0.00	0.01
PCB, Total	0.001	<0.0005	<0.0005	0.0002	7	0	0.00	0.00
Phosphate as Phosphc	d	<1	13.7	<0.1	94	d	0.07	1.00
Sulfate	d	1700	7890	8.4	95	d	124.56	578.09
Surfactant	d	<0.2	0.753	<0.05	7	d	0.01	0.06
Suspended Solids	40	<3	8	<1.0	94	0	0.22	0.59
Sum of TTO Analysis	2.13	<0.01	0.025	0	7	0	0.00	0.00
Uranium	d	<0.1	4	<0.001	86	d	0.01	0.29
Zinc	2	<0.09	<0.5	0.0087	94	0	0.01	0.04

a- mg/L unless otherwise noted
b- lbs/day unless otherwise noted

d- not applicable (report only)
e-maximum/minimum

APPENDIX 4

HISTORICAL MONITORING AND INSPECTION
OUTFALL 502

Parameter	Limits	Average (a)	Maximum (a)	Minimum (a)	Count	Exceedances	Quantity Average (b)	Quantity Maximum (b)
48-Hour Toxicity Test with Ceriodaphnia	d	>37.2	>100.0	11.2	20	d	d	d
48-Hour Toxicity Test with Fathead Minnows	d	82.9	82.9	82.9	1	d	d	d
Flow, mgd	d	0.0145	0.066	0.00001	416	d	d	d
pH, Std Unit	9/ 6(e)	d	8.9	6.1	292	0	d	d
Temperature, deg C	d	21	30.5	4.1	292	d	d	d
Silver	0.05	<0.03	<0.2	<0.0004	295	0	0.00	0.02
Alpha activity, pCi/L	d	20.4	300	-130	112	d	1118124.00	74844000.00
Arsenic	d	<1.1	<4.0	0.014	295	d	0.13	0.48
Boron	d	<6.4	20	<0.1	294	d	0.77	2.41
Beryllium	d	<0.006	<0.02	<0.0005	295	d	0.00	0.00
Beta activity, pCi/L	d	186	1600	-250	112	d	10194660.00	399168000.00
Calcium	d	54.4	200	9.12	294	d	6.57	24.15
Cadmium	0.15	<0.02	<0.1	<0.0005	295	0	0.00	0.01
Chloride	d	1300	32895	4.8	294	d	156.94	3971.31
Chromium	1	<0.1	<0.4	<0.005	295	0	0.01	0.05
Copper	1	<0.1	<0.4	0.0166	295	0	0.01	0.05
Cyanide	1.2	<0.01	0.0223	<0.005	294	0	0.00	0.00
Iron	d	<0.81	10.5	0.16	294	d	0.10	1.27
Fluoride	d	<7	21.4	<0.1	112	d	0.85	2.58
Gamma Activity, pCi/L	d	56	210	-32	112	d	3069360.00	52390800.00
Hexane Extractable	15	<5.7	<6.0	<5.4	12	0	0.69	0.72
Mercury	d	<0.0002	0.0024	<0.0001	294	d	0.00	0.00
Potassium	d	<140	399	<3.0	294	d	16.90	48.17
Lithium	d	<6	23.4	<0.08	294	d	0.72	2.83
Magnesium	d	18	35	1.2	294	d	2.17	4.23
Manganese	d	<0.6	22	<0.009	294	d	0.07	2.66
Sodium	d	4100	9300	9.7	294	d	494.98	1122.76
Nickel	3.98	<0.5	2.85	<0.04	295	0	0.06	0.34
Nitrate/Nitrite as Nitrog	150	<6	40.8	<0.05	294	0	0.72	4.93
Oil and Grease	15	<4.7	8.4	<2.0	281	0	0.57	1.01
Lead	0.2	<0.009	<0.1	<0.0005	296	0	0.00	0.01
PCB, Total	0.001	<0.0005	<0.0005	0.00005	41	0	0.00	0.00
Phosphate as Phosphc	d	<20	120	<0.1	294	d	2.41	14.49
Selenium	d	<1.2	<4.0	0.071	295	d	0.14	0.48
Sulfate	d	7400	15900	30	295	d	893.38	1919.56
Suspended Solids	40	<4.7	32.6	<1.0	294	0	0.57	3.94
Sum of TTO Analysis	2.13	<0.0076	0.02	0	43	0	0.00	0.00
Uranium	d	<0.0142	0.58	0.0006	112	d	0.00	0.07
Zinc	2	<0.3482	1.26	<0.05	294	0	0.04	0.15

a- mg/L unless otherwise noted
b- lbs/day unless otherwise noted

d- not applicable
e-maximum/minimum

APPENDIX 4

HISTORICAL MONITORING AND INSPECTION

OUTFALL 512

Parameter	Limits	Average (a)	Maximum (a)	Minimum (a)	Count	Exceedances	Quantity Average (b)	Quantity Maximum (b)
48-Hour Toxicity Test with Ceriodaphnia	d	>71.0	>100.0	30.5	38	d	d	d
48-Hour Toxicity Test with Fathead Minnows	d	40.7	40.7	40.7	1	d	d	d
Flow, mgd	d	0.011	0.0464	0.000003	1924	d	d	d
pH, Std Unit	9/ 6(e)	d	8.7	6.6	1311	0	d	d
Alpha activity, pCi/L	d	9.2	73	-2.8	457	d	382536.00	12803616.00
Beta activity, pCi/L	d	10	200	-36	457	d	415800.00	35078400.00
Copper	d	<0.02	<0.2	<0.02	1318	d	0.00	0.02
Iron	1	<0.2	2	<0.05	1318	2	0.02	0.18
Gamma Activity, pCi/L	d	15	1600	-35	457	d	623700.00	280627200.00
Manganese	d	<0.52	5.4	0.0056	1318	d	0.05	0.49
Lead	d	<0.1	<1.0	<0.1	1318	d	0.01	0.09
PCB, Total	0.001	<0.0005	<0.0005	0.0001	114	0	0.00	0.00
Uranium	d	<0.02	0.1	<0.001	914	d	0.00	0.01

OUTFALL 550

Parameter	Limits	Average (a)	Maximum (a)	Minimum (a)	Count	Exceedances	Quantity Average (b)	Quantity Maximum (b)
Flow, mgd	d	0.014	0.045	0.000011	3120	d	d	d
pH, Std Unit	9/ 6(e)	d	8.3	6.8	449	0	d	d
Mercury	0.004	<0.0002	0.0018	<0.0001	448	0	0.00	0.00

OUTFALL 551

Parameter	Limits	Average (a)	Maximum (a)	Minimum (a)	Count	Exceedances	Quantity Average (b)	Quantity Maximum (b)
Flow, mgd	d	0.01	0.062	0.0003	2849	d	d	d
pH, Std Unit	9/ 6(e)	d	8.4	6.4	420	0	d	d
Mercury	0.004	<0.0004	0.0118	0.0002	421	4	0.00	0.01

a- mg/L unless otherwise noted
b- lbs/day unless otherwise noted

d- not applicable
e-maximum/minimum

APPENDIX 4

HISTORICAL MONITORING AND INSPECTION
OUTFALL 200

Parameter	Limits	Average (a)	Maximum (a)	Minimum (a)	Count	Exceedances	Quantity Average (b)	Quantity Maximum (b)
Flow, mgd	d	2.3	116.38	0.12	1541	d	d	d
Alpha activity, pCi/L	d	17	110	-5.6	503	d	325.55	106587.67
Beryllium	d	<0.0006	<0.002	<0.0002	136	d	0.01	0.04
Beta activity, pCi/L	d	16	120	-29	503	d	306.40	116277.46
Cadmium	d	<0.0079	0.025	0.0011	136	d	0.15	24.22
Copper	d	<0.02	0.0639	<0.006	136	d	0.38	61.92
Iron	d	<0.4	8.11	<0.05	135	d	7.66	7858.42
Fluoride	d	0.84	1.3	0.197	113	d	16.09	1259.67
Gamma Activity, pCi/L	d	12	420	-55	503	d	229.80	406971.12
Hexane Extractable	15	<6.1	<6.6	<5.5	225	0	116.81	126.39
Mercury	d	<0.0008	0.0041	<0.0002	557	d	0.02	3.97
Nitrate/Nitrite as Nitrog	d	<6	56	<0.05	113	d	114.90	54262.82
Oil and Grease	15	<5.2	24.9	<2.0	1261	2	99.58	24127.57
Lead	d	<0.07	<0.1	<0.0005	136	d	1.34	1.91
Phosphate as Phosphc	d	<0.99	4.3	<0.307	120	d	18.96	4166.61
Sulfate	d	43.8	384	1.26	511	d	838.76	372087.88
Uranium	d	0.04	0.3	0.001	503	d	0.77	290.69
Zinc	d	<0.09	0.57	0.02	135	d	1.72	552.32

OUTFALL 201

Parameter	Limit	Average (a)	Maximum (a)	Minimum (a)	Count	Exceedences
96-hour LC50 with Cer	d/ 100(e)	>100.0	>100.0	>100.0	39	0
96-hour LC50 with Fat	d/ 100(e)	>100.0	>100.0	>100.0	37	0
NOEC, Ceriodaphnia	d/ 100(e)	99	100	80	39	0
NOEC, Fat Head Minno	d/ 100(e)	100	100	100	37	0
pH, Std Unit	8.5/ 6.5(e)	d	9.3	6.6	1480	3
Temperature, deg C	30.5	16	27.1	7.1	1479	0
Total Residual Chlorine	0.019	<0.05	0.964	<0.05	1515	13
Suspended Solids	d	<6.4	80.4	<1.0	497	d

OUTFALL 135

Parameter Name	Limit	Average	Maximum	Minimum	# of Samples
Flow, mgd	Report	0.23	22.3402	0.042	2563

a- mg/L unless otherwise noted
b- lbs/day unless otherwise noted

d- not applicable
e-maximum/minimum

APPENDIX 4

HISTORICAL MONITORING AND INSPECTION
EFFLUENT TOXICITY

Decl	Date	Outfall	Description	48-h LC50 (% Cd)	96-h LC50 (% Cd)	NOEC (% Fathead minnow larvae)	48-h LC50 (% Fathead minnow larvae)	96-h LC50 (% Fathead minnow larvae)
No	07-Oct-97	135	Outfall 135	>100				
No	22-Apr-99	135	Outfall 135	60.8				
No	22-Jul-99	135	Outfall 135	67.7				
No	12-Jun-02	200	Outfall 200 (North/South Pipe)	>100				
No	12-Jul-95	201	Outfall 201		>100	100		>100
No	12-Oct-95	201	Outfall 201		>100	100		>100
No	10-Jan-96	201	Outfall 201		>100	100		>100
No	31-Jan-96	201	Outfall 201		Terminated			
No	14-Feb-96	201	Outfall 201		>100			
No	12-Apr-96	201	Outfall 201		>100	100		>100
No	17-Jul-96	201	Outfall 201		>100	100		>100
No	02-Oct-96	201	Outfall 201		>100	100		>100
No	08-Jan-97	201	Outfall 201		>100	100		>100
No	09-Apr-97	201	Outfall 201		>100	100		>100
No	09-Jul-97	201	Outfall 201		>100	100		>100
No	01-Oct-97	201	Outfall 201		>100	100		>100
No	04-Feb-98	201	Outfall 201		>100	100		>100
No	22-Apr-98	201	Outfall 201		>100	100		>100
No	08-Jul-98	201	Outfall 201		>100	100		>100
No	07-Oct-98	201	Outfall 201		>100	100		>100
No	22-Jan-99	201	Outfall 201		>100	100		>100
No	21-Apr-99	201	Outfall 201		>100	100		100
No	22-Jul-99	201	Outfall 201		>100	100		>100
No	13-Oct-99	201	Outfall 201		>100	100		>100
No	19-Jan-00	201	Outfall 201		>100	100		>100
No	12-Apr-00	201	Outfall 201		>100	100		>100
No	12-Jul-00	201	Outfall 201		>100	100		>100
No	18-Oct-00	201	Outfall 201		>100	100		>100
No	17-Jan-01	201	Outfall 201		>100	100		>100
No	18-Apr-01	201	Outfall 201		>100	100		>100
No	18-Jul-01	201	Outfall 201		>100	100		>100
No	17-Oct-01	201	Outfall 201		>100	100		>100
No	09-Jan-02	201	Outfall 201		>100	100		>100
No	10-Apr-02	201	Outfall 201		>100	100		>100
No	05-Jun-02	201	Outfall 201	>100				
No	10-Jul-02	201	Outfall 201		>100	100		>100
No	09-Oct-02	201	Outfall 201		>100	100		>100
No	08-Jan-03	201	Outfall 201		>100	100		>100
No	02-Apr-03	201	Outfall 201		>100	100		>100
No	09-Jul-03	201	Outfall 201		>100	100		>100
No	08-Oct-03	201	Outfall 201		>100	100		>100
No	13-Jul-04	201	Outfall 201		>100	100		>100
No	06-Oct-04	201	Outfall 201		>100	100		>100

APPENDIX 4

HISTORICAL MONITORING AND INSPECTION

EFFLUENT TOXICITY

Decl	Date	Outfall	Description	48-h LC50 (% Cd)	96-h LC50 (% Cd)	NOEC (% Fathead minnow larvae)	48-h LC50 (% Fathead minnow larvae)	96-h LC50 (% Fathead minnow larvae)
No	13-Jul-95	501	Cent Poll Control Fac - CPCF	>100			>100	
No	08-Dec-95	501	Cent Poll Control Fac - CPCF	>100				
No	23-Jan-96	501	Cent Poll Control Fac - CPCF	>100				
No	06-Jun-96	501	Cent Poll Control Fac - CPCF	>100				
No	25-Nov-96	501	Cent Poll Control Fac - CPCF	67.7				
No	08-Jan-97	501	Cent Poll Control Fac - CPCF	>100				
No	02-Apr-97	501	Cent Poll Control Fac - CPCF	>100				
No	10-Apr-97	501	Cent Poll Control Fac - CPCF	>100				
No	11-Jul-97	501	Cent Poll Control Fac - CPCF	73.8				
No	23-Jan-98	501	Cent Poll Control Fac - CPCF	>100				
No	17-Apr-98	501	Cent Poll Control Fac - CPCF	>100				
No	23-Apr-98	501	Cent Poll Control Fac - CPCF	>100				
No	29-Sep-98	501	Cent Poll Control Fac - CPCF	>100				
No	19-Nov-98	501	Cent Poll Control Fac - CPCF	78.1				
No	30-Jan-99	501	Cent Poll Control Fac - CPCF	84.46				
No	24-Apr-99	501	Cent Poll Control Fac - CPCF	>100				
No	27-Sep-99	501	Cent Poll Control Fac - CPCF	>100				
No	19-Oct-99	501	Cent Poll Control Fac - CPCF	71.8				
No	25-Jan-00	501	Cent Poll Control Fac - CPCF	64.8				
No	28-Jun-00	501	Cent Poll Control Fac - CPCF	70.7				
No	09-Sep-00	501	Cent Poll Control Fac - CPCF	>100				
No	24-Oct-00	501	Cent Poll Control Fac - CPCF	76.4				
No	03-Feb-01	501	Cent Poll Control Fac - CPCF	>100				
No	21-Apr-01	501	Cent Poll Control Fac - CPCF	>100				
No	14-Jul-01	501	Cent Poll Control Fac - CPCF	>100				
No	05-Apr-02	501	Cent Poll Control Fac - CPCF	>100				
No	21-May-03	501	Cent Poll Control Fac - CPCF	<100				
No	20-Jul-95	502	West End Trt Facility (WETF)	42.4			82.9	
No	24-Oct-95	502	West End Trt Facility (WETF)	24.2				
No	15-Aug-96	502	West End Trt Facility (WETF)	11.2				
No	02-Oct-96	502	West End Trt Facility (WETF)	39.4				
No	07-Mar-97	502	West End Trt Facility (WETF)	91.1				
No	15-Aug-97	502	West End Trt Facility (WETF)	>100				
No	17-Oct-97	502	West End Trt Facility (WETF)	43.5				
No	10-Apr-98	502	West End Trt Facility (WETF)	42.4				
No	28-Apr-98	502	West End Trt Facility (WETF)	55.9				
No	29-Jul-98	502	West End Trt Facility (WETF)	41.4				
No	09-Oct-98	502	West End Trt Facility (WETF)	22.6				
No	15-Jun-99	502	West End Trt Facility (WETF)	19.4				
No	23-Jul-99	502	West End Trt Facility (WETF)	17.3				
No	14-Oct-99	502	West End Trt Facility (WETF)	17.3				
No	19-Jan-00	502	West End Trt Facility (WETF)	17.3				
No	14-Apr-00	502	West End Trt Facility (WETF)	48.9				
No	14-Jul-00	502	West End Trt Facility (WETF)	50.6				
No	05-Jun-02	502	West End Trt Facility (WETF)	16.5				
No	29-Jan-04	502	West End Trt Facility (WETF)	17.3				

APPENDIX 4

HISTORICAL MONITORING AND INSPECTION

EFFLUENT TOXICITY

Decl	Date	Outfall	Description	48-h LC50 (% Cd)	96-h LC50 (% Cd)	NOEC (% Fathead minnow larvae)	48-h LC50 (% Fathead minnow larvae)	96-h LC50 (% Fathead minnow larvae)
No	13-Jul-95	512	GW Trt Facility (GWTF)	87.6			40.7	
No	12-Oct-95	512	GW Trt Facility (GWTF)	>100				
No	11-Jan-96	512	GW Trt Facility (GWTF)	64				
No	17-Apr-96	512	GW Trt Facility (GWTF)	48.2				
No	18-Jul-96	512	GW Trt Facility (GWTF)	42.4				
No	02-Oct-96	512	GW Trt Facility (GWTF)	60.6				
No	08-Jan-97	512	GW Trt Facility (GWTF)	43				
Yes	14-Jan-97	512	GW Trt Facility (GWTF)	>100				
No	10-Apr-97	512	GW Trt Facility (GWTF)	30.5				
Yes	10-Jul-97	512	GW Trt Facility (GWTF)	>100				
No	10-Jul-97	512	GW Trt Facility (GWTF)	40.9				
No	02-Oct-97	512	GW Trt Facility (GWTF)	77.5				
No	06-Feb-98	512	GW Trt Facility (GWTF)	72.3				
No	23-Apr-98	512	GW Trt Facility (GWTF)	70.7				
No	10-Jul-98	512	GW Trt Facility (GWTF)	88				
No	08-Oct-98	512	GW Trt Facility (GWTF)	90.3				
No	21-Jan-99	512	GW Trt Facility (GWTF)	77.93				
No	22-Apr-99	512	GW Trt Facility (GWTF)	33.1				
No	22-Jul-99	512	GW Trt Facility (GWTF)	78.5				
No	14-Oct-99	512	GW Trt Facility (GWTF)	57.2				
No	20-Jan-00	512	GW Trt Facility (GWTF)	>100				
No	13-Apr-00	512	GW Trt Facility (GWTF)	45.5				
No	13-Jul-00	512	GW Trt Facility (GWTF)	40.9				
No	25-Oct-00	512	GW Trt Facility (GWTF)	40.5				
No	23-Jan-01	512	GW Trt Facility (GWTF)	93.8				
No	19-Apr-01	512	GW Trt Facility (GWTF)	36.7				
No	18-Jul-01	512	GW Trt Facility (GWTF)	70.6				
No	06-Nov-01	512	GW Trt Facility (GWTF)	>100				
No	15-Jan-02	512	GW Trt Facility (GWTF)	>100				
No	11-Apr-02	512	GW Trt Facility (GWTF)	74				
No	11-Jul-02	512	GW Trt Facility (GWTF)	62.2				
No	09-Oct-02	512	GW Trt Facility (GWTF)	>100				
No	08-Jan-03	512	GW Trt Facility (GWTF)	88				
No	08-Apr-03	512	GW Trt Facility (GWTF)	44.1				
No	09-Jul-03	512	GW Trt Facility (GWTF)	47				
No	16-Oct-03	512	GW Trt Facility (GWTF)	>100				
No	08-Jan-04	512	GW Trt Facility (GWTF)	>100				
No	02-Apr-04	512	GW Trt Facility (GWTF)	92.4				
No	20-Jul-04	512	GW Trt Facility (GWTF)	>100				
No	06-Oct-04	512	GW Trt Facility (GWTF)	>100				
No	03-Jun-99	520	Lith Proc Stm Condensate	>100				
No	09-Jul-99	520	Lith Proc Stm Condensate	52.9				
No	04-Aug-99	520	Lith Proc Stm Condensate	<6.25				
No	07-Aug-99	520	Lith Proc Stm Condensate	11.7				
No	12-May-00	520	Lith Proc Stm Condensate	26.1				
No	17-Jul-00	520	Lith Proc Stm Condensate	42.3				
No	24-May-01	520	Lith Proc Stm Condensate	6.4				
No	20-Jul-01	520	Lith Proc Stm Condensate	13				
No	02-Oct-01	520	Lith Proc Stm Condensate	14.9				
No	22-Oct-01	520	Lith Proc Stm Condensate	<6				
No	02-May-03	520	Lith Proc Stm Condensate	11.8				
No	09-Jul-03	520	Lith Proc Stm Condensate	28.2				
No	08-Oct-03	520	Lith Proc Stm Condensate	30.4				
No	08-Jan-04	520	Lith Proc Stm Condensate	79.4				

APPENDIX 4
HISTORICAL MONITORING AND INSPECTION
EFFLUENT TOXICITY

Decl	Date	Outfall	Description	48-h LC50 (% Cd)	96-h LC50 (% Cd)	NOEC (% Fathead minnow larvae)	48-h LC50 (% Fathead minnow larvae)	96-h LC50 (% Fathead minnow larvae)
No	03-Jun-99	520	Lith Proc Stm Condensate	>100				
No	09-Jul-99	520	Lith Proc Stm Condensate	52.9				
No	04-Aug-99	520	Lith Proc Stm Condensate	<6.25				
No	07-Aug-99	520	Lith Proc Stm Condensate	11.7				
No	12-May-00	520	Lith Proc Stm Condensate	26.1				
No	17-Jul-00	520	Lith Proc Stm Condensate	42.3				
No	24-May-01	520	Lith Proc Stm Condensate	6.4				
No	20-Jul-01	520	Lith Proc Stm Condensate	13				
No	02-Oct-01	520	Lith Proc Stm Condensate	14.9				
No	22-Oct-01	520	Lith Proc Stm Condensate	<6				
No	02-May-03	520	Lith Proc Stm Condensate	11.8				
No	09-Jul-03	520	Lith Proc Stm Condensate	28.2				
No	08-Oct-03	520	Lith Proc Stm Condensate	30.4				
No	08-Jan-04	520	Lith Proc Stm Condensate	79.4				
No	17-Dec-96	551	Cent Mercury Trt Sys (CMTS)	>100				
No	14-Jan-97	551	Cent Mercury Trt Sys (CMTS)	>100				
No	10-Apr-97	551	Cent Mercury Trt Sys (CMTS)	>100				
No	10-Jul-97	551	Cent Mercury Trt Sys (CMTS)	>100				
No	07-Oct-97	551	Cent Mercury Trt Sys (CMTS)	>100				
No	10-Feb-98	551	Cent Mercury Trt Sys (CMTS)	>100				
No	24-Apr-98	551	Cent Mercury Trt Sys (CMTS)	>100				
No	10-Jul-98	551	Cent Mercury Trt Sys (CMTS)	>100				
No	09-Oct-98	551	Cent Mercury Trt Sys (CMTS)	>100				
No	22-Jan-99	551	Cent Mercury Trt Sys (CMTS)	>100				
No	23-Apr-99	551	Cent Mercury Trt Sys (CMTS)	>100				
No	23-Jul-99	551	Cent Mercury Trt Sys (CMTS)	>100				
No	15-Oct-99	551	Cent Mercury Trt Sys (CMTS)	>100				
No	21-Jan-00	551	Cent Mercury Trt Sys (CMTS)	>100				
No	14-Apr-00	551	Cent Mercury Trt Sys (CMTS)	>100				
No	14-Jul-00	551	Cent Mercury Trt Sys (CMTS)	>100				
No	20-Oct-00	551	Cent Mercury Trt Sys (CMTS)	>100				
No	19-Jan-01	551	Cent Mercury Trt Sys (CMTS)	>100				
No	20-Apr-01	551	Cent Mercury Trt Sys (CMTS)	>100				
No	20-Jul-01	551	Cent Mercury Trt Sys (CMTS)	60.6				
No	19-Oct-01	551	Cent Mercury Trt Sys (CMTS)	>100				
No	11-Jan-02	551	Cent Mercury Trt Sys (CMTS)	>100				
No	12-Apr-02	551	Cent Mercury Trt Sys (CMTS)	>100				
No	12-Jul-02	551	Cent Mercury Trt Sys (CMTS)	>100				
No	11-Oct-02	551	Cent Mercury Trt Sys (CMTS)	>100				
No	10-Jan-03	551	Cent Mercury Trt Sys (CMTS)	>100				
No	04-Apr-03	551	Cent Mercury Trt Sys (CMTS)	>100				
No	09-Jul-03	551	Cent Mercury Trt Sys (CMTS)	>100				
No	17-Oct-03	551	Cent Mercury Trt Sys (CMTS)	>100				
No	08-Jan-04	551	Cent Mercury Trt Sys (CMTS)	>100				
No	02-Apr-04	551	Cent Mercury Trt Sys (CMTS)	>100				
No	15-Jul-04	551	Cent Mercury Trt Sys (CMTS)	>100				
No	06-Oct-04	551	Cent Mercury Trt Sys (CMTS)	>100				

APPENDIX 4

HISTORICAL MONITORING AND INSPECTION

EFFLUENT TOXICITY

Decl	Date	Outfall	Description	48-h LC50 (% Cd)	96-h LC50 (% Cd)	NOEC (% Fathead minnow larvae)	48-h LC50 (% Fathead minnow larvae)	96-h LC50 (% Fathead minnow larvae)
No	10-Jan-02	2742881	Cooling Tower 9409-10	8				
Yes	10-Jan-02	2742881	Cooling Tower 9409-10	>100				
No	10-Oct-02	2742881	Cooling Tower 9409-10	>100				
Yes	10-Oct-02	2742881	Cooling Tower 9409-10	>100				
No	08-Apr-03	2742881	Cooling Tower 9409-10	>100				
Yes	08-Apr-03	2742881	Cooling Tower 9409-10	>100				
No	16-Jul-02	9409-13	Cooling Tower 9409-13	>100				
Yes	16-Jul-02	9409-13	Cooling Tower 9409-13	>100				
No	10-Jan-02	9409-13E	Cooling Tower 9409-13E	36.4				
Yes	10-Jan-02	9409-13E	Cooling Tower 9409-13E	>100				
Yes	10-Oct-02	9409-13E	Cooling Tower 9409-13E	>100				
No	10-Oct-02	9409-13E	Cooling Tower 9409-13E	>100				
Yes	16-Apr-02	9409-15	Cooling Tower 9409-15	54.4				
No	16-Apr-02	9409-15	Cooling Tower 9409-15	<6				
Yes	11-Jul-02	9409-15	Cooling Tower 9409-15	>100				
No	11-Jul-02	9409-15	Cooling Tower 9409-15	>100				
No	09-Jan-03	9409-15	Cooling Tower 9409-15	<6				
Yes	09-Jan-03	9409-15	Cooling Tower 9409-15	>100				
No	03-Apr-03	9409-15	Cooling Tower 9409-15	8.7				
Yes	03-Apr-03	9409-15	Cooling Tower 9409-15	>100				
Yes	15-Jan-02	9409-20	Cooling Tower 9409-20	>100				
No	15-Jan-02	9409-20	Cooling Tower 9409-20	11.8				
No	16-Jul-02	9409-20	Cooling Tower 9409-20	>100				
Yes	16-Jul-02	9409-20	Cooling Tower 9409-20	>100				
Yes	14-Jan-03	9409-20	Cooling Tower 9409-20	>100				
No	14-Jan-03	9409-20	Cooling Tower 9409-20	8.3				
No	15-Jan-02	9409-22E	Cooling Tower 9409-22E	8.5				
Yes	15-Jan-02	9409-22E	Cooling Tower 9409-22E	>100				
No	11-Jul-02	9409-22E	Cooling Tower 9409-22E	71.8				
Yes	11-Jul-02	9409-22E	Cooling Tower 9409-22E	>100				
Yes	15-Oct-02	9409-22E	Cooling Tower 9409-22E	>100				
No	15-Oct-02	9409-22E	Cooling Tower 9409-22E	>100				
No	11-Apr-02	9409-23	Cooling Tower 9409-23	>100				
Yes	11-Apr-02	9409-23	Cooling Tower 9409-23	>100				
Yes	15-Oct-02	9409-23	Cooling Tower 9409-23	>100				
No	15-Oct-02	9409-23	Cooling Tower 9409-23	>100				
Yes	14-Jan-03	9409-23	Cooling Tower 9409-23	>100				
No	14-Jan-03	9409-23	Cooling Tower 9409-23	9.6				
No	11-Apr-02	9409-26	Cooling Tower 9409-26	8.3				
Yes	11-Apr-02	9409-26	Cooling Tower 9409-26	>100				
No	09-Jan-03	9409-26	Cooling Tower 9409-26	>100				
Yes	09-Jan-03	9409-26	Cooling Tower 9409-26	>100				
No	08-Apr-03	9409-26	Cooling Tower 9409-26	>100				
Yes	08-Apr-03	9409-26	Cooling Tower 9409-26	>100				
No	16-Apr-02	9409-32	Cooling Tower 9409-32	>100				
Yes	16-Apr-02	9409-32	Cooling Tower 9409-32	>100				
Yes	17-Oct-02	9409-32	Cooling Tower 9409-32	>100				
No	17-Oct-02	9409-32	Cooling Tower 9409-32	14.5				
No	03-Apr-03	9409-32	Cooling Tower 9409-32	<6				
Yes	03-Apr-03	9409-32	Cooling Tower 9409-32	>100				
No	17-Oct-02	9409-73	Cooling Tower 9409-73	<6				
Yes	17-Oct-02	9409-73	Cooling Tower 9409-73	>100				

APPENDIX 4

HISTORICAL MONITORING AND INSPECTION

EFFLUENT TOXICITY

Decl	Date	Outfall	Description	48-h LC50 (% Cd)	96-h LC50 (% Cd)	NOEC (% Fathead minnow larvae)	48-h LC50 (% Fathead minnow larvae)	96-h LC50 (% Fathead minnow larvae)
No	13-Apr-96	2747629	SWHISS S of 9204-2	8				
Yes	13-Apr-96	2747629	SWHISS S of 9204-2	66.9				
Yes	23-Jul-96	2747629	SWHISS S of 9204-2	40.9				
No	23-Jul-96	2747629	SWHISS S of 9204-2	29.6				
No	08-Oct-96	2747629	SWHISS S of 9204-2	14.5				
Yes	08-Oct-96	2747629	SWHISS S of 9204-2	51.4				
No	03-Oct-97	2747629	SWHISS S of 9204-2	14.7				
Yes	03-Oct-97	2747629	SWHISS S of 9204-2	75.8				
Yes	27-Apr-99	2747629	SWHISS S of 9204-2	57.3				
No	27-Apr-99	2747629	SWHISS S of 9204-2	35.4				
No	27-Jul-99	2747629	SWHISS S of 9204-2	66.6				
Yes	27-Jul-99	2747629	SWHISS S of 9204-2	>100				
No	13-Apr-00	2747629	SWHISS S of 9204-2	9				
Yes	13-Apr-00	2747629	SWHISS S of 9204-2	64.8				
No	18-Jul-00	2747629	SWHISS S of 9204-2	36.4				
Yes	18-Jul-00	2747629	SWHISS S of 9204-2	57				
No	19-Oct-00	2747629	SWHISS S of 9204-2	70.7				
Yes	19-Oct-00	2747629	SWHISS S of 9204-2	>100				
Yes	18-Jan-01	2747629	SWHISS S of 9204-2	68.7				
No	18-Jan-01	2747629	SWHISS S of 9204-2	57.8				
No	18-Oct-01	2747629	SWHISS S of 9204-2	>100				
Yes	18-Oct-01	2747629	SWHISS S of 9204-2	>100				
No	10-Jul-03	2747629	SWHISS S of 9204-2	75.8				
Yes	10-Jul-03	2747629	SWHISS S of 9204-2	>100				
Yes	09-Oct-03	2747629	SWHISS S of 9204-2	>100				
No	09-Oct-03	2747629	SWHISS S of 9204-2	34.3				
No	13-Jul-95	2747660	SWHISS S of 9201-4	>100			>100	
No	12-Oct-95	2747660	SWHISS S of 9201-4	39.5				
No	11-Jan-96	2747660	SWHISS S of 9201-4	70.7				
No	13-Apr-96	2747660	SWHISS S of 9201-4	72.6				
No	23-Jul-96	2747660	SWHISS S of 9201-4	Invalid				
No	30-Jul-96	2747660	SWHISS S of 9201-4	66.6				
No	08-Oct-96	2747660	SWHISS S of 9201-4	40.6				
No	14-Oct-99	2747660	SWHISS S of 9201-4	<6				
Yes	14-Oct-99	2747660	SWHISS S of 9201-4	90.4				
No	20-Jan-00	2747660	SWHISS S of 9201-4	17.2				
Yes	20-Jan-00	2747660	SWHISS S of 9201-4	68.7				
No	13-Apr-00	2747660	SWHISS S of 9201-4	>100				
Yes	13-Jul-00	2747660	SWHISS S of 9201-4	>100				
No	13-Jul-00	2747660	SWHISS S of 9201-4	49.7				
No	19-Oct-00	2747660	SWHISS S of 9201-4	16.8				
Yes	19-Oct-00	2747660	SWHISS S of 9201-4	61.1				
Yes	18-Jan-01	2747660	SWHISS S of 9201-4	>100				
No	18-Jan-01	2747660	SWHISS S of 9201-4	70.7				
No	18-Oct-01	2747660	SWHISS S of 9201-4	46.4				
Yes	18-Oct-01	2747660	SWHISS S of 9201-4	>100				
No	15-Jul-03	2747660	SWHISS S of 9201-4	>100				
No	09-Oct-03	2747660	SWHISS S of 9201-4	>100				

APPENDIX 4

HISTORICAL MONITORING AND INSPECTION

EFFLUENT TOXICITY

Decl	Date	Outfall	Description	48-h LC50 (% Cd)	96-h LC50 (% Cd)	NOEC (% Fathead minnow larvae)	48-h LC50 (% Fathead minnow larvae)	96-h LC50 (% Fathead minnow larvae)
No	13-Jul-95	2747690	SWHISS S of 9201-5, 9201-4	37.1			85.4	
Yes	13-Jul-95	2747690	SWHISS S of 9201-5, 9201-4	>100			>100	
Yes	12-Oct-95	2747690	SWHISS S of 9201-5, 9201-4	>100				
No	12-Oct-95	2747690	SWHISS S of 9201-5, 9201-4	55.4				
No	11-Jan-96	2747690	SWHISS S of 9201-5, 9201-4	>100				
No	11-Jan-96	2747690	SWHISS S of 9201-5, 9201-4	70.7				
Yes	16-Apr-96	2747690	SWHISS S of 9201-5, 9201-4	>100				
No	16-Apr-96	2747690	SWHISS S of 9201-5, 9201-4	70.7				
Yes	17-Jul-96	2747690	SWHISS S of 9201-5, 9201-4	>100				
No	17-Jul-96	2747690	SWHISS S of 9201-5, 9201-4	24				
Yes	02-Oct-96	2747690	SWHISS S of 9201-5, 9201-4	>100				
No	02-Oct-96	2747690	SWHISS S of 9201-5, 9201-4	64.8				
Yes	18-Apr-00	2747690	SWHISS S of 9201-5, 9201-4	89.9				
No	18-Apr-00	2747690	SWHISS S of 9201-5, 9201-4	43.3				
No	18-Jul-00	2747690	SWHISS S of 9201-5, 9201-4	35				
Yes	18-Jul-00	2747690	SWHISS S of 9201-5, 9201-4	>100				
No	24-Oct-00	2747690	SWHISS S of 9201-5, 9201-4	68.7				
Yes	24-Oct-00	2747690	SWHISS S of 9201-5, 9201-4	>100				
Yes	23-Jan-01	2747690	SWHISS S of 9201-5, 9201-4	52.1				
No	23-Jan-01	2747690	SWHISS S of 9201-5, 9201-4	25.5				
Yes	23-Oct-01	2747690	SWHISS S of 9201-5, 9201-4	>100				
No	23-Oct-01	2747690	SWHISS S of 9201-5, 9201-4	87.1				
Yes	15-Jul-03	2747690	SWHISS S of 9201-5, 9201-4	>100				
No	15-Jul-03	2747690	SWHISS S of 9201-5, 9201-4	17.3				
No	14-Oct-03	2747690	SWHISS S of 9201-5, 9201-4	70.7				
Yes	14-Oct-03	2747690	SWHISS S of 9201-5, 9201-4	73				
Yes	09-Jan-04	2747690	SWHISS S of 9201-5, 9201-4	>100				
No	09-Jan-04	2747690	SWHISS S of 9201-5, 9201-4	68.7				
No	05-Apr-04	2747690	SWHISS S of 9201-5, 9201-4	70.7				
Yes	13-Jul-04	2747690	SWHISS S of 9201-5, 9201-4	>100				
No	13-Jul-04	2747690	SWHISS S of 9201-5, 9201-4	70.7				
No	07-Oct-04	2747690	SWHISS S of 9201-5, 9201-4	22				
Yes	07-Oct-04	2747690	SWHISS S of 9201-5, 9201-4	>100				
Yes	18-Jul-95	9422-15	SWHISS S of 9204-4, 9201-5	71.8			>100	
No	18-Jul-95	9422-15	SWHISS S of 9204-4, 9201-5	66.6			>100	
No	18-Oct-95	9422-15	SWHISS S of 9204-4, 9201-5	>100				
No	12-Jan-96	9422-15	SWHISS S of 9204-4, 9201-5	>100				
No	18-Apr-00	9422-15	SWHISS S of 9204-4, 9201-5	>100				
Yes	18-Jul-00	9422-15	SWHISS S of 9204-4, 9201-5	>100				
No	18-Jul-00	9422-15	SWHISS S of 9204-4, 9201-5	78.7				
No	24-Oct-00	9422-15	SWHISS S of 9204-4, 9201-5	>100				
Yes	23-Jan-01	9422-15	SWHISS S of 9204-4, 9201-5	>100				
No	23-Jan-01	9422-15	SWHISS S of 9204-4, 9201-5	70.7				
Yes	23-Oct-01	9422-15	SWHISS S of 9204-4, 9201-5	>100				
No	23-Oct-01	9422-15	SWHISS S of 9204-4, 9201-5	100				
No	10-Jul-03	9422-15	SWHISS S of 9204-4, 9201-5	>100				
No	14-Oct-03	9422-15	SWHISS S of 9204-4, 9201-5	>100				
No	18-Jul-95	9422-16	SWHISS NW of 9720-5	87.1			>100	
Yes	18-Jul-95	9422-16	SWHISS NW of 9720-5	>100			>100	
No	19-Oct-95	9422-16	SWHISS NW of 9720-5	>100				
No	16-Jan-96	9422-16	SWHISS NW of 9720-5	>100				
No	08-Jan-97	9422-17	SWHISS West Line	>100				
No	15-Apr-97	9422-17	SWHISS West Line	Invalid				
No	01-May-97	9422-17	SWHISS West Line	>100				
No	15-Jul-97	9422-17	SWHISS West Line	>100				
No	02-Oct-97	9422-17	SWHISS West Line	>100				

APPENDIX 4

HISTORICAL MONITORING AND INSPECTION

EFFLUENT TOXICITY

Decl	Date	Outfall	Description	48-h LC50 (% Cd)	96-h LC50 (% Cd)	NOEC (% Fathead minnow larvae)	48-h LC50 (% Fathead minnow larvae)	96-h LC50 (% Fathead minnow larvae)
No	19-Oct-99	D2223	Storm Sewer S of 9409-24	>100				
Yes	19-Oct-99	D2223	Storm Sewer S of 9409-24	>100				
No	25-Jan-00	D2223	Storm Sewer S of 9409-24	>100				
Yes	19-Oct-99	D2226	Storm Sewer N of 9723-25	91.2				
No	19-Oct-99	D2226	Storm Sewer N of 9723-25	11.6				
Yes	25-Jan-00	D2226	Storm Sewer N of 9723-25	>100				
No	25-Jan-00	D2226	Storm Sewer N of 9723-25	17.3				
No	05-Feb-98	D2321	Storm Sewer SE of 9703-11	2.2				
Yes	05-Feb-98	D2321	Storm Sewer SE of 9703-11	39.3				
Yes	23-Apr-98	D2321	Storm Sewer SE of 9703-11	70.7				
No	23-Apr-98	D2321	Storm Sewer SE of 9703-11	17.3				
Yes	14-Jul-98	D2321	Storm Sewer SE of 9703-11	70.7				
No	14-Jul-98	D2321	Storm Sewer SE of 9703-11	63				
Yes	08-Oct-98	D2321	Storm Sewer SE of 9703-11	39.7				
No	08-Oct-98	D2321	Storm Sewer SE of 9703-11	15.8				
No	27-Jan-99	D2321	Storm Sewer SE of 9703-11	6.68				
Yes	27-Jan-99	D2321	Storm Sewer SE of 9703-11	70.71				
Yes	27-Jan-99	D2336	Storm Sewer W of 9212	>100				
No	27-Jan-99	D2336	Storm Sewer W of 9212	9.05				
No	14-Jan-97	D2426	Storm Sewer W of 9215	>100				
Yes	10-Apr-97	D2426	Storm Sewer W of 9215	>100				
No	10-Apr-97	D2426	Storm Sewer W of 9215	56				
No	10-Jul-97	D2426	Storm Sewer W of 9215	70.7				
No	05-Feb-98	D2426	Storm Sewer W of 9215	40.3				
Yes	05-Feb-98	D2426	Storm Sewer W of 9215	>100				
No	08-Oct-98	D2426	Storm Sewer W of 9215	59.8				
No	05-Feb-98	D3010	Storm Sewer 9215/9204-2E Alley	32				
Yes	05-Feb-98	D3010	Storm Sewer 9215/9204-2E Alley	75.9				
Yes	23-Apr-98	D3010	Storm Sewer 9215/9204-2E Alley	70.7				
No	23-Apr-98	D3010	Storm Sewer 9215/9204-2E Alley	66.7				
Yes	14-Jul-98	D3010	Storm Sewer 9215/9204-2E Alley	>100				
No	14-Jul-98	D3010	Storm Sewer 9215/9204-2E Alley	72.2				
No	13-Oct-98	D3010	Storm Sewer 9215/9204-2E Alley	71				
Yes	13-Oct-98	D3010	Storm Sewer 9215/9204-2E Alley	75.8				
Yes	26-Jan-99	D3010	Storm Sewer 9215/9204-2E Alley	>100				
No	26-Jan-99	D3010	Storm Sewer 9215/9204-2E Alley	36.14				
No	24-Apr-01	D3010	Storm Sewer 9215/9204-2E Alley	36.4				
Yes	24-Apr-01	D3010	Storm Sewer 9215/9204-2E Alley	>100				
No	25-Jul-01	D3010	Storm Sewer 9215/9204-2E Alley	70.7				
Yes	25-Jul-01	D3010	Storm Sewer 9215/9204-2E Alley	>100				
Yes	13-Jan-04	D3100	Storm Sewer NW of 9201-4	>100				
No	13-Jan-04	D3100	Storm Sewer NW of 9201-4	70.7				
No	06-Apr-04	D3100	Storm Sewer NW of 9201-4	>100				
Yes	14-Jul-04	D3100	Storm Sewer NW of 9201-4	>100				
No	14-Jul-04	D3100	Storm Sewer NW of 9201-4	>100				
No	12-Oct-04	D3100	Storm Sewer NW of 9201-4	>100				
No	13-Jan-04	D3101	Storm Sewer W of 9201-4	6				
No	06-Apr-04	D3101	Storm Sewer W of 9201-4	30.4				
No	14-Jul-04	D3101	Storm Sewer W of 9201-4	21.3				
No	12-Oct-04	D3101	Storm Sewer W of 9201-4	20.1				
No	03-Oct-97	D3121	Storm Sewer W of 9204-2	12.9				

APPENDIX 4

HISTORICAL MONITORING AND INSPECTION

EFFLUENT TOXICITY

Decl	Date	Outfall	Description	48-h LC50 (% Cd)	96-h LC50 (% Cd)	NOEC (% Fathead minnow larvae)	48-h LC50 (% Fathead minnow larvae)	96-h LC50 (% Fathead minnow larvae)
No	03-Oct-97	D3121	Storm Sewer W of 9204-2	12.9				
Yes	03-Oct-97	D3121	Storm Sewer W of 9204-2	81.6				
No	27-Apr-99	D3121	Storm Sewer W of 9204-2	70.7				
Yes	27-Apr-99	D3121	Storm Sewer W of 9204-2	>100				
Yes	27-Jul-99	D3121	Storm Sewer W of 9204-2	>100				
No	27-Jul-99	D3121	Storm Sewer W of 9204-2	45.9				
Yes	24-Apr-01	D3121	Storm Sewer W of 9204-2	>100				
No	24-Apr-01	D3121	Storm Sewer W of 9204-2	40.9				
Yes	25-Jul-01	D3121	Storm Sewer W of 9204-2	>100				
No	25-Jul-01	D3121	Storm Sewer W of 9204-2	>100				
No	28-Apr-98	D3236	Storm Sewer SE of 9201-4	70.7				
No	09-Jul-98	D3236	Storm Sewer SE of 9201-4	>100				
No	13-Oct-98	D3236	Storm Sewer SE of 9201-4	69.3				
No	26-Jan-99	D3236	Storm Sewer SE of 9201-4	70.71				
No	14-Jan-97	D3321	Storm Sewer S of 9201-4	70.7				
No	15-Apr-97	D3321	Storm Sewer S of 9201-4	17.1				
No	15-Jul-97	D3321	Storm Sewer S of 9201-4	>100				
No	10-Feb-98	D3321	Storm Sewer S of 9201-4	66				
No	28-Apr-98	D3321	Storm Sewer S of 9201-4	70.7				
No	09-Jul-98	D3321	Storm Sewer S of 9201-4	70.7				
No	14-Oct-99	D3321	Storm Sewer S of 9201-4	81				
No	20-Jan-00	D3321	Storm Sewer S of 9201-4	65.6				
No	19-Apr-01	D3321	Storm Sewer S of 9201-4	33.5				
No	19-Jul-01	D3321	Storm Sewer S of 9201-4	61.2				
Yes	22-Apr-99	D3353	Storm Sewer SE of 9204-2	>100				
No	22-Apr-99	D3353	Storm Sewer SE of 9204-2	38.5				
No	22-Jul-99	D3353	Storm Sewer SE of 9204-2	69.9				
Yes	22-Jul-99	D3353	Storm Sewer SE of 9204-2	73.1				
No	19-Apr-01	D3406	Storm Sewer N of 9727-3	>100				
No	19-Jul-01	D3406	Storm Sewer N of 9727-3	>100				
No	09-Jan-04	E3231	Storm Sewer SW of 9201-5	16.3				
Yes	09-Jan-04	E3231	Storm Sewer SW of 9201-5	>100				
No	05-Apr-04	E3231	Storm Sewer SW of 9201-5	>100				
No	13-Jul-04	E3231	Storm Sewer SW of 9201-5	>100				
Yes	13-Jul-04	E3231	Storm Sewer SW of 9201-5	>100				
No	07-Oct-04	E3231	Storm Sewer SW of 9201-5	17.3				
Yes	07-Oct-04	E3231	Storm Sewer SW of 9201-5	>100				
No	16-Apr-96	E3305	Storm Sewer W of 9720-13	>100				
No	17-Jul-96	E3305	Storm Sewer W of 9720-13	>100				
No	08-Oct-96	E3305	Storm Sewer W of 9720-13	>100				
No	14-Jan-97	E3305	Storm Sewer W of 9720-13	>100				
No	15-Apr-97	E3306	Storm Sewer W of 9720-12	>100				
No	09-Jul-97	E3306	Storm Sewer W of 9720-12	>100				

APPENDIX 4

HISTORICAL MONITORING AND INSPECTION
CATEGORY 1 STORMWATER OUTFALLS

Outfall	Parameter	Limits	Count	Maximum	Average	Minimun	No. Exceeding limit
004	Flow, mgd	d	44	1.008	0.1	0.0004	d
	pH, Std Unit	9/ 4(e)	42	8.8	d	7.1	0
	Tot. Res. Chlorine	0.5	39	0.25	<0.06	<0.05	0
010	Flow, mgd	d	41	0.396	0.04	0.0019	d
	pH, Std Unit	9/ 4(e)	41	8.4	d	7	0
	Tot. Res. Chlorine	0.5	39	0.12	<0.05	<0.05	0
014	Flow, mgd	d	43	2.4768	0.13	0.0011	d
	pH, Std Unit	9/ 4(e)	41	8.4	d	7.2	0
	Tot. Res. Chlorine	0.5	39	0.28	<0.07	<0.05	0
016	Flow, mgd	d	42	1.5077	0.07	0.0001	d
	pH, Std Unit	9/ 4(e)	41	8.4	d	6.9	0
	Tot. Res. Chlorine	0.5	39	0.06	<0.05	<0.05	0
019	Flow, mgd	d	42	0.742	0.06	0.0001	d
	pH, Std Unit	9/ 4(e)	41	8.7	d	7.1	0
	Tot. Res. Chlorine	0.5	39	0.49	<0.06	<0.05	0
020	Flow, mgd	d	44	0.6322	0.05	0.0001	d
	pH, Std Unit	9/ 4(e)	44	8.2	d	6.8	0
	Tot. Res. Chlorine	0.5	41	<0.05	<0.05	<0.05	0
041	Flow, mgd	d	37	0.3666	0.015	0.00048	d
	pH, Std Unit	9/ 4(e)	36	8.7	d	6.9	0
	Tot. Res. Chlorine	0.5	32	<0.05	<0.05	<0.05	0
044	Flow, mgd	d	40	0.1365	0.017	0.000024	d
	pH, Std Unit	9/ 4(e)	39	8.4	d	7.2	0
	Tot. Res. Chlorine	0.5	36	<0.05	<0.05	<0.05	0
057	Flow, mgd	d	44	0.1064	0.0096	0.000032	d
	pH, Std Unit	9/ 4(e)	42	8.2	d	6.9	0
	Tot. Res. Chlorine	0.5	40	<0.05	<0.05	<0.05	0
063	Flow, mgd	d	42	0.144	0.0143	0.000048	d
	pH, Std Unit	9/ 4(e)	41	8.3	d	7	0
	Tot. Res. Chlorine	0.5	39	0.08	<0.05	<0.05	0
064	Flow, mgd	d	40	0.0761	0.0068	0.000045	d
	pH, Std Unit	9/ 4(e)	41	8.4	d	7.2	0
	Tot. Res. Chlorine	0.5	39	<0.05	<0.05	<0.05	0
067	Flow, mgd	d	43	0.9778	0.07	0.0001	d
	pH, Std Unit	9/ 4(e)	41	8.2	d	7.2	0
	Tot. Res. Chlorine	0.5	39	0.68	<0.1	<0.05	0
083	Flow, mgd	d	42	0.1255	0.015	0.000048	d
	pH, Std Unit	9/ 4(e)	41	8.3	d	7.2	0
	Tot. Res. Chlorine	0.5	39	0.08	<0.05	<0.05	0
088	Flow, mgd	d	40	0.5802	0.02	0.000019	d
	pH, Std Unit	9/ 4(e)	39	11.2	d	6.8	2
	Tot. Res. Chlorine	0.5	37	<0.05	<0.05	<0.05	0
099	Flow, mgd	d	43	0.12	0.02	0.0004	d
	pH, Std Unit	9/ 4(e)	40	8.7	d	7.1	0
	Tot. Res. Chlorine	0.5	40	0.71	<0.08	<0.05	0
126	Flow, mgd	d	40	0.216	0.02	0.0001	d
	pH, Std Unit	9/ 4(e)	39	8.4	d	7.3	0
	Tot. Res. Chlorine	0.5	38	<0.05	<0.05	<0.05	0

d- not applicable (report only)
e-maximum/minimum

APPENDIX 4

HISTORICAL MONITORING AND INSPECTION
CATEGORY 2 STORMWATER OUTFALLS

Outfall	Parameter	Limits	Count	Maximum	Average	Minimun	No. Exceeding limit
004	Flow, mgd	d	44	1.008	0.1	0.0004	d
	pH, Std Unit	9/ 4(e)	42	8.8	d	7.1	0
	Tot. Res. Chlorine	0.5	39	0.25	<0.06	<0.05	0
010	Flow, mgd	d	41	0.396	0.04	0.0019	d
	pH, Std Unit	9/ 4(e)	41	8.4	d	7	0
	Tot. Res. Chlorine	0.5	39	0.12	<0.05	<0.05	0
014	Flow, mgd	d	43	2.4768	0.13	0.0011	d
	pH, Std Unit	9/ 4(e)	41	8.4	d	7.2	0
	Tot. Res. Chlorine	0.5	39	0.28	<0.07	<0.05	0
016	Flow, mgd	d	42	1.5077	0.07	0.0001	d
	pH, Std Unit	9/ 4(e)	41	8.4	d	6.9	0
	Tot. Res. Chlorine	0.5	39	0.06	<0.05	<0.05	0
019	Flow, mgd	d	42	0.742	0.06	0.0001	d
	pH, Std Unit	9/ 4(e)	41	8.7	d	7.1	0
	Tot. Res. Chlorine	0.5	39	0.49	<0.06	<0.05	0
020	Flow, mgd	d	44	0.6322	0.05	0.0001	d
	pH, Std Unit	9/ 4(e)	44	8.2	d	6.8	0
	Tot. Res. Chlorine	0.5	41	<0.05	<0.05	<0.05	0
041	Flow, mgd	d	37	0.3666	0.015	0.00048	d
	pH, Std Unit	9/ 4(e)	36	8.7	d	6.9	0
	Tot. Res. Chlorine	0.5	32	<0.05	<0.05	<0.05	0
044	Flow, mgd	d	40	0.1365	0.017	0.000024	d
	pH, Std Unit	9/ 4(e)	39	8.4	d	7.2	0
	Tot. Res. Chlorine	0.5	36	<0.05	<0.05	<0.05	0
057	Flow, mgd	d	44	0.1064	0.0096	0.000032	d
	pH, Std Unit	9/ 4(e)	42	8.2	d	6.9	0
	Tot. Res. Chlorine	0.5	40	<0.05	<0.05	<0.05	0
063	Flow, mgd	d	42	0.144	0.0143	0.000048	d
	pH, Std Unit	9/ 4(e)	41	8.3	d	7	0
	Tot. Res. Chlorine	0.5	39	0.08	<0.05	<0.05	0
064	Flow, mgd	d	40	0.0761	0.0068	0.000045	d
	pH, Std Unit	9/ 4(e)	41	8.4	d	7.2	0
	Tot. Res. Chlorine	0.5	39	<0.05	<0.05	<0.05	0
067	Flow, mgd	d	43	0.9778	0.07	0.0001	d
	pH, Std Unit	9/ 4(e)	41	8.2	d	7.2	0
	Tot. Res. Chlorine	0.5	39	0.68	<0.1	<0.05	0
083	Flow, mgd	d	42	0.1255	0.015	0.000048	d
	pH, Std Unit	9/ 4(e)	41	8.3	d	7.2	0
	Tot. Res. Chlorine	0.5	39	0.08	<0.05	<0.05	0
088	Flow, mgd	d	40	0.5802	0.02	0.000019	d
	pH, Std Unit	9/ 4(e)	39	11.2	d	6.8	2
	Tot. Res. Chlorine	0.5	37	<0.05	<0.05	<0.05	0
099	Flow, mgd	d	43	0.12	0.02	0.0004	d
	pH, Std Unit	9/ 4(e)	40	8.7	d	7.1	0
	Tot. Res. Chlorine	0.5	40	0.71	<0.08	<0.05	0
126	Flow, mgd	d	40	0.216	0.02	0.0001	d
	pH, Std Unit	9/ 4(e)	39	8.4	d	7.3	0
	Tot. Res. Chlorine	0.5	38	<0.05	<0.05	<0.05	0

d- not applicable (report only)
e-maximum/minimum

APPENDIX 4

HISTORICAL MONITORING AND INSPECTION
CATEGORY 2 STORMWATER OUTFALLS

continued

Outfall	Parameter	Limits	Count	Maximum	Average	Minimun	No. Exceeding limit
S02	Flow, mgd	d	1571	14.5482	0.2	0.00002	d
	pH, Std Unit	9/ 4(e)	87	9.9	d	6.43	1
	Tot. Res. Chlorine	0.5	22	0.12	<0.06	<0.05	0
S08	Flow, mgd	d	1669	13.068	0.17	0.000034	d
	pH, Std Unit	9/ 4(e)	73	8.77	d	6.31	0
	Tot. Res. Chlorine	0.5	2	<0.05	<0.05	<0.05	0
S10	Flow, mgd	d	42	2.5013	0.2	0.0007	d
	pH, Std Unit	9/ 4(e)	41	8	d	6.7	0
	Tot. Res. Chlorine	0.5	2	<0.05	<0.05	<0.05	0
S11	Flow, mgd	d	42	2.084	0.3	0.0003	d
	pH, Std Unit	9/ 4(e)	40	7.9	d	6.6	0
	Tot. Res. Chlorine	0.5	2	<0.05	<0.05	<0.05	0
S12	Flow, mgd	d	39	0.098	0.016	0.000036	d
	pH, Std Unit	9/ 4(e)	37	8.1	d	5.9	0
	Tot. Res. Chlorine	0.5	2	<0.05	<0.05	<0.05	0
S13	Flow, mgd	d	42	1.0987	0.2	0.0003	d
	pH, Std Unit	9/ 4(e)	49	8.86	d	6.51	0
	Tot. Res. Chlorine	0.5	2	<0.05	<0.05	<0.05	0
S17	Flow, mgd	d	57	10.5984	0.5998	0.0722	d
	pH, Std Unit	9/ 4(e)	50	8.1	d	6.9	0
	Tot. Res. Chlorine	0.5	4	<0.05	<0.05	<0.05	0
S20	Flow, mgd	d	46	2.313	0.19	0.000029	d
	pH, Std Unit	9/ 4(e)	45	8.3	d	6.5	0
	Tot. Res. Chlorine	0.5	16	0.07	<0.05	<0.05	0
S24	Flow, mgd	d	1883	113.6	2.4	0.0000067	d
	pH, Std Unit	9/ 4(e)	58	8.55	d	6.05	0
	Tot. Res. Chlorine	0.5	3	<0.05	<0.05	<0.05	0
S22	Flow, mgd	d	42	0.1296	0.02	0.0001	d
	pH, Std Unit	10/ 6(e)	41	8.3	d	6.9	0
S25	Flow, mgd	d	42	0.8	0.07	0.0002	d
	pH, Std Unit	10/ 6(e)	42	8.3	d	7	0
S26	Flow, mgd	d	43	0.324	0.06	0.0002	d
	pH, Std Unit	10/ 6(e)	41	8.2	d	6.9	0
S27	Flow, mgd	d	41	0.864	0.1377	0.000045	d
	pH, Std Unit	10/ 6(e)	41	8.4	7.6732	6.7	0
S28	Flow, mgd	d	41	0.72	0.1	0.0004	d
	pH, Std Unit	10/ 6(e)	40	8.6	d	6.8	0
S29	Flow, mgd	d	39	0.5	0.06	0.0002	d
	pH, Std Unit	10/ 6(e)	38	8.8	d	4.7	1

d- not applicable (report only)
e-maximum/minimum

APPENDIX 4

HISTORICAL MONITORING AND INSPECTION
CATEGORY 3 STORMWATER OUTFALLS

Outfall	Parameter	Count	Maximum (a)	Minimum (a)	Average (a)	Limits	Exceedances
002	Flow, mgd	121	2.399	0.0046	0.14	d	d
	pH, Std Unit	119	8.4	7.1	d	9/ 4(e)	0
	Tot. Res. Chlorin	116	0.061	<0.05	<0.05	0.5	0
034	Flow, mgd	127	0.6628	0.0228	0.136	d	d
	pH, Std Unit	126	8.3	6.9	d	9/ 4(e)	0
	Tot. Res. Chlorin	115	0.45	<0.05	<0.07	0.5	0
042	Flow, mgd	117	0.1113	0.000013	0.011	d	d
	pH, Std Unit	117	8.5	7.1	d	9/ 4(e)	0
	Tot. Res. Chlorin	114	0.42	<0.05	<0.06	0.5	0
047	Flow, mgd	140	0.1826	0.000024	0.035	d	d
	pH, Std Unit	135	8.3	7	d	9/ 4(e)	0
	Tot. Res. Chlorin	115	0.26	<0.05	<0.05	0.5	0
048	Flow, mgd	114	0.2283	0.0001	0.01	d	d
	pH, Std Unit	114	8.5	7	d	9/ 4(e)	0
	Tot. Res. Chlorin	112	0.84	<0.05	<0.06	0.5	1
054	Flow, mgd	125	0.0605	0.000038	0.0033	d	d
	pH, Std Unit	123	8.9	5.9	d	9/ 4(e)	0
	Tot. Res. Chlorin	115	<0.05	<0.05	<0.05	0.5	0
071	Flow, mgd	119	0.0342	0.0002	0.01	d	d
	pH, Std Unit	117	8.4	7	d	9/ 4(e)	0
	Tot. Res. Chlorin	115	0.22	<0.05	<0.06	0.5	0
109	Flow, mgd	137	5.76	0.0152	0.274	d	d
	pH, Std Unit	135	8.3	7.2	d	9/ 4(e)	0
	Tot. Res. Chlorin	115	0.25	<0.05	<0.07	0.5	0
113	Flow, mgd	130	0.6949	0.00000001	0.02	d	d
	pH, Std Unit	133	8.7	6.6	d	9/ 4(e)	0
	Tot. Res. Chlorin	113	0.1	<0.05	<0.05	0.5	0
114	Flow, mgd	119	1.692	0.0001	0.03	d	d
	pH, Std Unit	119	8.5	7	d	9/ 4(e)	0
	Tot. Res. Chlorin	115	0.41	<0.05	<0.06	0.5	0
S05	Flow, mgd	101	0.2592	0.0002	0.04	d	d
	pH, Std Unit	166	8.48	5.6	d	9/ 4(e)	0
	Tot. Res. Chlorin	48	0.13	<0.05	<0.05	0.5	0
S14	Flow, mgd	123	3.476	0.0011	0.2191	d	d
	pH, Std Unit	132	8.9	6.25	7.5544	9/ 4(e)	0
	Tot. Res. Chlorin	48	<0.05	<0.05	<0.05	0.5	0

d- not applicable (report only)
e-maximum/minimum

REVISED APPENDIX 5a
WATER QUALITY BASED EFFLUENT CALCULATIONS

WATER QUALITY BASED EFFLUENT CALCULATIONS
OUTFALL 200

FACILITY USDOE - Y-12 Plant
PERMIT # TN0002968

Stream (7Q10)	Stream (30Q2)	Waste Flow	Ttl. Susp. Solids	Hardness (as CaCO3)	Stream Allocation
[MGD]	[MGD]	[MGD]	[mg/l]	[mg/l]	[%]
4.730	4.730	2.980	10	142	90

	1	2	3	4	5	6	7	8
	Stream	Fish/Aqua. Life		Effluent	Fish & Aquatic Life Water Quality Criteria (7Q10)			
	Bckgrnd.	Water Quality Criteria		Fraction	In-Stream Allowable		Calc. Effluent Concentration	
EFFLUENT	Conc.	Chronic	Acute	Dissolved	Chronic	Acute	Chronic	Acute
CHARACTERISTIC	[ug/l]	[ug/l]	[ug/l]	[Fraction]	[ug/l]	[ug/l]	[ug/l]	[ug/l]
Cadmium *	1.00	0.31	2.83	0.25	1.24	11.21	**1.47**	**24.68**
Copper *	5.00	12.08	18.70	0.35	34.77	53.80	**73.81**	**118.13**
Lead *	4.00	3.68	94.40	0.18	20.00	513.32	**40.86**	**1189.56**
Nickel *	10.00	69.97	629.94	0.43	161.84	1457.12	**362.56**	**3378.64**
Silver *	1.00	NA	5.88	1.00	NA	5.88	**N/A**	**12.26**
Zinc *	5.90	159.01	157.72	0.29	552.14	547.66	**1277.25**	**1266.82**
Mercury, (T) **	0.20	0.91	1.69	1.00	0.91	1.69	**1.83**	**3.65**
Chromium (T) **	1.00	100.00	NA	1.00	100.00	N/A	**231.42**	**N/A**
Cyanide (T) **	0.00	5.20	22.00	1.00	5.20	22.00	**12.11**	**51.22**

9	10	11	12	13	14
Human Health Water Quality Criteria (30Q2)					
In-Stream Criteria			Calc. Effluent Concentration		
Organisms	ter/Organis	DWS	Organisms	ter/Organis	DWS
[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]
NA	NA	5.00	**NA**	**NA**	**10.21**
NA	N/A	NA	**NA**	**NA**	**NA**
NA	NA	5.00	**NA**	**NA**	**5.93**
4600	610	100	**#######**	**1406.11**	**218.57**
NA	NA	NA	**NA**	**NA**	**NA**
NA	NA	NA	**NA**	**NA**	**NA**
0.05	0.05	2.00	**-0.17**	**-0.17**	**4.37**
NA	NA	100.00	**NA**	**NA**	**231.42**
220000	700	200	**512275**	**1629.96**	**465.70**

* Denotes metals for which Fish & Aquatic Life Criteria are expressed as a function of total hardness. The Fish & Aquatic Life criteria for this metal are in the dissolved form at laboratory conditions.
The in-stream allowable criteria and calculated effluent concentrations are in the total recoverable form.
Hardness of Clinch River water is based on "East Fork Poplar Creek Flow Management Evaluation, November, 1995".

** The criteria for these parameters are in the total form.

Stream Background Concentrations are based on Clinch River Raw Water analyses from water plant intake, CRM 66.3.
NOTE: Water Quality criteria for stream use classifications other than Fish & Aquatic Life are based on the 30Q2 flow.

APPENDIX 5b

PROPOSED EFFLUENT LIMITS AND MONITORING REQUIREMENTS

NEW PERMIT LIMITS

TREATED PROCESS WASTEWATER

OUTFALL 501 - CENTRAL POLLUTION CONTROL FACILITY

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		note 1.	estimate
pH		range 6.0-9.0			1/batch	grab
Total suspended solids	31.0		40.0		1/batch	composite
Tot. Toxic Organics, (TTO)			2.13		note 2.	note 2.
Total dissolved solids	report		report		1/batch	composite
Oil and Grease (HEM)	10		15.0		1/batch	grab
Phosphate (as P)	report		report		1/batch	composite
Gross alpha	report		report		note 3.	mon. comp.
Gross beta	report		report		note 3.	mon. comp.
MBAS	report		report		note 2.	composite
Boron, total	report		report		1/batch	composite
Beryllium	report		report		1/batch	composite
Cadmium, total	0.075	0.16	0.15	0.40	1/batch	composite
Chromium, total	0.5	1.00	1.0	1.70	1/batch	composite
Copper, total	0.5	1.20	1.0	2.00	1/batch	composite
Lead, total	0.1	0.26	0.2	0.40	1/batch	composite
Mercury, total	report		report		1/batch	composite
Nickel, total	2.38	1.40	3.98	2.40	1/batch	composite
Silver, total	0.05	0.140	0.05	0.260	1/batch	composite
Zinc, total	1.48	0.90	2.0	1.60	1/batch	composite
Cyanide, total	0.65	0.40	1.2	0.72	1/batch	grab
Total PCB			0.001		note 2.	composite
Lithium, total	report		report		1/batch	composite
Uranium, total	report		report		monthly	composite

NOTE 1. Report per batch per day. The number of batches discharged shall be included on the DMR for the month.

NOTE 2. Analyses for TTO, MBAS and PCBs shall be conducted on a sample immediately prior to a carbon column replacement. The volatile organics part of the TTO shall be collected by grab sample. Total toxic organics shall include those parameters listed in 40 CFR Part 433 which have a reasonable expectation of being present.

NOTE 3. Radioactivity results will be reported in pCi/L. A report of the isotope specific data will be submitted to the WPC and DOEO Divisions each quarter.

NEW PERMIT LIMITS

TREATED PROCESS WASTEWATER

OUTFALL 502 WEST END TREATMENT FACILITY

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	1/batch	report	1/batch	report	3/week	instantaneous
pH		range 6.0-9.0			weekly	grab
Total suspended solids	31.0	19	40.0	36	weekly	composite
Total dissolved solids	report		report		monthly	composite
Tot. Toxic Organics, (TTO)	note 1.		2.13		annually	composite
Oil and Grease (HEM)	10		15.0		weekly	composite
Nitrate/nitrite	report		100.0		weekly	composite
Gross alpha	report		report		note 2.	monthly composite
Gross beta	report		report		note 2.	monthly composite
Cadmium, total	0.075	0.16	0.15	0.4	weekly	composite
Chromium, total	0.5	1.0	1.0	1.7	weekly	composite
Copper, total	0.5	1.2	1.0	2.0	weekly	composite
Lead, total	0.1	0.26	0.2	0.4	weekly	composite
Mercury, total	report		report		weekly	composite
Nickel, total	2.38	1.4	3.98	2.4	weekly	composite
Selenium, total			report		1/batch	composite
Silver, total	0.05	0.14	0.05	0.26	weekly	composite
Zinc, total	1.48	0.9	2.0	1.6	weekly	composite
Cyanide, total	0.65	0.4	1.2	0.72	weekly	grab
Total PCB			0.001		quarterly	composite
Lithium, total	report		report		weekly	composite
Uranium, total	report		report		monthly	composite

NOTE 1. Analyses for TTO shall be conducted on a composited sample, but the volatile organics part of the TTO shall be collected by grab sample. TTO shall include those parameters listed in 40 CFR Part 433 which have a reasonable expectation of being present.

NOTE 2. Radioactivity results will be reported in pCi/L. A report of the isotope specific data will be submitted to the Division each quarter.

NEW PERMIT LIMITS

TREATED PROCESS WASTEWATER

OUTFALL 503 STEAM PLANT WASTEWATER TREATMENT FACILITY

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow		report		report	weekly	recorder
pH		range 6.0-9.0			weekly	grab
Total suspended solids	30.0	125	40.0	417	weekly	composite
Temperature	report		report		weekly	grab
Fluoride	report		report		weekly	composite
Oil and Grease	10	63	15.0	83.4	weekly	grab
Sulfate, total	report		report		weekly	composite
Boron, total	report		report		weekly	composite
Iron, total	5.0	20.80	5.0	20.80	monthly	composite
Arsenic, total			report		monthly	composite
Beryllium			report		monthly	composite
Cadmium, total	0.075	0.16	0.15		monthly	composite
Chromium, total	0.2	0.8	0.2	0.8	quarterly	composite
Copper, total	0.2	4.17	0.4	4.17	monthly	composite
Lead, total	0.1		0.2		monthly	composite
Mercury, total	report		report		weekly	composite
Zinc, total	1.00	4.17	1.00	4.17	weekly	composite
Chloride, total	report		report		weekly	composite
Sodium, total	report		report		weekly	composite

NEW PERMIT LIMITS

TREATED PROCESS WASTEWATER

OUTFALL 512 GROUNDWATER TREATMENT FACILITY

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow		report		report	continuous	recorder
pH		range 6.0-9.0			monthly	instant's
Copper, total			report		monthly	composite
Lead, total			report		monthly	composite
Total PCB			0.001		quarterly	composite
Gross Alpha Radioactivity			report		per RMP	per RMP
Gross Beta Radioactivity			report		per RMP	per RMP

Radioactivity results will be reported in pCi/L. A report of the isotope specific data will be submitted to the Division each quarter.

NEW PERMIT LIMITS

TREATED PROCESS WASTEWATER

OUTFALL 520 LITHIUM PROCESS STEAM CONDENSATE

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	monitor and maintain records				weekly	estimate
pH		range 6.0-9.0			weekly	grab
Total dissolved solids			report		weekly	grab

Flow records shall be maintained and made available for review by State and Federal regulatory personnel with appropriate level of clearance.

NEW PERMIT LIMITS

PROCESS WASTEWATER

OUTFALL 550 EAST END MERCURY TREATMENT SYSTEM

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		weekly	instantaneous
pH		range 6.0-9.0			weekly	grab
Mercury, total	0.002		0.004		weekly	composite

Discharge is proposed for elimination in 2005.

OUTFALL 551 CENTRAL MERCURY TREATMENT SYSTEM

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		weekly	estimate
pH		range 6.0-9.0			weekly	grab
Mercury, total	0.002		0.004		weekly	composite

GROUND WATER

OUTFALL 051 - INTERIM MERCURY TREATMENT SYSTEM

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		weekly	estimate
pH		range 6.0-9.0			monthly	grab
Mercury, total	report		report		weekly	grab

NEW PERMIT LIMITS

OUTFALL 200 - HEADWATERS EF POPLAR CREEK

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		weekly	calculated *
pH		range 6.0 - 9.0			weekly	grab
Total Residual Chlorine	report		report		2/monthly	grab
Nitrate/nitrite	report		report		quarterly	composite
Oil and Grease	10		15.0		1/week	grab
Total Dissolved Solids	report		report		quarterly	composite
Gross alpha	note 1.		note 1.		note 1.	note 1.
Gross beta	note 1.		note 1.		note 1.	note 1.
Cadmium, total	0.002		0.027		monthly	composite
Lead, total	0.050		1.326		monthly	composite
Mercury, total	report		report		weekly	composite
Uranium, total	note 1.		note 1.		monthly	composite
Total PCB			report		quarterly	composite
IC 25 based on 34% effluent					quarterly	composite

Note 1: To be addressed in the Radiological Monitoring Plan.

* derived from flow measurement at downstream station C11 - see text.

NEW PERMIT LIMITS

PROCESS WASTE, COOLING WATER & STORMWATER

OUTFALL 135

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report	NA	report	NA	monthly	estimate
pH		range 6.0-9.0			monthly	grab
Total Residual Chlorine	report		report		2/monthly	grab
Cadmium, total	0.002		0.027		monthly	composite
Lead, total	0.05		1.326		monthly	composite
IC25 in 5% effluent					quarterly	composite

OUTFALL125

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		monthly	estimate
pH		range 6.0-9.0			monthly	grab
Total Residual Chlorine	report		report		2/monthly	grab
Cadmium, total	0.002		0.027		monthly	composite
Lead, total	0.050		1.326		monthly	composite
Mercury, total*	report		report		weekly*	composite
IC25 in 9% effluent					quarterly	composite

The acceptable methods for detection and reporting of total residual chlorine are referenced in Part I, Section B. Monitoring Procedures, subsection 3. Test Procedures.

***** Data obtained at this outfall by CERCLA program monitoring is acceptable.

NEW PERMIT LIMITS

PROCESS WASTEWATER

OUTFALL 055 COOLING WATER, SUMP WATER, STORMWATER

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow *	report		report		monthly	estimate
pH		range 6.0-9.0			monthly	grab
Mercury, total			0.004		weekly	grab
Total Residual Chlorine			0.5		annually	grab

* **Includes reporting of each bypass of EEMTS**

OUTFALL 109 COOLING WATER, STORMWATER

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow			report		quarterly	estimate
pH					quarterly	grab
Total Residual Chlorine			0.05		quarterly	grab

OUTFALL 021 COOLING WATER, CONDENSATE, STORMWATER

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow			report		quarterly	estimate
pH					quarterly	grab
Total Residual Chlorine			0.188		quarterly	grab

The acceptable methods for detection and reporting of total residual chlorine are referenced in Part I, Section B. Monitoring Procedures, subsection 3. Test Procedures.

NEW PERMIT LIMITS

INSTREAM MONITORING POINT

STATION EFP (former Station 17)

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report	NA	report	NA	continuous	recorder
pH		range 6.0-9.0			daily	grab
Temperature	report		report		daily	grab
Dissolved Oxygen	report		report		2/month	grab
Ammonia	report		report		2/month	grab
Total Suspended Solids	report		report		2/month	composite[1]
Mercury	report		report		2/month	composite[1]
Cadmium, total	report		report		2/month	composite[1]
Chromium, total	report		report		2/month	composite[1]
Copper, total	report		report		2/month	composite[1]
Lead, total	report		report		2/month	composite[1]
Magnesium, total	report		report		2/month	composite[1]
Nickel, total	report		report		2/month	composite[1]
Silver, total	report		report		2/month	composite[1]
Zinc, total	report		report		2/month	composite[1]
Cyanide, total	report		report		2/month	grab

[1] Composite sample collected over a 24-hour minimum time period up to a maximum of 7-day period.

STATION C11 (former OUTFALL 201)

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		2/monthly	estimate
pH		range 6.0 - 9.0			2/monthly	grab
Total suspended solids	report		report		2/monthly	composite
Temperature	report		30.5 C		2/monthly	grab
Total Residual Chlorine	0.011		0.019		2/monthly	grab
Mercury, total			report		2/monthly	composite
Aluminum, total			report		monthly	composite
Antimony, total			report		monthly	composite
Arsenic, total			report		monthly	composite
Barium,total			report		monthly	composite
Boron, total			report		monthly	composite
Beryllium			report		monthly	composite
Cadmium, total			report		monthly	composite
Cobalt, total			report		monthly	composite
Chromium, total			report		monthly	composite
Copper, total			report		monthly	composite
Lead, total			report		monthly	composite
Lithium, total			report		monthly	composite
Magnesium, total			report		monthly	composite
Molybdenum, total			report		monthly	composite
Nickel, total			report		monthly	composite
Silver, total			report		monthly	composite
Strontium, total			report		monthly	composite
Thallium, total			report		monthly	composite
Vanadium, total			report		monthly	composite
Zinc, total			report		monthly	composite
Phosphorus, total			report		monthly	composite
Nitrate-nitrite			report		monthly	composite
Nitrogen, Total			report		monthly	composite
Uranium, total			report		monthly	composite
Oil & Grease (HEM)			report		monthly	composite
MBAS surfactants			report		monthly	composite

NEW PERMIT LIMITS

OUTFALL S06

EFFLUENT CHARACTERISTIC	MONTHLY AVG. CONC. (mg/l)	MONTHLY AVG. AMT. (lb/day)	DAILY MAX. CONC. (mg/l)	DAILY MAX. AMT. (lb/day)	MON. REQUIREMENTS MSRMNT. FRQNCY.	MON. REQUIREMENTS SAMPLE TYPE
Flow				report	annually	estimate
pH				range 6.0-9.0	annually	grab
Nitrate/nitrite			report		annually	grab
Aluminum, total			report		annually	grab
Antimony, total			report		annually	grab
Arsenic, total			report		annually	grab
Barium,total			report		annually	grab
Boron, total			report		annually	grab
Beryllium			report		annually	grab
Cadmium, total			report		annually	grab
Cobalt, total			report		annually	grab
Chromium, total			report		annually	grab
Copper, total			report		annually	grab
Lead, total			report		annually	grab
Lithium, total			report		annually	grab
Magnesium, total			report		annually	grab
Molybdenum, total			report		annually	grab
Nickel, total			report		annually	grab
Silver, total			report		annually	grab
Strontium, total			report		annually	grab
Thallium, total			report		annually	grab
Vanadium, total			report		annually	grab
Zinc, total			report		annually	grab

NEW PERMIT LIMITS

OUTFALL S19

EFFLUENT CHARACTERISTIC	MONTHLY		DAILY		MON. REQUIREMENTS	
	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow				report	annually	estimate
pH		range 6.0-9.0			annually	grab
Total suspended solids	report		report		annually	grab
Total dissolved solids	report		report		annually	grab
Aluminum, total			report		annually	grab
Antimony, total			report		annually	grab
Arsenic, total			report		annually	grab
Barium,total			report		annually	grab
Boron, total			report		annually	grab
Beryllium			report		annually	grab
Cadmium, total			report		annually	grab
Cobalt, total			report		annually	grab
Chromium, total			report		annually	grab
Copper, total			report		annually	grab
Lead, total			report		annually	grab
Lithium, total			report		annually	grab
Magnesium, total			report		annually	grab
Molybdenum, total			report		annually	grab
Nickel, total			report		annually	grab
Silver, total			report		annually	grab
Strontium, total			report		annually	grab
Thallium, total			report		annually	grab
Vanadium, total			report		annually	grab
Zinc, total			report		annually	grab

NEW PERMIT LIMITS

OUTFALL S24*

EFFLUENT CHARACTERISTIC	MONTHLY		DAILY		MON. REQUIREMENTS	
	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
pH		range 6.0-9.0			quarterly	grab
Total suspended solids			report		quarterly	grab
Mercury, total			report		quarterly	grab
Total PCB			report		quarterly	grab
Aluminum, total			report		quarterly	grab
Antimony, total			report		quarterly	grab
Arsenic, total			report		quarterly	grab
Barium,total			report		quarterly	grab
Boron, total			report		quarterly	grab
Beryllium			report		quarterly	grab
Cadmium, total			report		quarterly	grab
Cobalt, total			report		quarterly	grab
Chromium, total			report		quarterly	grab
Copper, total			report		quarterly	grab
Lead, total			report		quarterly	grab
Lithium, total			report		quarterly	grab
Magnesium, total			report		quarterly	grab
Molybdenum, total			report		quarterly	grab
Nickel, total			report		quarterly	grab
Silver, total			report		quarterly	grab
Strontium, total			report		quarterly	grab
Thallium, total			report		quarterly	grab
Vanadium, total			report		quarterly	grab
Zinc, total			report		quarterly	grab
Phosphorus, total			report		quarterly	grab
Nitrate-nitrite			report		quarterly	grab
Nitrogen, Total			report		quarterly	grab
Uranium, total			report		quarterly	grab

* Data obtained at this outfall by CERCLA program monitoring is acceptable.

NEW PERMIT LIMITS

CATEGORY I OUTFALLS

Outfalls: 003, 006, 007, 033, 041, 044, 045, 046, 057, 058, 062, 063, 064, 086, 087, 102, 110, 134, S06, S18, and S26

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		annual	estimate
pH		range 6.0-9.0			annual	grab

CATEGORY II - OUTFALLS

Outfalls: 002, 004, 014, 016, 019, 020, 047, 048, 054, 067, 083, 088, 099, 126

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		semi-annual	estimate
pH		range 6.0-9.0			semi-annual	grab
Total Residual Chlorine			0.5		semi-annual	grab

CATEGORY III - OUTFALLS

Outfalls: 034, 042, 071, 113, 114

	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
EFFLUENT CHARACTERISTIC	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMT. (lb/day)	MSRMNT. FRQNCY.	SAMPLE TYPE
Flow	report		report		semi-annual	estimate
pH		range 6.0-9.0			semi-annual	grab
Total Residual Chlorine			0.5		semi-annual	grab

The acceptable methods for detection and reporting of total residual chlorine are referenced in Part I, Section B. Monitoring Procedures, subsection 3. Test Procedures.