

**Donald C. Cook Nuclear Plant Unit 1 and 2**

**Application for Renewal of  
National Pollutant Discharge Elimination  
System Permit**

**March 28, 2003**

# NPDES Permit Renewal

Indiana Michigan  
Power Company  
Cook Nuclear Plant  
One Cook Plant  
Bridgman MI 49106  
616 465 5901



CERTIFIED MAIL #7000 0520 0014 6367 3082

Mr. Greg Danneffel, District Supervisor  
Michigan Department of Environmental Quality  
Surface Water Quality Division  
7953 Adobe Road  
Kalamazoo, MI 49009

March 28, 2003

Subject: NPDES Permit MI0005827 Application

Dear Mr. Danneffel:

Enclosed is the Industrial and Commercial Wastewater Discharge Application for renewal of the Donald C. Cook Nuclear Plant National Pollutant Discharge Elimination System (NPDES) Permit. This application is being submitted 180 days prior to the expiration of the present permit.

During the term of the present permit, several permit modifications were made to improve Cook Nuclear Plant operations. We appreciate your efforts in these permit modifications.

If there are any questions, please contact me at (269) 456-5901 ext. 1153 or Blair Zordell at (269) 465-5901 ext. 2006.

Sincerely,

A handwritten signature in cursive script, appearing to read 'John Carlson'.

John Carlson  
Environmental Manager

Enclosure

c: US NRC per App. B. T.S.

bc: NPDES Permit  
K. D. Mack  
C. E. Hawk  
MDEQ File w/o Attachments  
Annual Operating Report  
NDM (2003-387), Mail Zone 1

# Section I



Michigan Department of Environmental Quality - Water Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
**SECTION I - General Information**

This information is required by the Part 21 Rules of Michigan Act 451, Public Acts of 1994, as amended, Part 31. A municipality, business, or industry which violates the Part 21 Rules may be enjoined by action commenced by the Attorney General in a court of competent jurisdiction.  
See the facing page for instructions on completing pages 1 and 2. To submit additional information see page ii, item 8

PLEASE TYPE OR PRINT

<b>1</b>	NPDES PERMIT NUMBER MI 0005827		DEQ USE ONLY Permit ID # : _____		
<b>2. APPLICANT</b>	Applicant Name Indiana Michigan Power Company				
	Address One Cook Place		Address 2 or P.O. Box		
	City Bridgman	State MI	ZIP Code 49106		
	Telephone (with area code) (269) 465-5901		FAX (with area code) (269) 466-2550		
<b>3. FACILITY</b>	Facility Name 1 Donald C Cook Nuclear Plant				
	Facility Name 2				
	Facility Name 3				
	Street Address (do not use a P.O. Box Number) One Cook Place				
	City Bridgman	State MI	ZIP Code 49106		
	Telephone (with area code) (269) 465-5901		FAX (with area code) (269) 466-2550		
<b>4. CONTACTS</b>	<input type="checkbox"/> Application Contact <input checked="" type="checkbox"/> Facility Contact <input checked="" type="checkbox"/> Discharge Monitoring Reports <input checked="" type="checkbox"/> Storm Water Billing <input type="checkbox"/> Biosolids Billing	First Name John		Last Name Carlson	
		Title Environmental Manager		Business	
		Address 1 Donald C Cook Nuclear Plant		Address 2 One Cook Place	
		City Bridgman	State MI	Zip Code 49106	
		Telephone (with area code) (269) 465-5901 x 1153	FAX (with area code) (269) 466-2550	e-mail address jpcarlson@aep.com	
	<input checked="" type="checkbox"/> Application Contact <input type="checkbox"/> Facility Contact <input type="checkbox"/> Discharge Monitoring Reports <input type="checkbox"/> Storm Water Billing <input type="checkbox"/> Biosolids Billing	First Name Blair		Last Name Zordell	
		Title Environmental Specialist Sr		Business	
		Address 1 Donald C. Cook Nuclear Plant		Address 2 One Cook Place	
		City Bridgman	State MI	Zip Code 49106	
		Telephone (with area code) (269) 465-5901 x 2006	FAX (with area code) (269) 466-2550	e-mail address bkzordell@aep.com	
	<input type="checkbox"/> Application Contact <input type="checkbox"/> Facility Contact <input type="checkbox"/> Discharge Monitoring Reports <input type="checkbox"/> Storm Water Billing <input type="checkbox"/> Biosolids Billing	First Name		Last Name	
		Title		Business	
		Address 1		Address 2	
		City	State	Zip Code	
		Telephone (with area code)	FAX (with area code)	e-mail address	

Michigan Department of Environmental Quality- Water Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
 SECTION I - General Information

PLEASE TYPE OR PRINT

FACILITY NAME Donald C Cook Nuclear Plant	NPDES PERMIT NUMBER MI0005827
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5. PERMIT ACTION REQUESTED (Check one box only) (see instructions page iv, item 5)

☐ **NEW USE** a proposed discharge OR an existing discharge that is currently unpermitted.  
☒ **REISSUANCE** of current permit.  
☐ **MODIFICATION** of current permit. Attach a description of the proposed modification.

Note: Applications for New Use discharges and applications for either Reissuance or Modification that include an increased loading of pollutants to the receiving water must submit a Rule 98 Demonstration with the application See Item 6 below.

6. RULE 98 - ANTIDegradation DEMONSTRATION (see instructions page iv, item 6)

In accordance with Rule 323.1098 of the Michigan Water Quality Standards, the permittee must submit an antidegradation demonstration for any new or increased loading of pollutants to the surface waters of the state. For assistance completing this item call the Permits Section.

Will this discharge be an increased loading of pollutants to the surface waters of the state?

☐ Yes, submit an antidegradation demonstration (refer to Rule 323.1098 on page 4 of the appendix for instructions).  
☒ No, Continue with Item 7.

7. ADDITIONAL FACILITY INFORMATION (see instructions on page iv, item 7)

A Is the treatment facility within municipal boundaries? ☐ Yes ☒ No

B County Berrien	Township Lake
C $\frac{1}{4}$ , $\frac{1}{4}$ SW NW	Section 06
D Latitude 41 58' 30"	Longitude 86 34' 30"

8. CERTIFIED OPERATOR Does the facility have a properly certified operator? ☒ Yes ☐ No (see instructions on page iv)

Operator's Name Blair Zordell	Operator's Telephone (269) 465-5901 x 2006
Certification Number: 4537	Certification Classification(s): A-1d, A-1h, A-2e, B-1b.

9. OTHER ENVIRONMENTAL PERMITS

Provide the information requested below for any other federal, state or local environmental permits in effect or applied for at the time of submittal of this application form, including, but not limited to, permits issued under any of the following programs Air Pollution Control, Hazardous Waste Management, Wetlands Protection, Soil Erosion and Sedimentation Control, and other NPDES permits. To submit additional information see page ii, item 8.

Issuing Agency	Permit or COC Number	Permit Type
MDEQ-Air Quality Division	544-97	Air Use Permit
MDEQ-Air Quality Division	460-93	Air Use Permit
MDEQ-WMD	M 00988	Discharge To Groundwater
Berrien County Drain Commission	3449R	Soil and Erosion Permit
MDEQ-Geological and Land Management Division	02-11-0111-P	Part 325 /353
USEPA	MID098647621	Hazardous Waste Waste ID
Berrien County Drain Commission	3298	Soil and Erosion Permit
MDEQ-Geological and Land Management Division	01-11-0069-P 98-12-0414-P	Crit Dne/Sub Lands

## Wastewater Discharge Permit Application

## SECTION I - General Information

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Issuing Agency	Permit or COC Number
MDEQ –Geological and Land Management Division	94-BR-321-C
US Army Corps of Engineers	69-056-004-7
MDEQ –Geological and Land Management Division	02-11-0045-P
Permit Type Right of Way Vegetation Control- Critical Dune Permit Dept of the Army Permit Part 323 Shorelands Protection and Management Part 353 Sand Dune Protection and Management.	



Michigan Department of Environmental Quality- Water Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
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**10. WATER FLOW DIAGRAM AND NARRATIVE DESCRIPTION**

Provide a flow diagram (using 8½" x 11" paper if possible) showing the wastewater flow through the facility (from intake through discharge) including all processes, treatment units and bypass piping and include a narrative description that explains the diagram. Show all operations contributing wastewater and the locations of flow meters, chemical feeds, monitoring points and discharge points. The water balance shall show daily average flow rates at intake and discharge points and approximate daily flow rates between treatment units including influent and treatment rates. Use actual measurements whenever available, otherwise use the best estimate. Show all significant losses of water to products, atmosphere and discharge. In addition provide a flow diagram for any storm water discharges from secondary structures that are required by state or federal law, and for storm water runoff from any Site of Environmental Contamination pursuant to Part 201 of the Michigan Act. **Do not send blueprints.**

Do the treatment facility processes described above, include any lagoons or ponds used for wastewater treatment or storage? ☒ Yes ☐ No  
 If yes, include the ponds or lagoons in the flow diagram.

**Municipal Facilities** - Include a narrative that briefly describes the history of the wastewater treatment facility and collection system, including the original construction, the facility improvements that have been made, future plans for upgrade, the location of all constructed emergency overflows and other pertinent information.

**Industrial and Commercial Facilities** - The line diagram shall include all operations contributing wastewater including process and production areas, sanitary flows, cooling water and storm water runoff. **Also include a narrative** that provides a brief description of the nature of the business and the manufacturing processes

**ATTACH THIS INFORMATION TO THIS APPLICATION. PLEASE DO NOT BIND THIS INFORMATION.**

**11. MAP OF FACILITY AND DISCHARGE LOCATION**

Provide a detailed map on 8½" x 11" paper showing the location of the existing or proposed facility, wastewater and biosolid treatment system(s), and wastewater monitoring and discharge points into receiving waters (including bypasses). Include the exact location of the wastewater monitoring and discharge point(s) and all areas through which the discharge flows (e.g. wetlands, open drains, storm sewers), if applicable, between the discharge point and the receiving water. If the discharge is to a storm sewer, label the storm sewer and show its flow path to the receiving water. Also include the location of any water supply intakes or wells and groundwater monitoring wells. This map shall be a United States Geological Survey Quadrangle (7 5 minute series) or other map of comparable detail, scale and quality (which shows surface water bodies, roads, bathing beaches and other pertinent landmarks). **The minimum area this map shall encompass is approximately one mile beyond property boundaries.**

**ATTACH THIS INFORMATION TO THIS APPLICATION.**

**12. CONTRACT LABORATORY THAT PROVIDE ANALYTICAL SUPPORT**

Provide the name and address of each contract laboratory or consulting firm that performed any analyses submitted as part of this application. To submit additional information see page II, item 8.

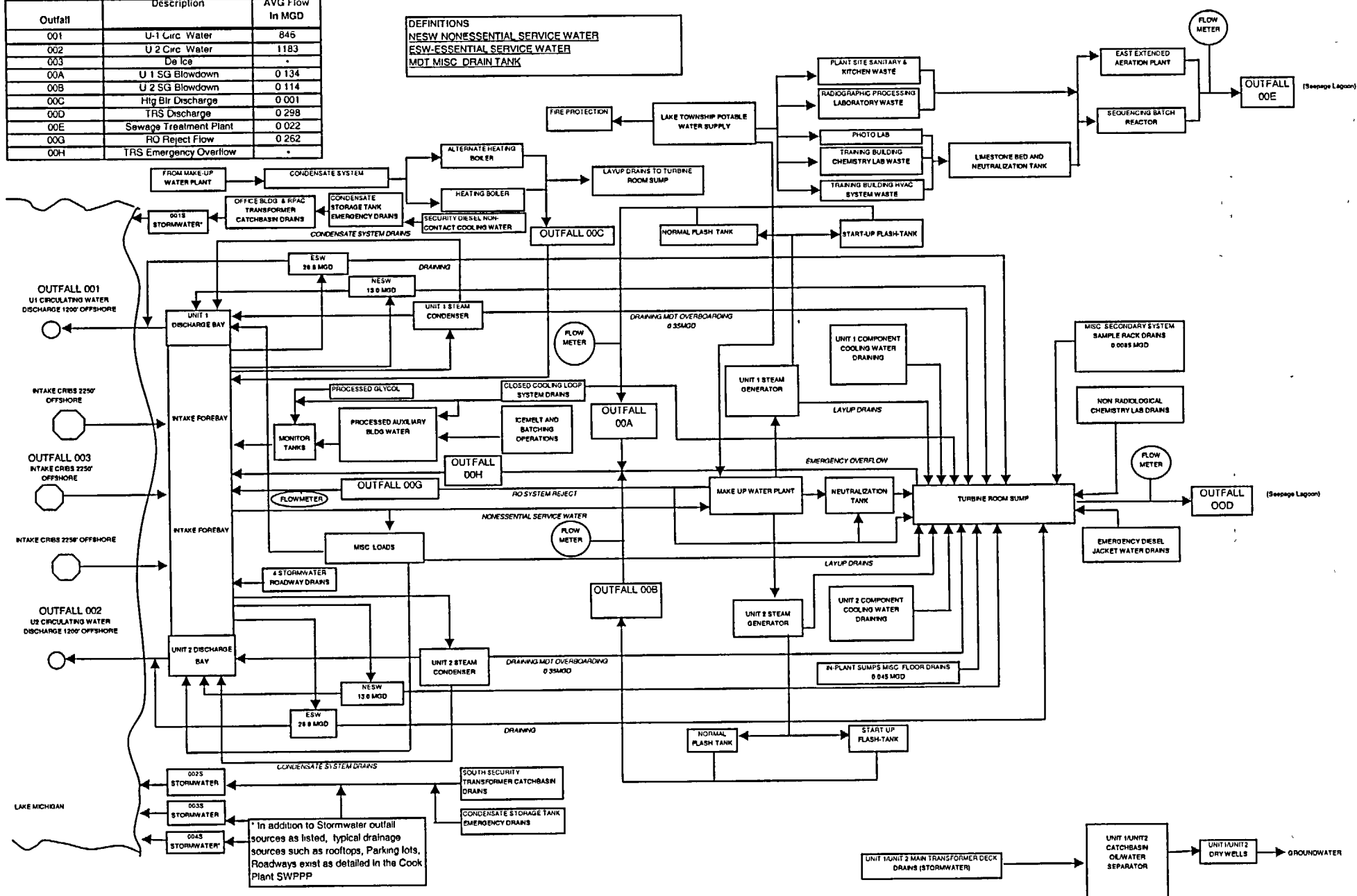
Laboratory Name John E. Dolan Labs		Laboratory Name General Engineering Labs	
Street Address 4001 Bixby Road		Street Address 2040 Savage Road	
City Groveport, Ohio		City Charleston, South Carolina	
Telephone (with area code) (614) 836-4236	Fax (with area code) (614) 836-4168	Telephone (with area code) (843) 556-8171	Fax (with area code) (843) 766-1178
Analysis Performed Metals, TOC, SO <sub>4</sub> , BOD <sub>5</sub> , Cyanide, TSS, NH <sub>3</sub>		Analysis Performed Metals, TOC, SO <sub>4</sub> , BOD <sub>5</sub> , Cyanide, TSS, NH <sub>3</sub>	
Laboratory Name Belmonte Park Environmental Laboratories		Laboratory Name Cook Nuclear Plant	
Street Address 11 E. Main St.		Street Address One Cook Place	
City Dayton, Ohio		City Bridgman, Michigan	
Telephone (with area code) (937) 837-3744	Fax (with area code) NA	Telephone (with area code) (269) 465-5901	Fax (with area code) (269) 466-2550
Analysis Performed Table 2 Analyses		Analysis Performed pH, TRC, Temp, Ethanolamine, Hydrazine, SO <sub>4</sub> , Metals, TSS	

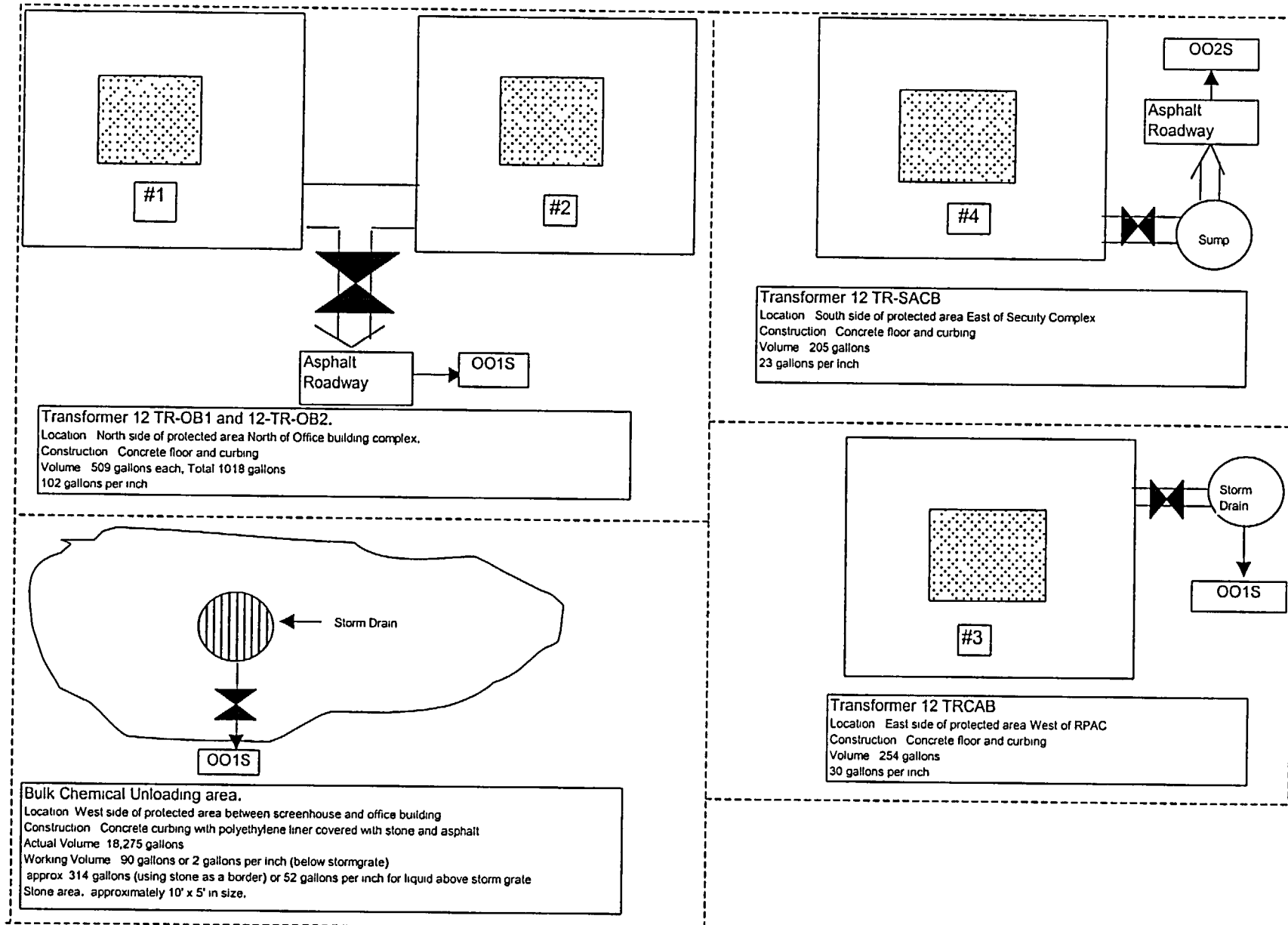
# Waste Flow Diagram & Narrative

# WASTEWATER FLOW DIAGRAM DONALD C. COOK NUCLEAR PLANT

Outfall	Description	AVG Flow In MGD
001	U-1 Circ Water	845
002	U-2 Circ Water	1183
003	De Ice	*
00A	U-1 SG Blowdown	0.134
00B	U-2 SG Blowdown	0.114
00C	Htg Blr Discharge	0.001
00D	TRS Discharge	0.298
00E	Sewage Treatment Plant	0.022
00G	RO Reject Flow	0.262
00H	TRS Emergency Overflow	*

DEFINITIONS  
 NESW NON-ESSENTIAL SERVICE WATER  
 ESW-ESSENTIAL SERVICE WATER  
 MDT MISC. DRAIN TANK





**SECTION I, ITEM 10 Cont'd**  
**NPDES Waste Stream Narrative**

This narrative describes all outfalls discharging to Lake Michigan. Flows are based on a review of previous NPDES applications, Plant system descriptions, or previously submitted Discharge Monitoring Reports (DMR). The chemical additives described below may include a manufacturer's name as an example of the type of product used in a specific system. Indiana Michigan Power may substitute vendors of chemical additives provided that the chemical ingredients are similar. Discharge values are based on maximum release rates and volumes, dilution rates are based on a minimum number of pumps running.

**OUTFALL 001 - Unit 1 Circulating Water Discharge**

Outfall 001 is a non-contact cooling water discharge. The majority of non-contact cooling water (Circulating Water System, ~690,000 GPM) is used to condense the steam exhausting from steam driven turbines. Non-contact cooling water is drawn from Lake Michigan approximately one-half mile from shore through three 16 ft. diameter tunnels. Water enters the tunnels via intake cribs at an approximate velocity of 1.3 feet per second. The water enters to a forebay where it is screened to remove large debris that may be entrained in the water. It is routed through the Unit 1 condensers and then discharged to Lake Michigan through a 16 foot diameter tunnel. The water exits the tunnels through high velocity discharges at a rate of approximately 13 feet per second approximately 1/4 mile from shore. Outfall 001 also includes internal Outfalls (as designated by the Michigan Department of Environmental Quality) steam generator Blowdown (00A, 00B), Plant Heating Boiler (00C), Reverse Osmosis Unit (00G), and the Turbine Room Sump Emergency Overflow (00H) described in detail later in this document.

Outfall 001 also may contain the effluent flow from both Units' Essential Service Water (ESW) systems, both Units' Non-Essential Service Water (NESW) system, and monitor tank releases. ESW (~40,000 GPM) is Lake Michigan water taken from the forebay that is used to provide cooling to safety-related equipment. NESW (~18,000 GPM) is also Lake Michigan water taken from the forebay used for

non-contact cooling for various plant systems including oil coolers, a source of water for the demineralized makeup system (MUP), and a water supply for non-safety related equipment. Monitor tank releases (~15,000 to 20,000 gallons per event) are regulated by the NRC and consist of wastewater from various system and equipment leakage that may be generated within the auxiliary building area. Minor leakage from systems containing lube oil, hydrazine, carbohydrazide, ethanolamine or closed-loop cooling systems containing a maximum concentration of gluteraldehyde (100 ppm), methyl (bis) thiocyanate (10 ppm), tolyltriazole (60 ppm), Molybdate (1000 ppm), and nitrite (1200 ppm), may be discharged via monitor tank releases.

The non-contact cooling water for the Circulating Water, the ESW and the NESW, and Miscellaneous Sealing and Cooling Water Systems is treated for biological control using sodium hypochlorite. This same water is periodically treated using a non-oxidizing biocide to eradicate zebra mussels from the cooling systems. The biocides (Betz Spectrus CT-1300, Betz CT-4, Calgon H-130M, Calgon EVAC and NALCO Macro-Trol 9380) are all polyquats, and are used as required to protect plant systems while meeting water quality based effluent limits. The treatments can be directed to various critical plant systems from the intake structures through the entire plant cooling system, including the Circulating Water System, ESW and NESW systems and other non-contact cooling water. The biocide may be added to the systems via a chemical injection pipeline through a ring header located inside the intake crib, or directly applied at a specific system. A chemical injection pipeline is installed inside the intake piping and is designed to feed chemicals from inside the plant. The intake chemical injection header may be stored with chemical inside the pipe to prevent zebra mussel infestation. The header may also be leak checked using approved dyes such as fluorescein, or other indicators such as Nalco Trasar 23299. Non-contact cooling systems biocide treatments are dependent upon zebra mussel infestation. Concentrations and chemical feed points are chosen to minimize the amount of biocide required and to maximize the efficacy on zebra mussels. Bentonite clay may be added to detoxify the biocide prior to discharge. The plant non-contact cooling water systems may be treated concurrently or individually to allow more efficient use of chemicals. Plant systems are treated to assure safe operation of the nuclear generating units.

The piping used to apply chemicals is regularly cleaned of calcium carbonate scale buildup. A small amount of weak acid cleaner such as Betz FerroQuest FQ LP 7200 may be used to remove accumulated carbonate scale deposits. The accumulated deposits will be discharged via Outfalls 001/003. Circulating water will dilute the weak acid prior to discharge to Lake Michigan.

Condensate flushes are performed periodically to purge the plant's secondary water system from layup chemistry specifications during shutdown conditions to startup chemistry specifications prior to startup of the unit. Water containing up to 4 ppm hydrazine [Betz Cortrol OS5035, Betz Cortrol OS5010, NALCO 19H], 10 ppm carbohydrazide (NALCO 1250 plus, or equivalent), 100 ppm ethanolamine (Betz Powerline 1440, Betz Powerline 1480, NALCO 92UM001), is overboarded to Outfall 001 as required to remove contaminants to meet desired startup secondary Chemistry specifications. This flowrate averages 70 GPM, but may reach 600 GPM for short periods of time. The flowrate is dependent on chemistry specification parameters and makeup water availability. The maximum output from the MUP is approximately 600 GPM or 864,000 GPD. (See Outfalls 00A, 00B for further description.)

Monitor tanks receive treated water from the auxiliary building radioactive waste removal system and other sources such as ice production and removal processes from the ice condenser systems and other radioactively contaminated wastes generated at the facility. This system handles wastes generated from the reactor coolant pump seal leakoffs, the refueling cavity water, equipment leaks, floor drains, valve stem leakoffs, system sampling, and waste sample solutions. It also handles laboratory wastes from the radiochemistry analysis in the hot chemical laboratory, system equipment drains, non-contact cooling water, ice production/removal and decontamination processes and any contaminated liquid waste generated in the auxiliary building area. The wastes are collected in one of several tanks and are treated when enough water is collected. The treatment utilizes a demineralizer system to minimize radioactive contaminants. A small amount of wastewater may bypass the treatment because it cannot be processed by resin.

Other special drains of non-radioactive process water systems such as Component Cooling Water system flushes with biocides such as gluteraldehyde (100 ppm), methyl (bis) thiocyanate (10 ppm), tolyltriazole (60 ppm), Molybdate (1000 ppm) and nitrite (1200 ppm), and borated icemaking/ice removal operations, can be routed directly to the plant's monitor tanks without treatment. For maintenance purposes to prevent microbial growth, Component Cooling Water flushes are performed generating approximately 281,000 gallons per year of flushwater to the monitor tanks.

Borated icemaking/ice removal operations occur for maintenance of the plant's ice condenser systems. This process produces a solution of sodium tetraborate (approximately 2200 ppm as boron) that can be drained to the monitor tanks. This process takes place approximately every 18 months and may produce up to 10,000 gallons of sodium tetraborate solution.

Both the treated wastewater and the special drains are accumulated in the monitor tanks and sampled to ensure the waste meets the radiological requirements prior to being discharged into the Circulating Water System.

Periodically, due to equipment leaks and/or system upsets, a waste stream is generated that contains radioactively contaminated ethylene glycol and water. Incidental amounts of ethylene glycol generated from equipment leaks may be drained directly to the monitor tanks or treated by the radwaste processing system. Small amounts of ethylene glycol may be discharged to outfalls 001, 002, or 003.

Sulfur hexafluoride gas (SF<sub>6</sub>) is utilized in the non-contact cooling water systems at the plant to detect leaks in various components such as the condensers. The gas is injected in the cooling water stream and discharged to outfalls 001, 002 or 003 at less than 54 u/l.

Aryl sulfate liquid (NALCO Trasar 23299) is utilized in the non-contact cooling water systems at the plant to determine flow through various parts of the system. The liquid is injected into the service water system to reach a target concentration of approximately 2 mg/l. The service water is discharged to Outfalls 001, 002, or 003, which would, in turn, discharge at less than 0.15 mg/l. The liquid is also injected into the circulating water system to reach a target concentration of approximately 2 mg/l.

Control Room Air Conditioning (CRAC) testing: Approximately 1440 gallons/yr. of CRAC water may mix with ESW and then be discharged to the forebay during a monthly test of the system. CRAC water is demineralized water, and may contain up to: 2000 ppm nitrite [Calgon LCS 60, Betz Corrshield NT 4205, BETZ CORRSHIED NT 4201, Betz Corrshield NT 4203, or equivalent], 100 ppm gluteraldehyde [from Betz Biotrol 107 (Spectrum NX 1105), Calgon H-300, or equivalent], 60 ppm tolyltriazole [from Calgon LCS-60, Betz Copper-Trol Cu-1, Betz Corrshield NT 4205, BETZ CORRSHIED NT 4201, Betz Corrshield NT 4203, or equivalent], 10 ppm methyl (bis) thiocyanate (from Betz 3610), 1000 ppm molybdate from Betz Corrshield MD 4103 and 25 ppm aryl sulfate (from NALCO 22199).



Three roadway storm drains route small amounts of stormwater from a small section of roadway that traverses over the Circulating Water Forebay. The three storm drains are designed to route accumulated stormwater from this small roadway to the forebay below. A small amount of de-icing compound used on this section of road could potentially enter these small (Approximately 8") gratings. Screened material collected from the plant's intakes is also stored in this area in designated trash dumpsters. Fish exudates are now drained to the forebay as recommended by the MDEQ stormwater and NPDES inspection team (M. Fields and J. Molloy 1997).

During upset conditions it is possible to overflow the contents of the Turbine Room Sump (See Outfall 00H) to Outfalls 001, 002 and/or 003 if the flow path to the on-site absorption pond cannot be used.

#### OUTFALL 002 - Unit 2 Circulating Water Discharge

Outfall 002 is a non-contact cooling water discharge. The majority of non-contact cooling water (Circulating Water System, ~920,00 GPM) is used to condense the steam exhausting from steam driven turbines. Non-contact cooling water is drawn from Lake Michigan approximately one-half mile from shore through three 16 ft. diameter tunnels. Water enters the tunnels via intake cribs at an approximate velocity of 1.3 feet per second. The water enters to a forebay where it is screened to remove large debris that may be entrained in the water. It is routed through the Unit 2 condensers and then discharged to Lake Michigan through an 18 foot diameter tunnel. The water exits the tunnels through high velocity discharges at a rate of approximately 13 feet per second approximately 1/4 mile from shore. Outfall 002 also includes internal Outfalls (as designated by the Michigan Department of Environmental Quality) steam generator Blowdown (00A, 00B), Plant Heating Boiler (00C), Reverse Osmosis Unit (00G), and the Turbine Room Sump Emergency Overflow (00H) described in detail later in this document.

Outfall 002 also may contain the effluent flow from both Units' Essential Service Water (ESW) systems, both Units' Non-Essential Service Water (NESW) system, and monitor tank releases. ESW (~40,000 GPM) is Lake Michigan water taken from the forebay that is used to provide cooling to safety-related equipment. NESW (~18,000 GPM) is also Lake Michigan water taken from the forebay used for

non-contact cooling for various plant systems including oil coolers, a source of water for the demineralized makeup system (MUP), and a water supply for non-safety related equipment. Monitor tank releases (~15,000 to 20,000 gallons per event) are regulated by the NRC and consist of wastewater from various system and equipment leakage that may be generated within the auxiliary building area. Minor leakage from systems containing lube oil, hydrazine, carbohydrazide, ethanolamine or closed-loop cooling systems containing a maximum concentration of gluteraldehyde (100 ppm), methyl (bis) thiocyanate (10 ppm), tolyltriazole (60 ppm), Molybdate (1000 ppm), and nitrite (1200 ppm), may be discharged via monitor tank releases.

The non-contact cooling water for the Circulating Water, the ESW and the NESW, and Miscellaneous Sealing and Cooling Water Systems is treated for biological control using sodium hypochlorite. This same water is periodically treated using a non-oxidizing biocide to eradicate zebra mussels from the cooling systems. The biocides (Betz Spectrus CT-1300, Betz CT-4, Calgon H-130M, Calgon EVAC and NALCO Macro-Trol 9380) are all polyquats, and are used as required to protect plant systems while meeting water quality based effluent limits. The treatments can be directed to various critical plant systems from the intake structures through the entire plant cooling system, including the Circulating Water System, ESW and NESW systems and other non-contact cooling water. The biocide may be added to the systems via a chemical injection pipeline through a ring header located inside the intake crib, or directly applied at a specific system. A chemical injection pipeline is installed inside the intake piping and is designed to feed chemicals from inside the plant. The intake chemical injection header may be stored with chemical inside the pipe to prevent zebra mussel infestation. The header may also be leak checked using approved dyes such as fluorescein, or other indicators such as Nalco Trasar 23299. Non-contact cooling systems biocide treatments are dependent upon zebra mussel infestation. Concentrations and chemical feed points are chosen to minimize the amount of biocide required and to maximize the efficacy on zebra mussels. Bentonite clay may be added to detoxify the biocide prior to discharge. The plant non contact cooling water systems may be treated at the concurrently or individually to allow more efficient use of chemicals. Plant systems are treated to assure safe operation of the nuclear generating units.

The piping used to apply chemicals is regularly cleaned of calcium carbonate scale buildup. A small amount of weak acid cleaner such as Betz FerroQuest FQ LP 7200 may be used to remove accumulated carbonate scale deposits. The accumulated deposits will be discharged via Outfalls 002/003. Circulating water will dilute the weak acid prior to discharge to Lake Michigan.

Condensate flushes are performed periodically to purge the plant's secondary water system from layup chemistry specifications during shutdown conditions to startup chemistry specifications prior to startup of the unit. Water containing up to 4 ppm hydrazine [Betz Cortrol OS5035, Betz Cortrol OS5010, NALCO 19H], 10 ppm carbohydrazide (NALCO 1250 plus, or equivalent), 100 ppm ethanolamine (Betz Powerline 1440, Betz Powerline 1480, NALCO 92UM001), is overboarded to Outfall 002 as required to remove contaminants to meet desired startup secondary Chemistry specifications. This flowrate averages 70 GPM, but may reach 600 GPM for short periods of time. The flowrate is dependent on chemistry specification parameters and makeup water availability. The maximum output from the MUP is approximately 600 GPM or 864,000 GPD. (See Outfalls 00A, 00B for further description.)

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Periodically, due to equipment leaks and/or system upsets, a waste stream is generated that contains radioactively contaminated ethylene glycol and water. Incidental amounts of ethylene glycol generated from equipment leaks may be drained directly to the monitor tanks or treated by the radwaste processing system. Small amounts of ethylene glycol may be discharged to outfalls 001, 002, or 003.

Sulfur hexafluoride gas (SF<sub>6</sub>) is utilized in the non-contact cooling water systems at the plant to detect leaks in various components such as the condensers. The gas is injected in the cooling water stream and discharged to outfalls 001, 002 or 003 at less than 54 u/l.

Aryl sulfate liquid (NALCO Trasar 23299) is utilized in the non-contact cooling water systems at the plant to determine flow through various parts of the system. The liquid is injected into the service water system to reach a target concentration of approximately 2 mg/l. The service water is discharged to Outfalls 001, 002, or 003, which would, in turn, discharge at less than 0.15 mg/l. The liquid is also injected into the circulating water system to reach a target concentration of approximately 2 mg/l.

Control Room Air Conditioning (CRAC) testing: Approximately 1440 gallons/yr. of CRAC water may mix with ESW and then be discharged to the forebay during a monthly test of the system. CRAC water is demineralized water, and may contain up to: 2000 ppm nitrite [Calgon LCS 60, Betz Corrshield NT 4205, BETZ CORRSHIED NT 4201, Betz Corrshield NT 4203, or equivalent], 100 ppm gluteraldehyde [from Betz Biotrol 107 (Spectrus NX 1105), Calgon H-300, or equivalent], 60 ppm tolyltriazole [from Calgon LCS-60, Betz Copper-Trol Cu-1, Betz Corrshield NT 4205, BETZ CORRSHIED NT 4201, Betz Corrshield NT 4203, or equivalent], 10 ppm methyl (bis) thiocyanate (from Betz 3610), 1000 ppm molybdate from Betz Corrshield MD 4103 and 25 ppm aryl sulfate (from NALCO 22199).

Three roadway storm drains route small amounts of stormwater from a small section of roadway that traverses over the Circulating Water Forebay. The three storm drains are designed to route accumulated stormwater from this small roadway to the forebay below. A small amount of de-icing compound used on this section of road could potentially enter these small (Approximately 8") gratings. Screened material collected from the plant's intakes is also stored in this area in designated trash dumpsters. Fish exudates are now drained to the forebay as recommended by the MDEQ stormwater and NPDES inspection team (M. Fields and J. Molloy 1997).

During upset conditions it is possible to overflow the contents of the Turbine Room Sump (See Outfall 00H) to Outfalls 001, 002 and/or 003 if the flow path to the on-site absorption pond cannot be used.

#### OUTFALL 003 - Deicing Discharge

Outfall 003 is a deicing discharge which is used when water temperatures approach freezing temperatures. A portion of the flow from Outfall 001 and /or Outfall 002 is directed through the center intake tunnel to temper the intake water and prevent ice buildup on the intake structures which could restrict intake flow. The velocity at the other two intake structures during de-icing mode increases to approximately 1.9 feet per second. Discharge velocity will be less than 13 feet per second since a portion of the discharge is routed out the center intake tunnel.

The Essential and Non-Essential Service Water System (ESW and NESW) may be recirculated with a combination of Circulating Water Pumps in service to raise the forebay temperature to prevent frazil ice formation during cold weather periods. During shutdown conditions when normal operating heat addition is not available, portable heat addition units may be placed in the forebay to prevent frazil ice formations that may prevent flow to safety systems in the plant.

#### OUTFALL 00A - Unit 1 Steam Generator Blowdown

The steam generators (part of the secondary water system) require ultra high purity water for operation. Makeup water used in the steam generators is withdrawn from the intake forebay (or from Lake Township water supply or a blending of both sources) and treated so most natural impurities are removed through sedimentation, filtration, reverse osmosis, and demineralization. Impurities concentrate in the steam generators as the water is turned to steam and must be removed to protect the steam turbines and

heat transfer surfaces of the steam generators. The impurities are removed by continuously draining a portion of the water from the steam generators in a process called "blowdown".

In the steam generator, steam is separated from the water, further heated, and then routed to the turbines. When the steam separates from the water, the impurities remain in the water, concentrating in the steam generator. Blowdown consists of two forms, a liquid portion (700 gpm max) and a wet steam portion, which is exhausted to the atmosphere. The liquid portion of the steam generator blowdown is discharged to the screenhouse forebay either directly (Normal Flash Tank), or after processing through mixed bed demineralizers. Impurities in this discharge may consist of small quantities of insoluble iron and copper or impurities from the Circulating Water System used to cool the condensers should condenser tube leaks occur. Steam generator additives consist of ethanolamine (Betz Powerline 1440, Betz Powerline 1480, NALCO 92UM001) for pH adjustment, hydrazine [Betz Control OS5035, Betz Control OS5010, NALCO 19H] and/or carbohydrazide (NALCO 1250 plus, or equivalent) for oxygen scavenging.

When the units are not operating, the steam generators are placed in wet layup conditions to protect against corrosion during storage. Layup water is periodically discharged through the outfall to the Circulating Water Forebay. The layup water contains a maximum concentration of 400 ppm hydrazine [Betz Powerline Control OS5035, Betz Control OS5010, NALCO 19H] and/or 40 ppm carbohydrazide (NALCO 1250 plus, or equivalent), and /or 100 ppm ethanolamine (Betz Powerline 1440, Betz Powerline 1480, NALCO 92UM001). The waste strength of this discharge is reduced through mixing with Outfalls 001, 002, or 003.

During the **Sludge Lancing Process**, demineralized water or secondary water is used to pressure clean the steam generators during outage periods. The water is recirculated through temporary filters to remove entrained solids. The major constituent of the solids is iron oxide from the steam generators. The water is then returned to the steam generators and can be drained to Outfalls 00A, 00B, to Outfall 001, 002, 003, 00D or 00H. The suspended solids are analyzed for radioactivity prior to disposal.

#### OUTFALL 00B - Unit 2 Steam Generator Blowdown

The steam generators (part of the secondary water system) require ultra high purity water for operation. Makeup water used in the steam generators is withdrawn from the intake forebay (or from Lake Township water supply or a blending of both sources) and treated so most natural impurities are removed

through sedimentation, filtration, reverse osmosis, and demineralization. Impurities concentrate in the steam generators as the water is turned to steam and must be removed to protect the steam turbines and heat transfer surfaces of the steam generators. The impurities are removed by continuously draining a portion of the water from the steam generators in a process called "blowdown".

In the steam generator, steam is separated from the water, further heated, and then routed to the turbines. When the steam separates from the water, the impurities remain in the water, concentrating in the steam generator. Blowdown consists of two forms, a liquid portion (700 gpm max) and a wet steam portion, which is exhausted to the atmosphere. The liquid portion of the steam generator blowdown is discharged to the screenhouse forebay either directly (Normal Flash Tank), or after processing through mixed bed demineralizers. Impurities in this discharge may consist of small quantities of insoluble iron and copper or impurities from the Circulating Water System used to cool the condensers should condenser tube leaks occur. Steam generator additives consist of ethanolamine (Betz Powerline 1440, Betz Powerline 1480, NALCO 92UM001) for pH adjustment, hydrazine [Betz Cortrol OS5035, Betz Cortrol OS5010, NALCO 19H] and/or carbohydrazide (NALCO 1250 plus, or equivalent) for oxygen scavenging.

When the units are not operating, the steam generators are placed in wet layup conditions to protect against corrosion during storage. Layup water is periodically discharged through the outfall to the Circulating Water Forebay. The layup water contains a maximum concentration of 400 ppm hydrazine [Betz Powerline Cortrol OS5035, Betz Cortrol OS5010, NALCO 19H] and/or 40 ppm carbohydrazide (NALCO 1250 plus, or equivalent), and /or 100 ppm ethanolamine (Betz Powerline 1440, Betz Powerline 1480, NALCO 92UM001). The waste strength of this discharge is reduced through mixing with Outfalls 001, 002, or 003.

During the **Sludge Lancing Process**, demineralized water or secondary water is used to pressure clean the steam generators during outage periods. The water is recirculated through temporary filters to remove entrained solids. The major constituent of the solids is iron oxide from the steam generators. The water is then returned to the steam generators and can be drained to Outfalls 00A, 00B, to Outfall 001, 002, 003, 00D or 00H. The suspended solids are analyzed for radioactivity prior to disposal.

### OUTFALL 00C - Plant Heating Boiler

A heating boiler (150,000 lb/hr capacity) operates to supply plant heating and auxiliary steam when Unit 1 and/or Unit 2 are out of service. The boiler is also fired periodically for testing purposes to ensure its availability.

During periods when not in operation, the **heating boiler** may be stored full of treated boiler water containing up to 400 ppm hydrazine [Betz Cortrol OS5035, Betz Cortrol OS5010, NALCO 19H] or 40 ppm carbohydrazide (NALCO 1250 plus, or equivalent) for oxygen scavenging and or 50 ppm ethanolamine (Betz Powerline 1440, Betz Powerline 1480, NALCO 92UM001) for corrosion protection. Prior to use, this "wet lay-up" water is drained to Outfall 00C via blowdown, which discharges to the intake forebay. The volume drained is approximately 600 gallons. This boiler may also be occasionally drained for maintenance activities, approximately 6,000 gallons of treated boiler water would be directed to Outfall 00C or 00D/00H for such purposes.

Impurities from the boiler water consisting primarily of insoluble iron and copper are discharged via blowdown (30 GPM) to the intake forebay during operation as needed for Chemistry control. Boiler water treatment additives consist of up to 15 ppm ethanolamine (Betz Powerline 1440, Betz Powerline 1480, NALCO 92UM001) for pH adjustment, up to 150 ppb hydrazine [Betz Cortrol OS5035, Betz Cortrol OS5010, NALCO 19H] and/or 150 ppb carbohydrazide (NALCO 1250 plus, or equivalent) for oxygen scavenging and 25 ppm aryl sulfate (from NALCO 22199) for flow testing purposes.

Just after boiler shutdown, the boiler may be placed in dry layup. The boiler contents (up to 6,000 gallons) are drained via blowdown to the intake forebay. Boiler water treatment additives consist of up to 3 ppm ethanolamine (Betz Powerline 1440, Betz Powerline 1480, NALCO 92UM001) for pH adjustment and up to 150 ppb hydrazine [Betz Cortrol OS5035, Betz Cortrol OS5010, NALCO 19H] and/or 150 ppb carbohydrazide (NALCO 1250 plus, or equivalent) for oxygen scavenging. The boiler is then dried out and stored empty. This process saves on chemicals and prevents unnecessary discharge of wet layup chemicals.

A smaller boiler may be installed to provide back-up heat if the permanent heating boiler was out of service. This back-up boiler may be located outdoors on the West Side of the turbine building. The blowdown line is directed to the Unit One forebay, near the same discharge point as the permanently installed heating boiler.



The same boiler treatment chemistry will be maintained in the back-up boiler as is used in the permanent heating boiler. The back-up boiler treatment additives consist of ethanolamine (Betz Powerline 1440, Betz Powerline 1480, NALCO 92UM001) for pH adjustment, and hydrazine [Betz Powerline Cortrol OS5035, Betz Cortrol OS5010, NALCO 19H] and/or carbonylhydrazide (NALCO 1250 plus, or equivalent) for oxygen scavenging. This boiler may be occasionally drained for maintenance activities, approximately 6,000 gallons of treated boiler water would be directed to Outfall 00C for such purposes. Impurities from the boiler water consisting primarily of insoluble iron and copper are discharged via blowdown (30 GPM maximum) to the intake forebay during operation as needed for Chemistry control.

#### OUTFALL 00G - Reverse Osmosis System

The Reverse Osmosis System (RO) is used to assist in the removal of dissolved solids from the lake water prior to demineralization. Reject water flow is directed to the forebay, which leads to Outfalls 001, 002, and 003. Reject water flow rates may reach up to 0.360 MGD. The RO system must maintain very clean membranes to assure efficient operation and purity of water. Several methods are used to maintain this level of cleanliness from scale and biofouling. Hydrochloric acid or sulfuric acid is fed at approximately 1.3 GPH continually when the RO is in service to lower the pH to reduce the scaling tendencies of the water. The reject water from the RO unit consists of concentrated Lake Michigan water and a small amount of acid that inhibits scale buildup in the membranes.

Approximately once per month, a flush is performed using approximately 1,000 gallons of a nominal 0.05% hydrochloric acid solution. This is followed with approximately 1,000 gallons of a nominal 0.1% sodium hydroxide solution. This flush will dissolve any scale that deposits on the membranes. The total amount of flushing solution will average approximately 5,000 gallons per event. Sodium bisulfite is used to preserve the membranes during long-term shutdown periods. Approximately 15 lbs. of sodium bisulfite per year is used in this manner.

The chemical cleaning involves several steps and may contain citric acid, hydrochloric acid, phosphoric acid, sodium hydroxide, and a neutral pH detergent. The periodic cleaning process averages approximately 10,000 gallons per event, diverted either to the Turbine Room Sump (Outfall 00H/00D), through the Neutralization Tank to the Turbine Room Sump (Outfall 00H/00D), or to the Circulating Water Forebay (Outfall 001, 002, or 003).

### OUTFALL 00H - Turbine Room Sump Emergency Overflow

Utility wastewater from within the plant is discharged via the turbine room sump (TRS) into an on-site absorption pond (Outfall 00D). The normal disposition of these wastewaters is to an on-site absorption pond, which eventually vents via groundwater to Lake Michigan. In the unlikely event that the normal flow path to the absorption pond is not available, the overflow line (Outfall 00H) will direct the TRS flow to the plant's intake forebay. The wastewaters associated with this Outfall include:

#### **Wastes from the makeup water treatment system.**

- **NESW:** (144,000 GPD) The main contributor to this waste stream is the degassifier pump seal water. Non-Essential Service Water (NESW) from Lake Michigan supplies the vacuum degassifier pumps which utilize up to 100 GPM to remove non-condensable gases (primarily carbon dioxide and oxygen) from the makeup plant water and exhausts them to the atmosphere.
- **Pre-filter backwash:** (Estimated 98,000 GPD) Six pre-filters are backwashed with Lake Michigan water to remove the suspended matter captured on the filter media. Alum solution (aluminum sulfate 0.5 lb. per gallon) is added to the pre-filter influent as a flocculent. The alum is added via a coagulant feed pump. Approximately 50 lb./day of alum is used in this process. The alum contained in the backwash is discharged in the form of insoluble aluminum hydroxide.
- **Carbon filter backwash:** (Estimated 42,000 GPD) Carbon filters are periodically backwashed with Lake Michigan water to the TRS. These filters primarily remove organics, chlorine and small amounts of iron.
- **Demineralizer regeneration:** (Estimated 50,000 gallons per regeneration) occurs 2-4 times per month when the RO is in service and more often when it is not in service. Dilute sulfuric acid and sodium hydroxide used by the system to regenerate the resin. Dilute sulfuric acid, sodium hydroxide, and contaminants from the demineralization process is discharged to the neutralization tank or TRS. The pH is then adjusted to between 5.5 and 9.0 with sulfuric acid, or sodium hydroxide prior to discharge.
- **MUP Neutralization Tank** provides a place for demineralization regeneration wastes, and Reverse Osmosis Unit cleaning flushes to be neutralized prior to being discharged to the TRS and ultimately

the absorption pond. When the MUP resin beds are regenerated, up to 50,000 gallons of regeneration chemicals, and backwash waters are processed in the neutralization tank. The Reverse Osmosis cleaning flushes average approximately 5,000 gallons per event. When the water is neutralized, it is pumped to the TRS via a 2,000 GPM neutralization waste pump.

- The **Retention Tank** is periodically blown down, discharging small volumes of solid material removed by settling. The retention tank contains a mixture of Lake Township water and filtered Lake Michigan water waiting further processing by the Makeup Plant.
- The **Reverse Osmosis System (RO) Cleaning**. Normal reject water flow is to Lake Michigan via Outfall 00G. The RO system must maintain very clean membranes to assure efficient operation and purity of water. Several methods are used to maintain this level of cleanliness from scale and biofouling. Hydrochloric acid or sulfuric acid is fed at approximately 1.3 GPH continually when the RO is in service to lower the pH to reduce the scaling tendencies of the water. The reject water from the RO unit consists of concentrated Lake Michigan water and a small amount of acid that inhibits scale buildup in the membranes.

Approximately once per month, a flush is performed using approximately 1,000 gallons of a nominal 0.05% hydrochloric acid solution. This is followed with approximately 1,000 gallons of a nominal 0.1% sodium hydroxide solution. This flush will dissolve any scale that deposits on the membranes. The total amount of flushing solution will average approximately 5,000 gallons per event. Sodium bisulfite is used to preserve the membranes during long-term shutdown periods. Approximately 15 lbs. of sodium bisulfite per year is used in this manner.

The chemical cleaning involves several steps and may contain citric acid, hydrochloric acid, phosphoric acid, sodium hydroxide, and a neutral pH detergent. The periodic cleaning process averages approximately 10,000 gallons per event, diverted either to the Turbine Room Sump (Outfall 00H), through the Neutralization Tank to the Turbine Room Sump (Outfall 00H), or to the Circulating Water Forebay (Outfall 001, 002, or 003).

#### **Waste from miscellaneous processes.**

- During periods when not in operation, the **heating boiler** may be stored full of treated boiler water containing at most 400 ppm hydrazine [Betz Cortal OS5035, Betz Cortal OS5010, NALCO 19H] or 40 ppm carbonylhydrazide (NALCO 1250 plus, or equivalent) for oxygen scavenging and/or 50 ppm

ethanolamine (Betz Powerline 1440, Betz Powerline 1480, NALCO 92UM001) for corrosion protection. Prior to use, this "wet lay-up" water is drained to the TRS. The volume drained is approximately 600 gallons.

- The Circulating Water System cooling water contained in the **condensers** during shutdowns are periodically drained to the TRS. (Six condenser halves and 2 feedpump condensers, approximately 37,000 gallons of lake water per half).
- The **Component Cooling Water system (CCW)** is periodically drained to allow for equipment inspection, maintenance or repair. This system uses demineralized water from the makeup plant as its source of makeup water along with a maximum of: 1200 ppm nitrite [from Calgon LCS 60, Betz Corrshield NT 4205, BETZ CORRSHIED NT 4201, Betz Corrshield NT 4203, or equivalent], 100 ppm gluteraldehyde [from Betz Spectrus NX 1105, Calgon H-300, or equivalent], methyl (bis) thiocyanate (10 ppm) [from Betz 3610 or equivalent], 60 ppm tolyltriazole (from Betz Copper-Trol Cu-1, Calgon LCS-60, or equivalent) ), 1000 ppm molybdate from Betz Corrshield MD 4103, and 25 ppm aryl sulfate (from NALCO 22199). The infrequent drainings release approximately 60,000 gallons of treated water to the TRS per year.
- There are four Emergency Diesel Generators that are each cooled by an **Emergency Diesel Generator cooling jacket water system (DJW)**, which employs chemical control for corrosion with a maximum of 2000 ppm nitrite [Calgon LCS 60 or Betz Corrshield NT 4205, BETZ CORRSHIED NT 4201, Betz Corrshield NT 4203 or equivalent], 100 ppm gluteraldehyde [Betz Spectrus NX 1105, Calgon H-300, or equivalent], methyl (bis) thiocyanate (10 ppm) [from Betz 3610 or equivalent], 60 ppm tolyltriazole [Betz Copper-Trol Cu-1, Calgon LCS-60, or equivalent] ), 1000 ppm molybdate from Betz Corrshield MD 4103, and 25 ppm aryl sulfate [from NALCO 22199].

This system is drained through the floor drains to the TRS when maintenance is performed. Each system volume is approximately 1000 gallons. Any system leaks would also be directed to the floor drain during normal operations.

- **Control Room Air Conditioning (CRAC) drains:** Approximately 1440 gallons/yr. of CRAC water is drained to the TRS. CRAC Water is demineralized water, and may contain up to: 2000 ppm nitrite [Calgon LCS 60, Betz Corrshield NT 4205, BETZ CORRSHIED NT 4201, Betz Corrshield NT 4203 or equivalent], 100 ppm gluteraldehyde [Betz Spectrus NX 1105, Calgon H-300, or equivalent],

methyl (bis) thiocyanate (10 ppm) [from Betz 3610 or equivalent], 60 ppm tolyltriazole (Calgon LCS-60, Betz Copper-Trol Cu-1, or equivalent) ), 1000 ppm molybdate from Betz Corrshield MD 4103, and 25 ppm aryl sulfate (NALCO 22199). The system may be flushed with demineralized water, and when completed, corrosion control chemicals will be added back to the system. No additions of corrosion controlling chemicals are done during the demineralized water flush.

- **The Essential Service Water systems (ESW) and Non-Essential Service Water systems (NESW)** are also periodically drained to allow for equipment inspection, maintenance, or repair. These drains may discharge Lake Michigan water used for non-contact cooling into the TRS. This water may be chlorinated for zebra mussel control. During some special treatment periods, this water may contain zebra mussel biocides, used as a molluscicide for zebra mussel control. Periodically, components of the ESW or NESW systems may be chemically cleaned to remove iron deposits using vendor supplied cleaning solution such as EDTA (ethylenediaminetetraacetic acid) or ascorbic acid, acetic acid and ammonia. These wastes could either be drained to the TRS or Lake Michigan via Outfall 001, 002, or 003.
- During wet lay-up, the **steam generators** are stored full of water with up to 400 ppm of hydrazine from Betz Control OS5035, Betz Control OS5010, NALCO 19H or 40 ppm carbohydrazide (NALCO 1250 plus, or equivalent) and 100 ppm ethanolamine (Betz Powerline 1440, Betz Powerline 1480, NALCO 92UM001) are added for corrosion control. The water may also contain up to 20 ppm boron. This water is normally drained to surface water via NPDES Outfalls 00A or 00B, but may be drained to the TRS in some instances. Drain volume will be approximately 32,000 gallons for each of the unit's four steam generators.
- **The Miscellaneous Drain Tanks** can be aligned to discharge to the TRS. As much as 350,000 gallons per day per unit may be directed to the TRS to control the chemistry limitations on the secondary water systems. Water chemistry is primarily the same as in the steam generators. This type of batch drain occurs in concert with condensate flushing activities, or it may occur during normal operation to adjust system chemistry. The overboarded water is normal secondary water. It may contain a mixture of ethanolamine, hydrazine [Betz Control OS5035, Betz Control OS5010, NALCO 19H], or carbohydrazide (NALCO 1250 plus, or equivalent). Maximum flows may approach 240 GPM as makeup plant water supplies can deliver.

- **Condensate flushes** are performed periodically to clean up the plant's secondary system prior to startup, and can be discharged to the TRS. Water containing up to 2 ppm hydrazine [Betz Cortrol OS5035, Betz Cortrol OS5010, NALCO 19H], 10 ppm carbohydrazide (NALCO 1250 plus, or equivalent), 100 ppm ethanolamine (Betz Powerline 1440, Betz Powerline 1480, NALCO 92UM001), is overboard to the TRS as required to remove contaminants. This flow rate averages 70 GPM, but may reach 600 GPM for short periods of time. The flow rate is dependent on water demands in the plant. Maximum output from the MUP is approximately 600 GPM.
- Around the plant, **miscellaneous sumps** collect an estimated 45,000 GPD of water from various equipment drains (ESW pipe tunnel sump). **Water and condensate leaks from valves and pumps** (Circulating Water condenser pit sumps, ESW pipe tunnel sump, heater drain pump room sump, screen wash pump room sump, acid and caustic room sumps, elevator pit sumps, screenhouse electrical equipment enclosure sump) will also be drained to the TRS. **Steam jet air ejector drains** also are directed to the heater drain pump room sump prior to pumping to the TRS. Betz FerroQuest FQ LP 7200 may be added to this sump to prevent scale buildup.
- **Miscellaneous floor drains** are located throughout the plant to provide a safe working environment by routing spilled or leaked water to the TRS. The major chemical influx into these drains is from general floor cleaning products used to maintain the floors. Also routed to the TRS through the floor drains are fire protection water, chlorinated Lake Township water, drinking water, cooling water (ESW/NESW), and drains from bioboxes used to monitor the zebra mussel control measures and other chemical control monitors. The bioboxes will discharge chlorine and zebra mussel biocides during periods when the Service Water Systems are treated with previously mention biological control agents.
- **Chemical feed tank drains** (drains are limited to emergencies only). There are eight chemical feed tanks that are approximately 200 gallons each that contain hydrazine [Betz Cortrol OS5035, Betz Cortrol OS5010, NALCO 19H] at approximately 2%, ethanolamine (Betz Powerline 1440, Betz Powerline 1480, NALCO 92UM001), at approximately 5%, carbohydrazide (NALCO 1250 plus, or equivalent), approximately 2%. Normal process will be to collect these tank volumes to be reused whenever possible.

- **Chemical cleaning tank drains:** During refueling and maintenance outages, the chemical cleaning tank, and or temporary tanks may be used to mix borax (sodium tetraborate @ approximately 2000 ppm as boron) solutions for ice making operations. Small portions of the system may be drained to the TRS. In the unlikely event that a full tank is drained, approximately 3500 gallons will be directed to the TRS.
- **Non-radiological chemical lab sink and floor drains** are routed to the TRS for disposal. The drains carry water and the wastes generated while performing analyses and preparing laboratory standard including those on the attached list. Also discharged will be glassware cleaning and normal laboratory cleaning wastes. The average volume directed to the TRS is estimated to be 500 -1000 GPD.
- **Secondary sample water** from continuous analyzers are routed to drains which discharge to the TRS and/or the miscellaneous drain tank. The analyzers are on the cycles that may contain as much as 150 ppb hydrazine from either a direct feed or (as a breakdown product of carbohydrazide, and 2.5 ppm ethanolamine. The analyzers measure corrosion transport at an average flow of 1440 gallons per day when in operation.
- **Miscellaneous sealing and cooling water (MSCW)** supplies cooling and sealing water to the TRS pumps, Condensate Booster Pumps, Circulating Water Pumps, Vacuum Priming Pumps, Drain Seal Reservoir Tanks, MSCW pump sealing water, screen wash pumps sealing water, and Drain Sample Coolers. The flow per day may reach approximately 576,000 gallons; this water is filtered and chlorinated Lake Michigan water .
- Non-essential service water supplies approximately 53,000 GPD of non-contact cooling water to various **sample coolers** throughout the plant's turbine building.

- Chemical spills that enter the TRS may be neutralized within the sump to prevent a discharge to the environment. The potential for spills to the TRS exists for the following chemicals with the proposed neutralizers listed:

<u>Chemical</u>	<u>Associated Neutralizer</u>
Sulfuric acid	Sodium hydroxide
Sodium hydroxide	Sulfuric acid
Sodium hypochlorite	Sodium thiosulfate
Hydrazine	NESW (lake water), Hydrogen peroxide, sodium hypochlorite.
Ethanolamine	Sodium Hypochlorite, Hydrogen Peroxide, or ozone.
Ethylene glycol	Hydrogen peroxide

Reduction of hydrazine and ETA prior to discharge to the absorption pond may include additions of chemicals such as sodium hypochlorite, hydrogen peroxide, or ozone to the Turbine Room Sump in batches, or to the discharge piping as continuous treatment. A downstream treatment system provided by a vendor may be used to break down the hydrazine and ETA.



## ADDITIONAL CHEMICAL LAB ANALYSES

Additional Information

Section I

Item 11

Donald C. Cook Nuclear Plant

Surface Water Permit Application

### Plant Chemistry Lab (To Outfall 00H/00D)

Laboratory sink drains from the 633' Turbine lab are directed to the 90,000 gallon Turbine Room Sump. The sump contents are normally directed to the groundwater discharge (outfall 00D). Occasionally the Emergency by-pass may be utilized and the sump's contents will be discharged to the surface water discharge (outfall 00H). The following analyses are performed in the lab. Laboratory wastes from the analyses are discarded in the sink.

Parameter	Analysis Method
Nitrite	HACH DR-2000 Method 373, HACH DR 2010 Method 373
Hydrazine	ASTM D-1385 -88
Oil and Grease	EPA-600-4-79-020 Method 413.1
pH	Standard Methods for the examination of Water and Wastewater, ASTM-1293
Total Phosphorus	EPA-600-4-79-020 Method 365.3
Sulfate	EPA-600-4-79-020 Method 375.4
Total Residual Chlorine	EPA-600-4-79-020 Method 330.5
Ethanolamine (ETA)	Betz Standard Operating Procedure. 9Betz proprietary Method adapted from HACH Dr-2000 1,2- Naphthoquinone-4-sulfonic acid Method.
ICP Metals	Standard Methods for Examination of water and wastewater - 17 <sup>th</sup> ed. 1989, 3120B.
Tolyltriazole	HACH DR-2000 Method 730
Carbohydrazide	HACH DR-2000 Method 732 HACH DR-2010 Method 182
N,N Diethylhydroxylamine (DEHA)	HACH DR-2010 Method 182
Silica	ASTM D 859-88

## GROUNDWATER DISCHARGES

### OUTFALL 00D - Turbine Room Sump

Utility wastewater from within the plant is discharged via the turbine room sump (TRS) into an on-site absorption pond (Outfall 00D). The normal disposition of these wastewaters is to an on-site absorption pond, which eventually vents via groundwater to Lake Michigan. In the unlikely event that the normal flow path to the absorption pond is not available, the overflow line (Outfall 00H) will direct the TRS flow to the plant's intake forebay. The wastewaters associated with this Outfall include:

#### **Wastes from the makeup water treatment system.**

- **NESW:** (144,000 GPD) The main contributor to this waste stream is the degassifier pump seal water. Non-Essential Service Water (NESW) from Lake Michigan supplies the vacuum degassifier pumps which utilize up to 100 GPM to remove non-condensable gases (primarily carbon dioxide and oxygen) from the makeup plant water and exhausts them to the atmosphere.
- **Pre-filter backwash:** (Estimated 98,000 GPD) Six pre-filters are backwashed with Lake Michigan water to remove the suspended matter captured on the filter media. Alum solution (aluminum sulfate 0.5 lb. per gallon) is added to the pre-filter influent as a flocculent. The alum is added via a coagulant feed pump. Approximately 50 lb./day of alum is used in this process. The alum contained in the backwash is discharged in the form of insoluble aluminum hydroxide.
- **Carbon filter backwash:** (Estimated 42,000 GPD) Carbon filters are periodically backwashed with Lake Michigan water to the TRS. These filters primarily remove organics, chlorine and small amounts of iron.
- **Demineralizer regeneration:** (Estimated 50,000 gallons per regeneration) occurs 2-4 times per month when the RO is in service and more often when it is not in service. Dilute sulfuric acid and sodium hydroxide used by the system to regenerate the resin. Dilute sulfuric acid, sodium hydroxide, and contaminants from the demineralization process is discharged to the neutralization tank or TRS. The pH is then adjusted to between 5.5 and 9.0 with sulfuric acid, or sodium hydroxide prior to discharge.

- **MUP Neutralization Tank** provides a place for demineralization regeneration wastes, and Reverse Osmosis Unit cleaning flushes to be neutralized prior to being discharged to the TRS and ultimately the absorption pond. When the MUP resin beds are regenerated, up to 50,000 gallons of regeneration chemicals, and backwash waters are processed in the neutralization tank. The Reverse Osmosis cleaning flushes average approximately 5,000 gallons per event. When the water is neutralized, it is pumped to the TRS via a 2,000 GPM neutralization waste pump.
- The **Retention Tank** is periodically blown down, discharging small volumes of solid material removed by settling. The retention tank contains a mixture of Lake Township water and filtered Lake Michigan water waiting further processing by the Makeup Plant.
- **The Reverse Osmosis System (RO) Cleaning.** Normal reject water flow is to Lake Michigan via Outfall 00G. The RO system must maintain very clean membranes to assure efficient operation and purity of water. Several methods are used to maintain this level of cleanliness from scale and biofouling. Hydrochloric acid or sulfuric acid is fed at approximately 1.3 GPH continually when the RO is in service to lower the pH to reduce the scaling tendencies of the water. The reject water from the RO unit consists of concentrated Lake Michigan water and a small amount of acid that inhibits scale buildup in the membranes.

Approximately once per month, a flush is performed using approximately 1,000 gallons of a nominal 0.05% hydrochloric acid solution. This is followed with approximately 1,000 gallons of a nominal 0.1% sodium hydroxide solution. This flush will dissolve any scale that deposits on the membranes. The total amount of flushing solution will average approximately 5,000 gallons per event. Sodium bisulfite is used to preserve the membranes during long-term shutdown periods. Approximately 15 lbs. of sodium bisulfite per year is used in this manner.

The chemical cleaning involves several steps and may contain citric acid, hydrochloric acid, phosphoric acid, sodium hydroxide, and a neutral pH detergent. The periodic cleaning process averages approximately 10,000 gallons per event, diverted either to the Turbine Room Sump (Outfall 00H), through the Neutralization Tank to the Turbine Room Sump (Outfall 00H), or to the Circulating Water Forebay (Outfall 001, 002, or 003).

#### **Waste from miscellaneous processes.**

- During periods when not in operation, the **heating boiler** may be stored full of treated boiler water containing at most 400 ppm hydrazine [Betz Cortrol OS5035, Betz Cortrol OS5010, NALCO 19H] or 40 ppm carbohydrazide (NALCO 1250 plus, or equivalent) for oxygen scavenging and/or 50 ppm ethanolamine (Betz Powerline 1440, Betz Powerline 1480, NALCO 92UM001) for corrosion protection. Prior to use, this "wet lay-up" water is drained to the TRS. The volume drained is approximately 600 gallons.
- The Circulating Water System cooling water contained in the **condensers** during shutdowns are periodically drained to the TRS. (Six condenser halves and 2 feedpump condensers, approximately 37,000 gallons of lake water per half).
- The **Component Cooling Water system (CCW)** is periodically drained to allow for equipment inspection, maintenance or repair. This system uses demineralized water from the makeup plant as its source of makeup water along with a maximum of: 1200 ppm nitrite [from Calgon LCS 60, Betz Corrshield NT 4205, BETZ CORRSHIED NT 4201, Betz Corrshield NT 4203, or equivalent], 100 ppm gluteraldehyde [from Betz Spectrus NX 1105, Calgon H-300, or equivalent], methyl (bis) thiocyanate (10 ppm) [from Betz 3610 or equivalent], 60 ppm tolyltriazole (from Betz Copper-Trol Cu-1, Calgon LCS-60, or equivalent) ), 1000 ppm molybdate from Betz Corrshield MD 4103, and 25 ppm aryl sulfate (from NALCO 22199). The infrequent drainings release approximately 60,000 gallons of treated water to the TRS per year.
- There are four Emergency Diesel Generators that are each cooled by an **Emergency Diesel Generator cooling jacket water system (DJW)**, which employs chemical control for corrosion with a maximum of 2000 ppm nitrite [Calgon LCS 60 or Betz Corrshield NT 4205, BETZ CORRSHIED NT 4201, Betz Corrshield NT 4203 or equivalent], 100 ppm gluteraldehyde [Betz Spectrus NX 1105, Calgon H-300, or equivalent], methyl (bis) thiocyanate (10 ppm) [from Betz 3610 or equivalent], 60 ppm tolyltriazole [Betz Copper-Trol Cu-1, Calgon LCS-60, or equivalent] ), 1000 ppm molybdate from Betz Corrshield MD 4103, and 25 ppm aryl sulfate [from NALCO 22199].

This system is drained through the floor drains to the TRS when maintenance is performed. Each system volume is approximately 1000 gallons. Any system leaks would also be directed to the floor drain during normal operations.

- **Control Room Air Conditioning (CRAC) drains:** Approximately 1440 gallons/yr. of CRAC water is drained to the TRS. CRAC Water is demineralized water, and may contain up to: 2000 ppm nitrite [Calgon LCS 60, Betz Corrshield NT 4205, BETZ CORRSHIED NT 4201, Betz Corrshield NT 4203 or equivalent], 100 ppm gluteraldehyde [Betz Spectrus NX 1105, Calgon H-300, or equivalent], methyl (bis) thiocyanate (10 ppm) [from Betz 3610 or equivalent], 60 ppm tolyltriazole (Calgon LCS-60, Betz Copper-Trol Cu-1, or equivalent) ), 1000 ppm molybdate from Betz Corrshield MD 4103, and 25 ppm aryl sulfate (NALCO 22199). The system may be flushed with demineralized water, and when completed, corrosion control chemicals will be added back to the system. No additions of corrosion controlling chemicals are done during the demineralized water flush.
- **The Essential Service Water systems (ESW) and Non-Essential Service Water systems (NESW)** are also periodically drained to allow for equipment inspection, maintenance, or repair. These drains may discharge Lake Michigan water used for non-contact cooling into the TRS. This water may be chlorinated for zebra mussel control. During some special treatment periods, this water may contain zebra mussel biocides, used as a molluscicide for zebra mussel control. Periodically, components of the ESW or NESW systems may be chemically cleaned to remove iron deposits using vendor supplied cleaning solution such as EDTA (ethylenediaminetetraacetic acid) or ascorbic acid, acetic acid and ammonia. These wastes could either be drained to the TRS or Lake Michigan via Outfall 001, 002, or 003.
- During wet lay-up, the **steam generators** are stored full of water with up to 400 ppm of hydrazine from Betz Cortrol OS5035, Betz Cortrol OS5010, NALCO 19H or 40 ppm carbohydrazide (NALCO 1250 plus, or equivalent) and 100 ppm ethanolamine (Betz Powerline 1440, Betz Powerline 1480, NALCO 92UM001) are added for corrosion control. The water may also contain up to 20 ppm boron. This water is normally drained to surface water via NPDES Outfalls 00A or 00B, but may be drained to the TRS in some instances. Drain volume will be approximately 32,000 gallons for each of the unit's four steam generators.
- **The Miscellaneous Drain Tanks** can be aligned to discharge to the TRS. As much as 350,000 gallons per day per unit may be directed to the TRS to control the chemistry limitations on the secondary water systems. Water chemistry is primarily the same as in the steam generators. This type of batch drain occurs in concert with condensate flushing activities, or it may occur during normal operation to adjust system chemistry. The overboarded water is normal secondary water. It may contain a mixture of ethanolamine, hydrazine [Betz Cortrol OS5035, Betz Cortrol OS5010,

NALCO 19H], or carbohydrazide (NALCO 1250 plus, or equivalent). Maximum flows may approach 240 GPM as makeup plant water supplies can deliver.

- **Condensate flushes** are performed periodically to clean up the plant's secondary system prior to startup, and can be discharged to the TRS. Water containing up to 2 ppm hydrazine [Betz Cortrol OS5035, Betz Cortrol OS5010, NALCO 19H], 10 ppm carbohydrazide (NALCO 1250 plus, or equivalent), 100 ppm ethanolamine (Betz Powerline 1440, Betz Powerline 1480, NALCO 92UM001), is overboard to the TRS as required to remove contaminants. This flow rate averages 70 GPM, but may reach 600 GPM for short periods of time. The flow rate is dependent on water demands in the plant. Maximum output from the MUP is approximately 600 GPM.
- Around the plant, **miscellaneous sumps** collect an estimated 45,000 GPD of water from various equipment drains (ESW pipe tunnel sump). **Water and condensate leaks from valves and pumps** (Circulating Water condenser pit sumps, ESW pipe tunnel sump, heater drain pump room sump, screen wash pump room sump, acid and caustic room sumps, elevator pit sumps, screenhouse electrical equipment enclosure sump) will also be drained to the TRS. **Steam jet air ejector drains** also are directed to the heater drain pump room sump prior to pumping to the TRS. Betz FerroQuest FQ LP 7200 may be added to this sump to prevent scale buildup.
- **Miscellaneous floor drains** are located throughout the plant to provide a safe working environment by routing spilled or leaked water to the TRS. The major chemical influx into these drains is from general floor cleaning products used to maintain the floors. Also routed to the TRS through the floor drains are fire protection water, chlorinated Lake Township water, drinking water, cooling water (ESW/NESW), and drains from bioboxes used to monitor the zebra mussel control measures and other chemical control monitors. The bioboxes will discharge chlorine and zebra mussel biocides during periods when the Service Water Systems are treated with previously mention biological control agents.
- **Chemical feed tank drains** (drains are limited to emergencies only). There are eight chemical feed tanks that are approximately 200 gallons each that contain hydrazine [Betz Cortrol OS5035, Betz Cortrol OS5010, NALCO 19H] at approximately 2%, ethanolamine (Betz Powerline 1440, Betz Powerline 1480, NALCO 92UM001), at approximately 5%, carbohydrazide (NALCO 1250 plus, or equivalent), approximately 2%. Normal process will be to collect these tank volumes to be reused whenever possible.

- **Chemical cleaning tank drains:** During refueling and maintenance outages, the chemical cleaning tank, and or temporary tanks may be used to mix borax (sodium tetraborate @ approximately 2000 ppm as boron) solutions for ice making operations. Small portions of the system may be drained to the TRS. In the unlikely event that a full tank is drained, approximately 3500 gallons will be directed to the TRS.
- **Non-radiological chemical lab sink and floor drains** are routed to the TRS for disposal. The drains carry water and the wastes generated while performing analyses and preparing laboratory standard including those on the attached list. Also discharged will be glassware cleaning and normal laboratory cleaning wastes. The average volume directed to the TRS is estimated to be 500 -1000 GPD.
- **Secondary sample water** from continuous analyzers are routed to drains which discharge to the TRS and/or the miscellaneous drain tank. The analyzers are on the cycles that may contain as much as 150 ppb hydrazine from either a direct feed or (as a breakdown product of carbohydrazide, and 2.5 ppm ethanolamine. The analyzers measure corrosion transport at an average flow of 1440 gallons per day when in operation.
- **Miscellaneous sealing and cooling water (MSCW)** supplies cooling and sealing water to the TRS pumps, Condensate Booster Pumps, Circulating Water Pumps, Vacuum Priming Pumps, Drain Seal Reservoir Tanks, MSCW pump sealing water, screen wash pumps sealing water, and Drain Sample Coolers. The flow per day may reach approximately 576,000 gallons; this water is filtered and chlorinated Lake Michigan water .
- Non-essential service water supplies approximately 53,000 GPD of non-contact cooling water to various sample coolers throughout the plant's turbine building.

- Chemical spills that enter the TRS may be neutralized within the sump to prevent a discharge to the environment. The potential for spills to the TRS exists for the following chemicals with the proposed neutralizers listed:

<u>Chemical</u>	<u>Associated Neutralizer</u>
Sulfuric acid	Sodium hydroxide
Sodium hydroxide	Sulfuric acid
Sodium hypochlorite	Sodium thiosulfate
Hydrazine	NESW (lake water), Hydrogen peroxide, sodium hypochlorite.
Ethanolamine	Sodium Hypochlorite, Hydrogen Peroxide, or ozone.
Ethylene glycol	Hydrogen peroxide

Reduction of hydrazine and ETA prior to discharge to the absorption pond may include additions of chemicals such as sodium hypochlorite, hydrogen peroxide, or ozone to the Turbine Room Sump in batches, or to the discharge piping as continuous treatment. A downstream treatment system provided by a vendor may be used to break down the hydrazine and ETA.



## ADDITIONAL CHEMICAL LAB ANALYSES

### Additional Information

Section I

Item 11

Donald C. Cook Nuclear Plant

Surface Water Permit Application

### Plant Chemistry Lab (To Outfall 00H/00D)

Laboratory sink drains from the 633' Turbine lab are directed to the 90,000 gallon Turbine Room Sump. The sump contents are normally directed to the groundwater discharge (outfall 00D). Occasionally the Emergency by-pass may be utilized and the sump's contents will be discharged to the surface water discharge (outfall 00H). The following analyses are performed in the lab. Laboratory wastes from the analyses are discarded in the sink.

Parameter	Analysis Method
Nitrite	HACH DR-2000 Method 373, HACH DR 2010 Method 373
Hydrazine	ASTM D-1385 -88
Oil and Grease	EPA-600-4-79-020 Method 413.1
pH	Standard Methods for the examination of Water and Wastewater, ASTM-1293
Total Phosphorus	EPA-600-4-79-020 Method 365.3
Sulfate	EPA-600-4-79-020 Method 375.4
Total Residual Chlorine	EPA-600-4-79-020 Method 330.5
Ethanolamine (ETA)	Betz Standard Operating Procedure. 9Betz proprietary Method adapted from HACH Dr-2000 1,2- Naphthoquinone-4-sulfonic acid Method.
ICP Metals	Standard Methods for Examination of water and wastewater - 17 <sup>th</sup> ed. 1989, 3120B.
Tolyltriazole	HACH DR-2000 Method 730
Carbohydrazide	HACH DR-2000 Method 732 HACH DR-2010 Method 182
N,N Diethylhydroxylamine (DEHA)	HACH DR-2010 Method 182
Silica	ASTM D 859-88

### OUTFALL 00E – Sanitary Waste Discharges

The system operates at a designed flow of 50,000 GPD with a maximum flow capacity of 60,000 GPD. The Sequencing Batch Reactor (SBR) system treats the wastewater and discharges to an effluent tank where it can be filtered prior to discharge to one of two seepage lagoons. The lagoons discharge into the groundwater with the ultimate disposition venting to Lake Michigan. The sludge removed from the digester tank basins is taken to a local POTW (public owned treatment works) for disposal or dewatered and stored as low level radioactive waste, and disposed of as appropriate.

To aid in the settling process, flocculents such as ferric chloride, pH controllers such as magnesium hydroxide, or polymers (such as Axchem AF4500) are added to the process. To selectively enhance biosolids, bioaugmentation nutrients (such as Bioprime Dosfolat) are added to the process. This is a nutrient that encourages the growth of beneficial microbes in the activated sludge. Sodium hypochlorite is added in small amounts to the process to control filamentous bacteria growth if needed. Sodium hypochlorite and detergent are also added to the sand filters to clean them periodically. These are then backwashed into the equalization basin to be reprocessed by the SBR treatment process.

Plant sanitary waste consists of shower and rest room facilities, and janitor washbasins located throughout the Plant's non-radiological property. Kitchen wastes are generated from the plant cafeteria, the Cook Energy Information Center and Training buildings.

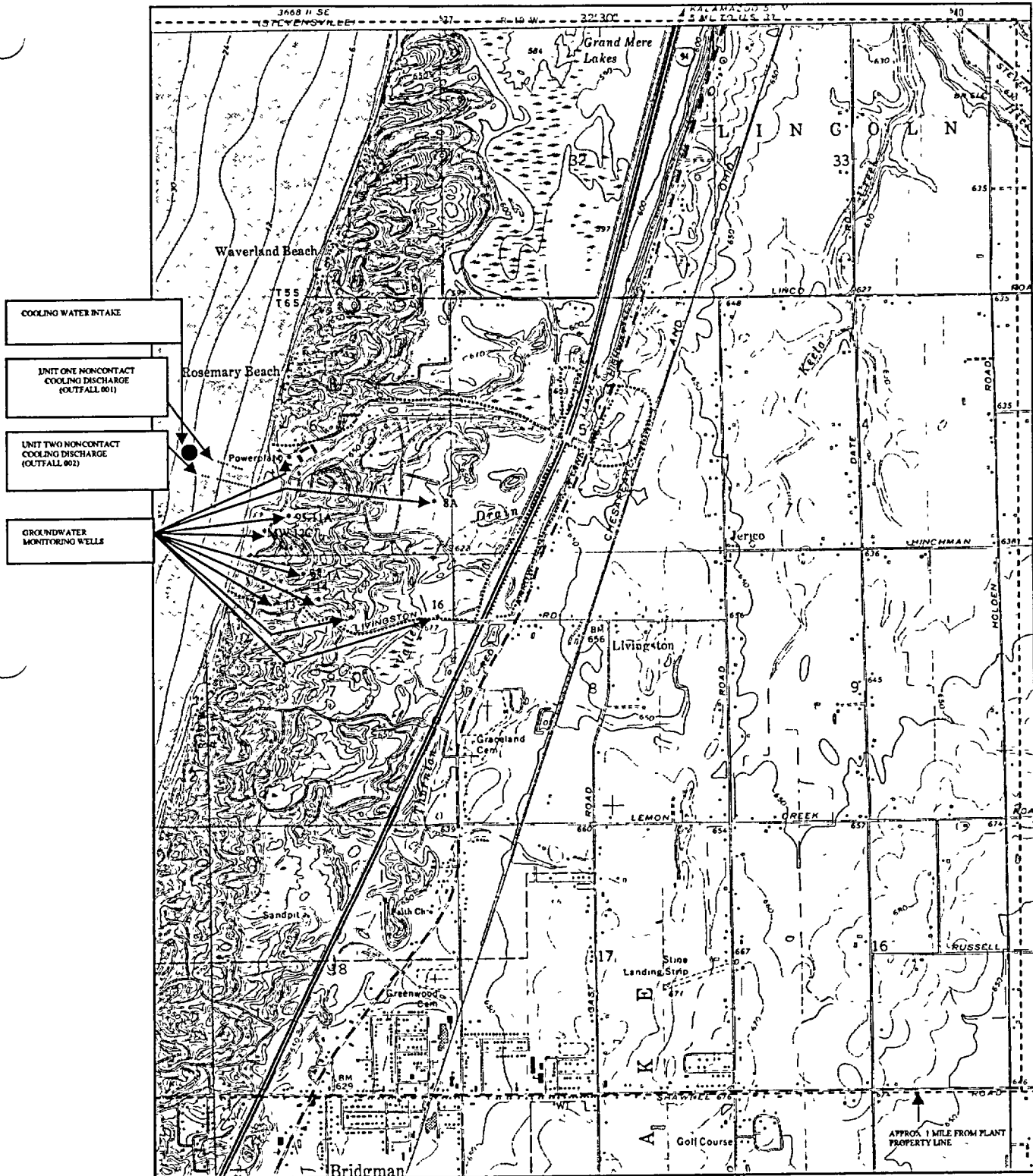
The chemistry training laboratory discharges to the sewage treatment plants through a limestone bed neutralization tank. The chemistry lab is used to train technicians on analyses performed in the plant. The discharge from the lab carries water and wastes generated while performing analyses and preparing laboratory standards including those on the attached list. The training building HVAC system also drains through the limestone bed.

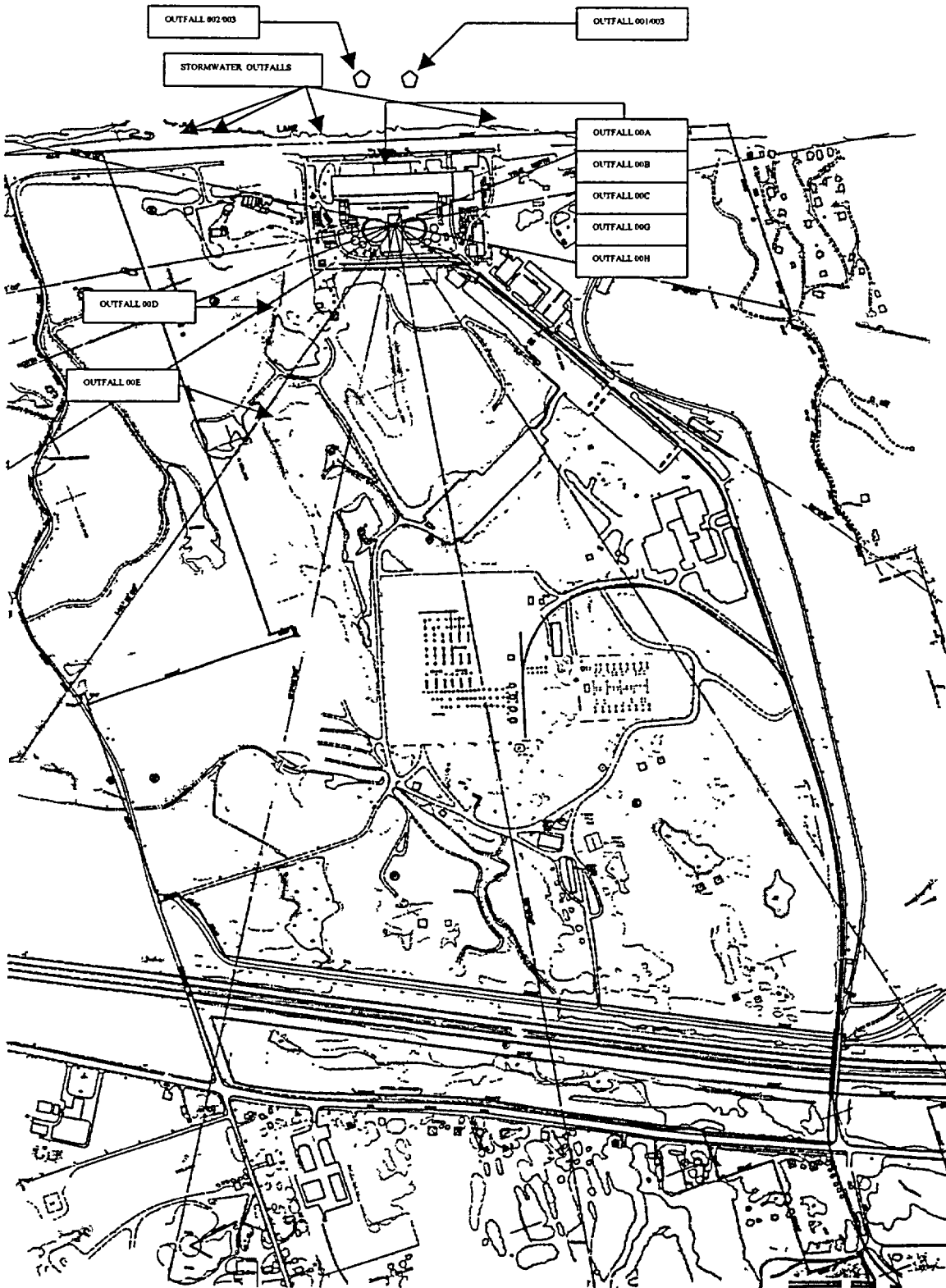
The wastewater treatment plant laboratory discharges to the sewage treatment plants. The discharge from the lab carries water and wastes generated from performing analyses and preparing laboratory standards used for compliance monitoring of the sewage treatment plant under groundwater discharge permit M00988.

Portable toilet wastes on the plant site may be collected and discharged to the sewage treatment plants. A biodegradable deodorant is used in the portable toilets. Sludge effluent waste may also be recycled through the plants to decrease the amount of sludge for processing when possible.

Miscellaneous rinsing of waste receptacles and possible cleaning operations waste, utilizing various detergents, may be rinsed to the sewage treatment plants.

# Site Map





# Adjacent Property Owners

Michigan Department of Environmental Quality- Water Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
**SECTION I - General Information**

PLEASE TYPE OR PRINT

FACILITY NAME Ronald C Cook Nuclear Plant	NPDES PERMIT NUMBER MI0005827
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**13 LIST ADJACENT PROPERTY OWNERS**

List the names and addresses of all property owners adjacent to the facility, treatment systems, and discharge locations To submit additional information see page ii, item 8.

Name	Address	City	State	ZIP Code
Tengerstrom, Eric H	3415 S. 59 <sup>th</sup> St	Cicero	IL	60650
Gielniewski, Michael Z & Teresa B	4500 Lake Rd	Stevensville	MI	49127
Vesely, Alan Kobler, Rich+Matthews	5004 S. Long Ave	Chicago	IL	60638
Lewis, James G Jr	4183 Lake Ct	Stevensville	MI	49127
Gilpin, Clark and Nancy	4291 Lake Rd	Stevensville	MI	49127
Giese, Marie E.	3180 N Lakeshore Drive	Chicago	IL	60657
Gottschall, Bruce A & Susan M	5216 Blackstone Dr	Chicago	IL	60615
Balka, Ronald A & Janet M	3334 Louise Dr	Lansing	IL	60438
Michigan Dept of Natural Resources	PO Box 307358	Lansing	MI	48909
Franklin Real Estate	c/o PO Box 60	Ft Wayne	IN	46801
ammel, Edward P.	9617 E. Shore Dr	Oak Lawn	IL	60453
Caparo, William E. & Oyler, Kathryn	122 S. Ellsworth Pl	South Bend	IN	46635
Rosemary Beach Corp	3415 S 59 <sup>th</sup> St	Cicero	IL	60650
Lake Charter Twp	3220 Shawnee Road	Bridgman	MI	49106
Indiana Michigan Power	PO Box 60	Ft Wayne	IN	46801
Technisand, Inc	PO Box 177	Wedron	IL	50557

**14. STORM WATER DISCHARGES**

A Is the storm water from this facility discharged to the waters of the state either directly or through a separate storm water drainage system?

☒ Yes ☐ No

B Is the discharge (see definitions on page iii of the application)

☐ Non-Regulated Storm Water

☐ Regulated Storm Water

C. Is any of the storm water discharged from

☒ Secondary containment structures that are required by state or federal law

☐ Areas identified on Michigan's list of Sites of Environmental Contamination, pursuant to the Natural Resources and Environmental Protection Act, PA 451 of 1994, Part 201 (formerly 307)

This completes Section I. TWTDS requesting authorization for domestic wastewaters or biosolids should complete Section II. All other applicants should complete Section III.

If assistance is needed completing this application, contact the Permits Section, telephone number: 517-373-8088.





## Section II

Michigan Department of Environmental Quality- Water Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
**SECTION II - Sanitary Wastewater**

Section II is to be completed by Publicly Owned Treatment Works discharging treated or untreated sanitary and industrial wastewater to the surface waters. Section II is also to be completed by all privately owned treatment facilities discharging treated sanitary wastewater to the surface waters. The privately owned treatment facilities in this category generally include Mobile Home Parks, Campgrounds, Condominiums, Hotels and Motels, Nursing Homes, etc.

**A. Facility Information**

PLEASE TYPE OR PRINT

FACILITY NAME	NPDES PERMIT NUMBER
---------------	---------------------

**1. SERVICE AREA INFORMATION**

**A** List the source(s) of water supply in the area served by sewers. Identify groundwater wells, surface water intakes and the name(s) of any surface water(s) from which intake water is drawn.

Publicly Owned Treatment Works shall provide the following information:

**B** List the governmental jurisdictions (cities, townships, villages, etc.) that this facility serves (applicants should include themselves). What is the population in each jurisdiction? Is the jurisdiction's collection system separate, combined or both? If the collection system is both separate and combined, what percentage is combined? To submit additional information see page ii, item 8.

Name	Population Served	Type of Collection System	Percent Combined
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

**C.** Provide the total population served by this facility. \_\_\_\_\_

Privately Owned Treatment Works shall provide the following information:

**D.** Provide the number of residential units served by this facility. \_\_\_\_\_

**E.** Describe the service area (mobile home park, condominium, nursing home, industrial facility, etc.) \_\_\_\_\_

**2. BIOMONITORING FOR ACUTE AND CHRONIC TOXICITY**

Publicly Owned Treatment Works (POTWs) meeting one or more of the following criteria must submit with this application the results of whole effluent toxicity (WET) tests for each of the facility's discharge points excluding combined sewer overflows: 1) POTWs with a design flow rate greater than or equal to one (1) million gallons per day, 2) POTWs with an approved Federal Industrial Pretreatment Program (FIPP); and/or 3) POTWs required to develop a FIPP.

At a minimum, these results must include quarterly WET testing for a 12-month period prior to this application, or at least annually from the 5 years prior to this application. In addition, submit with this application the results of any other WET tests from the past 5 years. If a WET test in the past 4-½ years revealed toxicity, provide all the information on the cause of toxicity or the results of all toxicity reduction evaluations, if any were conducted. For WET Test Guidance and Requirements see page 14 of the N.P.D.E.S. Permit Application Appendix.

Michigan Department of Environmental Quality- Water Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
**SECTION II - Sanitary Wastewater**

B. Outfall Information

**INSTRUCTIONS FOR COMPLETING SECTION II, ITEM B.1.**

This item requests detailed information on each outfall at the facility. For this item, outfall refers to the discharge of **treated** wastewater. Fill in the Outfall Number in the top right hand box identifying the outfall by number, e.g., 001, 002, etc (applicants with existing NPDES permits should refer to the facility's current NPDES permit for outfall number identification). For each outfall provide the location, the expected and/or measured volume of effluent discharged, the frequency of discharge and the flow variation of the discharge.

- A. **WATERSHED:** Identify the receiving stream's watershed. Each receiving stream will eventually discharge into one of the Great Lakes or one of the connecting waters (i.e. Detroit River, St. Mary's River, St. Clair River). Indicate from which river the discharge eventually discharges to the Great Lakes. For example: Sycamore Creek is tributary to the Red Cedar River, which is tributary to the Grand River, which discharges to Lake Michigan. Consequently a discharge to the Sycamore Creek is a discharge to the Grand River Watershed.
- B. **RECEIVING WATER:** Identify the exact location of the wastewater discharge point(s) and all areas through which the discharge flows (e.g. storm sewers, open drains, wetlands), if applicable, between the discharge point and the receiving water. Examples of receiving waters are rivers, creeks, drains, etc
- C. **COUNTY / TOWNSHIP:** Provide the county and township where the outfall is located.
- D. **STATE PLANAR COORDINATES:** Provide the location of the discharge to the receiving water in State Planar Coordinates. Report State Planar Coordinates using quarter-quarter section, quarter section, section, town and range (e.g., NE 1/4, SE 1/4, Section 34, T1N, R12E)
- E. **LATITUDE / LONGITUDE:** Provide the latitude and longitude of the discharge accurate within 15 seconds (e.g., Latitude = 42°27'15", Longitude = -83°02'30") or accurate within 0.004 decimal degrees (e.g., Latitude = 42.454167, Longitude -83.041667).
- F. **FACILITY ANNUAL AVERAGE DESIGN FLOW:** Enter the Annual Average Design Flow that the facility is designed to treat in millions of gallons per day (MGD). Seasonal dischargers shall enter the total volume (million gallons per year (MGY)) of wastewater the facility is designed to treat and discharge per year. This number will be used in determination of appropriate effluent limitations. Also provide the actual annual average facility flow and the maximum daily facility flow for the past three years.
- G. **SEASONAL DISCHARGE:** A discharge is considered to be seasonal if the facility treats and then **stores** wastewater throughout the year or portion of the year and discharges it a few days, weeks or months a year. Provide the dates the facility discharges the treated wastewater (e.g., October 15 through November 10) and the average discharge flows (e.g., 5 MGD).
- H. **CONTINUOUS DISCHARGE:** A discharge is any discharge that is not a seasonal discharge. Provide the approximate hours per day and the number of days per year that the discharge occurs from this outfall. Batch Dischargers shall provide the peak batch flow rate, the number of batches per day, the per batch minimum, average and maximum volumes in gallons, and the per batch minimum, average and maximum batch discharges in minutes.

Complete a separate Section II. B. Outfall Information (pages 7 - 15) for each outfall at the facility. Make copies of Section II. B. for each additional outfall that discharges treated wastewater

FACILITY NAME	NPDES PERMIT NUMBER	OUTFALL NUMBER
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## A

B

C

D

2

Longitude

Continuous Discharge \_\_\_\_\_ MGD (Continue with Item H )

From	Through	Discharge Volume (MGD)	Annual Total (MGY)
From	Through	Discharge Volume (MGD)	
From	Through	Discharge Volume (MGD)	
From	Through	Discharge Volume (MGD)	

Annual Average Daily Flow (MGD)			
Maximum Daily Flow in a Single Day (MGD)			

	Minimum	Average	Maximum
Batch Volume (gallons)			
Batch Duration (minutes)			

Michigan Department of Environmental Quality- Water Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
 SECTION II - Sanitary Wastewater

B. Outfall Information

CASE TYPE OR PRINT

FACILITY NAME	NPDES PERMIT NUMBER	OUTFALL NUMBER
---------------	---------------------	----------------

**2 EFFLUENT CHARACTERISTICS – CONVENTIONAL POLLUTANTS**

Existing TWTDS must provide effluent testing data for the parameters listed below. (See pages ii and iii for sampling definitions, including "maximum daily concentration" and "maximum monthly concentration" )

New TWTDS must provide estimated effluent concentrations for the parameters listed below.

For analytical requirements, see page ii number 5. If Alternate Test Procedures have been approved for any parameter listed below, see item 9 on page ii for additional instructions.

☐ Check this box if additional information is included as an attachment. To submit additional information see page ii, item 8.

Parameter	Maximum Daily Concentration	Maximum Monthly Concentration	Units	Number of Analyses	Sample Type
Biochemical Oxygen Demand - five day (BOD <sub>5</sub> )			mg/l		<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
BOD <sub>5</sub> , Lowest % Removal	Do Not Use		%		<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
Carbonaceous BOD <sub>5</sub> (CBOD <sub>5</sub> )			mg/l		<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
Carbonaceous BOD <sub>5</sub> , Lowest % Removal	Do Not Use		%		<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
Ammonia Nitrogen (as N)			mg/l		<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
Total Suspended Solids			mg/l		<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
Total Suspended Solids, Lowest % Removal	Do Not Use		%		<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
Total Dissolved Solids			mg/l		<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
Total Phosphorus (as P)			mg/l		<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
Fecal Coliform Bacteria (report geometric means)	max. 7-day		counts/100 ml		Grab
Total Residual Chlorine			<input type="checkbox"/> µg/l <input type="checkbox"/> mg/l		Grab
Dissolved Oxygen	min daily	Do Not Use	mg/l		<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
pH	minimum	maximum	standard units		<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
Temperature			<input type="checkbox"/> °F <input type="checkbox"/> °C		<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
					<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
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Michigan Department of Environmental Quality- Water Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
**SECTION II - Sanitary Wastewater**

B. Outfall Information

PLEASE TYPE OR PRINT

FACILITY NAME	NPDES PERMIT NUMBER	OUTFALL NUMBER
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**3 EFFLUENT CHARACTERISTICS - TOXIC POLLUTANTS**

Existing Publicly Owned Treatment Works (POTWs) with a design flow greater than or equal to 1.0 MGD or an approved Federal Industrial Pretreatment Program (FIPP), or required to develop a FIPP or otherwise required by the permitting authority to provide the information, must provide effluent testing data for the pollutants listed below. Any effluent testing data for pollutants not specifically listed must be included using the blank rows provided on page 15. Provide the results of a minimum of three effluent analyses for each outfall through which effluent is discharged using approved methods pursuant to 40 CFR Part 136. Do not include information on combined sewer overflows in this section.

At a minimum, effluent testing data must be based on at least three pollutant scans for each outfall discharging effluent to waters of the state. For analytical requirements, see page II number 5.

All existing POTWs must provide (unless already provided as specified above) the results of at least one effluent analysis (taken in the last 5 years) for any chemical that is known or believed to be present in facility effluent that is listed in Tables 2, 3 and 4 of the appendix; a measured or estimated effluent concentration for any chemical that is known or believed to be present that is listed in table 5 of the appendix; a measured or estimated concentration for any toxic or otherwise injurious chemical known or believed to be present in facility effluent that is not previously identified in this application; and, results of all other effluent analyses that have been performed within the past 5 years for any chemical listed in Tables 2, 3, 4 and 5.

New POTWs must provide: An estimated effluent concentration for any chemical expected to be present in facility effluent that is listed in Tables 2, 3, 4 and 5 of the appendix, and an estimated effluent concentration for any toxic or otherwise injurious chemical known or believed to be present in facility effluent that is not previously identified in this application.

**Note:** If the effluent concentrations are estimated, place an E in the "Analytical Method" column. In accordance with Rule 323.1211(7), facilities whose supply water contains toxic pollutants that are withdrawn from and discharged to the same body of water may qualify for intake credits for those toxic pollutants. See Rule 1211(7) for qualification and demonstration requirements. All effluent data submitted in response to this part should be recorded on pages 9-15. To submit additional information see page II, item 8.

If Alternate Test Procedures have been approved for any parameter listed below, see Item 9 on page II for additional instructions.

SAMPLE DATE →																
PARAMETER	CAS No.	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Sample Type	Analytic Method	QL	DL
<b>METALS (TOTAL RECOVERABLE), CYANIDE, PHENOLS, AND HARDNESS</b>																
Antimony	7440360															
Arsenic	7440382															
Beryllium	7440417															
Cadmium	7440439															
Chromium	7440473															
Copper	7440508															
Lead	7439921															
Mercury (EPA Method 1631)	7439976															

Michigan Department of Environmental Quality- Water Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
 SECTION II - Sanitary Wastewater  
 B. Outfall Information

PLEASE TYPE OR PRINT

FACILITY NAME						NPDES PERMIT NUMBER						OUTFALL NUMBER			
---------------	--	--	--	--	--	---------------------	--	--	--	--	--	----------------	--	--	--

SAMPLE DATE →																
PARAMETER	CAS No.	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Sample Type	Analytic Method	QL	DL
Nickel	7440020															
Selenium	7782492															
Silver	7440224															
Thallium	7440280															
Zinc	7440666															
Cyanide	57125															
Total phenolic compounds	None															
Hardness (as CaCO <sub>3</sub> )	None															

SAMPLE DATE →																
PARAMETER	CAS No.	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Sample Type	Analytic Method	QL	DL
<b>VOLATILE ORGANIC COMPOUNDS</b>																
Acrolein	107028															
Acrylonitrile	107131															
Benzene	71432															
Bromoform	75252															
Carbon tetrachloride	56235															
Chlorobenzene	108907															
Chlorodibromomethane	124481															
Chloroethane	75003															
2-chloro-ethylvinyl ether	110758															

Michigan Department of Environmental Quality- Water Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
 SECTION II - Sanitary Wastewater  
 B. Outfall Information

PLEASE TYPE OR PRINT

FACILITY NAME					NPDES PERMIT NUMBER					OUTFALL NUMBER						
SAMPLE DATE →																
PARAMETER	CAS No.	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Sample Type	Analytic Method	QL	DL
Chloroform	67663															
Dichlorobromo-methane	75274															
1,1-dichloroethane	75343															
1,2-dichloroethane	107062															
Trans-1,2-dichloro-ethylene	156605															
1,1-dichloroethylene	75354															
1,2-dichloropropane	78875															
1,3-dichloro-propylene	542756															
Ethylbenzene	100414															
Methyl bromide	74839															
Methyl chloride	74873															
Methylene chloride	75092															
1,1,2,2-tetra-chloro ethane	79345															
Tetrachloroethylene	127184															
Toluene	108883															
1,1,1-trichloroethane	71556															
1,1,2-trichloroethane	79005															
Trichloroethylene	79016															
Vinyl chloride	75014															



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 SECTION II - Sanitary Wastewater  
 B. Outfall Information

PLEASE TYPE OR PRINT

FACILITY NAME						NPDES PERMIT NUMBER						OUTFALL NUMBER			
---------------	--	--	--	--	--	---------------------	--	--	--	--	--	----------------	--	--	--

SAMPLE DATE →																
PARAMETER	CAS No.	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Sample Type	Analytic Method	QL	DL
<b>ACID-EXTRACTABLE COMPOUNDS</b>																
P-chloro-m-creso	None															
2-chlorophenol	95578															
2,4-dichlorophenol	120832															
2,4-dimethylphenol	105679															
4,6-dinitro-o-cresol	534521															
2,4-dinitrophenol	51285															
2-nitrophenol	88755															
4-nitrophenol	100027															
Pentachlorophenol	87865															
Phenol	108952															
2,4,6-trichlorophenol	88062															
SAMPLE DATE →																
PARAMETER	CAS No.	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Sample Type	Analytic Method	QL	DL
<b>BASE-NEUTRAL COMPOUNDS</b>																
Acenaphthene	83329															
Acenaphthylene	208968															
Anthracene	120127															
Benzidine	92875															
Benzo(a)-anthracene	56553															

Michigan Department of Environmental Quality- Water Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
 SECTION II - Sanitary Wastewater  
 B. Outfall Information

PLEASE TYPE OR PRINT

FACILITY NAME						NPDES PERMIT NUMBER						OUTFALL NUMBER				
SAMPLE DATE →																
PARAMETER	CAS No.	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Sample Type	Analytic Method	QL	DL
Benzo(a)pyrene	50328															
3,4 benzo-fluoranthene	205992															
Benzo(ghi)perylene	191242															
Benzo(k)fluoranthene	207089															
Bis (2-chloroethoxy) methane	111911															
Bis (2-chloroethyl)-ether	111444															
Bis (2-chloroisopropyl) ether	108601															
Bis (2-ethylhexyl) phthalate	117817															
4-bromophenyl phenyl ether	101553															
Butyl benzyl phthalate	85687															
2-chloronaphthalene	91587															
4-chlorophenyl phenyl ether	7005723															
Chrysene	218019															
Di-n-butyl phthalate	84742															
Di-n-octyl phthalate	117840															
Dibenzo(a,h)anthracene	53703															
1,2-dichlorobenzene	95501															
1,3-dichlorobenzene	541731															
1,4-dichlorobenzene	106467															
3,3-dichlorobenzidine	91941															

Michigan Department of Environmental Quality- Water Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
 SECTION II - Sanitary Wastewater  
 B Outfall Information

PLEASE TYPE OR PRINT

FACILITY NAME				NPDES PERMIT NUMBER				OUTFALL NUMBER								
SAMPLE DATE →																
PARAMETER	CAS No.	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Sample Type	Analytic Method	QL	DL
Diethyl phthalate	84662															
Dimethyl phthalate	131113															
2,4-dinitrotoluene	121142															
2,6-dinitrotoluene	606201															
1,2-diphenylhydrazine	122667															
Fluoranthene	206440															
Fluorene	86737															
Hexachlorobenzene	118741															
Hexachlorobutadiene	87683															
Hexachlorocyclopentadiene	77474															
Hexachloroethane	67721															
Indeno(1,2,3-cd)pyrene	193395															
Isophorone	78591															
Naphthalene	91203															
Nitrobenzene	98953															
N-nitrosodi-n-propylamine	None															
N-nitrosodimethylamine	62759															
N-nitrosodiphenylamine	86306															
Phenanthrene	85018															
Pyrene	129000															

## Michigan Department of Environmental Quality- Water Division

## SECTION II - Sanitary Wastewater

### B. Outfall Information

PLEASE TYPE OR PRINT

[illegible]

Michigan Department of Environmental Quality- Water Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**

**SECTION II - Sanitary Wastewater**

**C. Combined Sewer System Information**

EASE TYPE OR PRINT

ILITY NAME

NPDES PERMIT NUMBER

**1 COLLECTION SYSTEM INFORMATION**

Complete this item if there are outfalls at the treatment facility or along the collection system from which discharges of untreated or partially treated wastewater occur. If there are more than 10 outfalls, make copies of page 17.

A Estimate the percentage of the collection system that is combined \_\_\_\_\_ %

B System Map Provide a map that shows all CSO discharge points

C. System Diagram Provide a diagram, either in the above map or on a separate drawing, of the combined sewer collection system that includes the locations of major trunk line sewers, both combined and separate sanitary; the locations of points where separate sanitary sewers feed into the combined sewer system; the locations of in-line and off-line storage structures; locations of flow regulating devices and the locations of pump stations.

**2. OUTFALL INFORMATION**

A Identify the outfall by number (e g 001, 002, etc ). Applicants with existing NPDES permits should refer to their current NPDES permit for outfall number identification, provide the name of the receiving water to which the outfall discharges.

B Enter the county and city/township (where applicable) in which the outfall is located

C Provide the location in State Planar Coordinates.

D Describe the location using latitude and longitude (accurate within 15 seconds)

**Note:** If the outfall discharges effluent from a retention treatment basin attach a summary of influent and effluent data from the last five years

A.	Outfall Number	Receiving Water			
B.	County			City or Township	
C.	$\frac{1}{4}, \frac{1}{4}$	$\frac{1}{4}$	Section	Town	Range
D.	Latitude (accurate within 15 seconds)			Longitude (accurate within 15 seconds)	

A.	Outfall Number	Receiving Water			
B.	County			City or Township	
C.	$\frac{1}{4}, \frac{1}{4}$	$\frac{1}{4}$	Section	Town	Range
D.	Latitude (accurate within 15 seconds)			Longitude (accurate within 15 seconds)	

A.	Outfall Number	Receiving Water			
B.	County			City or Township	
C.	$\frac{1}{4}, \frac{1}{4}$	$\frac{1}{4}$	Section	Town	Range
D.	Latitude (accurate within 15 seconds)			Longitude (accurate within 15 seconds)	

Michigan Department of Environmental Quality- Water Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
**SECTION II - Sanitary Wastewater**

C. Combined Sewer System Information

PLEASE TYPE OR PRINT

UTILITY NAME

NPDES PERMIT NUMBER

**OUTFALL INFORMATION - Continued**

Use this sheet to describe additional outfalls. Make additional copies of this page if necessary.

A.	Outfall Number	Receiving Water			
B	County			City or Township	
C	$\frac{1}{4}, \frac{1}{4}$	$\frac{1}{4}$	Section	Town	Range
D.	Latitude (accurate within 15 seconds)			Longitude (accurate within 15 seconds)	

A	Outfall Number	Receiving Water			
B	County			City or Township	
C.	$\frac{1}{4}, \frac{1}{4}$	$\frac{1}{4}$	Section	Town	Range
D.	Latitude (accurate within 15 seconds)			Longitude (accurate within 15 seconds)	

A	Outfall Number	Receiving Water			
B	County			City or Township	
C.	$\frac{1}{4}, \frac{1}{4}$	$\frac{1}{4}$	Section	Town	Range
D	Latitude (accurate within 15 seconds)			Longitude (accurate within 15 seconds)	

A	Outfall Number	Receiving Water			
B	County			City or Township	
C.	$\frac{1}{4}, \frac{1}{4}$	$\frac{1}{4}$	Section	Town	Range
D.	Latitude (accurate within 15 seconds)			Longitude (accurate within 15 seconds)	

A	Outfall Number	Receiving Water			
B	County			City or Township	
C.	$\frac{1}{4}, \frac{1}{4}$	$\frac{1}{4}$	Section	Town	Range
D.	Latitude (accurate within 15 seconds)			Longitude (accurate within 15 seconds)	

Michigan Department of Environmental Quality- Water Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**

**SECTION II - Sanitary Wastewater**

**D. Non-Domestic Wastewater Information**

PLEASE TYPE OR PRINT

CITY NAME

NPDES PERMIT NUMBER

**1. SEPTAGE - Does this facility accept septage?**

☐ No, continue with Item 2 below.

☐ Yes, on a separate sheet, describe the allocation of the Maximum Allowable Headworks Loading (MAHL) capacity to domestic wastewater, nondomestic wastewater and septage. The MAHL should include the treatment plant's design and current loading, and at a minimum, the number of gallons and concentrations of the following pollutants, BOD, TSS, PO4, and NH3 attributable to each wastewater.

**2 INDUSTRIAL AND COMMERCIAL SOURCES**

**A. Does this facility receive any nondomestic wastewater from any industrial or commercial facilities? (Nondomestic wastewater refers to water carried wastes other than human and household wastes )**

☐ No, continue with Section II E.

☐ Yes, continue with B below.

**B. Provide the following information:**

1) Estimate the average volume of non-sanitary wastewater received by this facility: \_\_\_\_\_ gallons/day

2) Describe the type of nondomestic wastewater(s) received by this facility in the space provided below (check all that are appropriate).

Wastewater Type	Volume (MGD)	Wastewater Type	Volume (MGD)
Industrial Process Wastewater	_____	Landfill leachate	_____
Contact cooling water	_____	Trucked Industrial Wastewater	_____
Noncontact cooling water	_____	Other _____	_____

**C. Is an Industrial Pretreatment Program (IPP) currently required by the DEQ? Note: Applicants with an Industrial Pretreatment Program must also complete Item 5 on page 19**

☐ No, continue with Item 3. below.

☐ Yes, provide the most recent approval date for the following elements of your program Continue with Item 3. below

Sewer Use Ordinance \_\_\_\_\_ Interjurisdictional Agreements \_\_\_\_\_ Procedures \_\_\_\_\_

Other Legal Authority \_\_\_\_\_ Enforcement Response Plan \_\_\_\_\_ Local Limits \_\_\_\_\_

**3. RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) WASTEWATER**

Does the treatment works receive or has it in the last three years received RCRA hazardous waste by truck, rail or dedicated pipe?

☐ No, continue with 4 below.

☐ Yes, provide the following information on a separate sheet The method that the waste is received (truck, rail, or dedicated pipe), the waste's "EPA Hazardous Waste Number", and the amount of waste received in either mass or volume

**4. REMEDIATION WASTEWATER**

Does the treatment facility receive (or has it been notified that it will receive in the next 5 years) wastes from remedial activities?

☐ No, continue with Section II.E

☐ Yes, provide a list on a separate sheet that contains the following information for each current and future remediation site

1) Describe the site and type of facility at which the CERCLA/RCRA/or other remedial waste originates or will originate.

2) List the hazardous constituents that are or are expected to be received at the POTW Include data on volume and concentration if known

3) Describe in detail any treatment the waste receives before being discharged to the POTW.

4) Provide the schedule that the remediation wastewater is discharged to the POTW.

Michigan Department of Environmental Quality- Water Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**

**SECTION II - Sanitary Wastewater**

**D. Non-Domestic Wastewater Information**

PLEASE TYPE OR PRINT

FACILITY NAME	NPDES PERMIT NUMBER
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**5 SIGNIFICANT INDUSTRIAL USER (SIU) INFORMATION**

Supply the following information for each SIU that discharges to the treatment plant. Make additional copies of this page when necessary.

**A SIU location information**

Company		
Facility Address		
City	State	Zip

**B Describe all of the industrial processes that affect or contribute to the SIU's discharge**

**C. Describe all of the principal processes and raw materials that affect or contribute to the SIU's discharge**

**D. Flow Rate. What are the average daily volume(s) of wastewater discharged to the collection system Are the discharge(s) continuous or intermittent.**

Type of Wastewater	Volume of Discharge (gpd)	Continuous or Intermittent
Process Wastewater		
Non-Process Wastewater		

**E Pretreatment Standards. Indicate whether the SIU is subject to one or both of the following**

☐ Local Limits

☐ Categorical Pretreatment Standards

Category \_\_\_\_\_

Subcategory \_\_\_\_\_

Category \_\_\_\_\_

Subcategory \_\_\_\_\_

Category \_\_\_\_\_

Subcategory \_\_\_\_\_

Category \_\_\_\_\_

Subcategory \_\_\_\_\_

**F. Describe any problems at the treatment plant or in the collection system (e g upsets, pass through, interference, blockages) attributed to waste discharged by this SIU during the last three years.**



Michigan Department of Environmental Quality- Water Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
 SECTION II - Sanitary Wastewater

E. Biosolids Information

EASE TYPE OR PRINT

FACILITY NAME	NPDES PERMIT NUMBER
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**1. BIOSOLIDS HANDLING**

Provide total English dry tons per 365-day period of residuals handled under the following practices:

Amount generated at the facility: _____	Amount sent to municipal solid waste landfill. _____
Amount received from off-site: _____	Amount sold or given away in a bag or other container for application to the land. _____
Amount treated on-site (including blending): _____	Amount Transported to another POTW _____
Amount used or disposed by another practice: _____	Transport Company _____
Amount applied to land in bulk form: _____	Receiving POTW _____
Amount fired in incinerator: _____	

**2. BIOSOLIDS STORAGE**

Enter the volume of residual storage capacity at this facility. \_\_\_\_\_ ☐ million gallons or ☐ cubic feet

**3. BIOSOLIDS CHARACTERISTICS**

Report one year residuals monitoring data, and in no case less than three sampling events for the following parameters. Provide the actual analytical data sheets as an attachment. Analytical methods shall be in accordance with R 323 2406 (2) Methods for Biosolids.

Parameter	Average Monthly Concentration	Maximum Concentration	Units	Number of Analyses	Sample Type	Analytical Method	Quantification Level
Total Solids			%		<input type="checkbox"/> Grab <input type="checkbox"/> Composite		
Total Arsenic			Mg/kg		<input type="checkbox"/> Grab <input type="checkbox"/> Composite		
Total Cadmium			Mg/kg		<input type="checkbox"/> Grab <input type="checkbox"/> Composite		
Total Copper			Mg/kg		<input type="checkbox"/> Grab <input type="checkbox"/> Composite		
Total Lead			Mg/kg		<input type="checkbox"/> Grab <input type="checkbox"/> Composite		
Total Mercury			Mg/kg		<input type="checkbox"/> Grab <input type="checkbox"/> Composite		
Total Molybdenum			Mg/kg		<input type="checkbox"/> Grab <input type="checkbox"/> Composite		
Total Nickel			Mg/kg		<input type="checkbox"/> Grab <input type="checkbox"/> Composite		
Total Selenium			Mg/kg		<input type="checkbox"/> Grab <input type="checkbox"/> Composite		
Total Zinc			Mg/kg		<input type="checkbox"/> Grab <input type="checkbox"/> Composite		
Total Kjeldahl Nitrogen			Mg/kg		<input type="checkbox"/> Grab <input type="checkbox"/> Composite		
Ammonium Nitrogen			Mg/kg		<input type="checkbox"/> Grab <input type="checkbox"/> Composite		
Total Phosphorus			Mg/kg		<input type="checkbox"/> Grab <input type="checkbox"/> Composite		
Total Potassium			Mg/kg		<input type="checkbox"/> Grab <input type="checkbox"/> Composite		

Michigan Department of Environmental Quality- Water Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
**SECTION II - Sanitary Wastewater**

E. Biosolids Information

PLEASE TYPE OR PRINT

FACILITY NAME	NPDES PERMIT NUMBER
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**4 POLLUTANTS OF CONCERN**

Are there currently or is there potential for pollutants (other than parameters listed on the previous page) to be present in the residuals at concentrations that would make them unsuitable for land application?

☐ No, continue with Item 5.

☐ Yes, on a separate sheet provide representative analytical data for those pollutants.

**5 ADDITIONAL BIOSOLIDS MONITORING DATA**

Report any biosolids monitoring data from the last permit cycle for parameters not specifically listed on the previous page. Include the actual analytical data sheets as an attachment. Upon submittal review, additional monitoring may be required if the Water Division has reason(s) to suspect that the information provided (or not provided) does not adequately characterize the residuals proposed to be land applied. For assistance completing this item call the Permits Section. To submit additional information see page ii, item 8

Parameter	Average Monthly Concentration	Maximum Concentration	Units	Number of Analyses	Sample Type	Analytical Method	Quantification Level
					<input type="checkbox"/> Grab <input type="checkbox"/> Composite		
					<input type="checkbox"/> Grab <input type="checkbox"/> Composite		
					<input type="checkbox"/> Grab <input type="checkbox"/> Composite		
					<input type="checkbox"/> Grab <input type="checkbox"/> Composite		
					<input type="checkbox"/> Grab <input type="checkbox"/> Composite		
					<input type="checkbox"/> Grab <input type="checkbox"/> Composite		
					<input type="checkbox"/> Grab <input type="checkbox"/> Composite		
					<input type="checkbox"/> Grab <input type="checkbox"/> Composite		

**6 LAND APPLICATION SITE LIST**

Provide the following information for every new or existing site that may be used in the next five years (biosolids permit cycle). Each listed site should have been submitted to the MDEQ on a Site Identification Form (with attachments) since January 1, 1998 or the required information should be included with this form. Additional sites may be added to the Land Application Site List during the biosolids permit cycle by submitting a completed Site Identification Form with the appropriate attachments and waiting the required ten day notification period. To submit additional information see page ii, item 8

Site Identification Number	Latitude	Longitude	Acres	Owners Last Name	New Site	CPLR Site
					<input type="checkbox"/>	<input type="checkbox"/>
					<input type="checkbox"/>	<input type="checkbox"/>
					<input type="checkbox"/>	<input type="checkbox"/>
					<input type="checkbox"/>	<input type="checkbox"/>
					<input type="checkbox"/>	<input type="checkbox"/>
					<input type="checkbox"/>	<input type="checkbox"/>
					<input type="checkbox"/>	<input type="checkbox"/>
					<input type="checkbox"/>	<input type="checkbox"/>

Michigan Department of Environmental Quality- Water Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
SECTION II - Sanitary Wastewater

F Signature Page

PLEASE TYPE OR PRINT

MUNICIPALITY NAME

NPDES PERMIT NUMBER

**1. CERTIFICATION**

Rule 323.2114(1-4) promulgated under the Michigan Act, requires that this application be signed as follows:

- A. For a municipal, state, or other public facility, by a principal executive officer or ranking elected official (such as the mayor, village president, city or village manager or clerk)
- B. For an organization, company, corporation or authority, by a principal executive officer.
- C. For a partnership, by a general partner.
- D. For a sole proprietor, by the proprietor.

**Note:** If the signatory is not listed above, but is authorized to sign the application, please provide documentation of that authorization

*"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."*

Print Name \_\_\_\_\_ Title \_\_\_\_\_

Representing \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

If the application is for a privately owned treatment system serving a mobile home park, campground, apartment complex, condominium, nursing home, prison, or other facility for treatment of domestic wastewater from two or more residences, a principal executive officer or a ranking elected official from the local unit of government shall sign the permit application in the space provided. The signature is only a certification that the local unit of government is aware of its responsibilities as set forth in Section 3109(2) of Michigan Act 451, P.A. of 1994, as amended. The refusal of the local unit of government to sign the application does not reduce its liability under the statute.

*"This is to certify that I am aware of and recognize the responsibilities of the municipality as set forth in Section 3109(2) of Michigan Act 451, P.A. of 1994, as amended"*

Print Name \_\_\_\_\_ Title \_\_\_\_\_

Representing \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

**This completes Section II. Return the completed application, (Sections I, II and any attachments) to the appropriate district office. See pages 2 and 3 of the appendix for district office addresses and a map of district boundaries.**

**If assistance is needed completing this application, contact the Permits Section, telephone number: 517-373-8088.**

## Section III.A



Michigan Department of Environmental Quality- Water Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
**SECTION III - Industrial and Commercial Wastewater**

Section III is to be completed by all facilities classified as Industrial or Commercial facilities. Industrial and Commercial facilities include but are not limited to facilities that discharge or propose to discharge a wastewater generated by; a production process, a service provided or through a remediation project. Municipal and public facilities are not required to complete Section III (unless requesting authorization for discharges other than sanitary wastewater)

**A. Facility Information**

PLEASE TYPE OR PRINT

<b>FACILITY NAME</b> Donald C. Cook Nuclear Plant	<b>NPDES PERMIT NUMBER</b> MI0005827
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**1. BUSINESS INFORMATION**

A. Provide up to four (4), Standard Industrial Classification (SIC) or North American Industry Classification System (NAICS) codes, in order of economic importance, which best describe the major products or services provided by this facility.

1. 4911	2	3	4
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B. Indicate if this facility is a primary industry (refer to Table 1 of the appendix to determine if this facility is a primary industry)

- ☒ Yes, this facility is a primary industry. Indicate the primary industry as identified in Table 1 of the appendix: Steam Electric
- ☐ No, this facility is not a primary industry, continue with Item C

C. Is this facility a concentrated animal feeding operation or an aquatic animal production facility?

- ☐ Yes, contact the Permits Section, telephone number: 517-373-8088
- ☒ No, continue below.

**2. WATER SUPPLY AND DISCHARGE TYPE**

A. Identify all water sources entering the facility and treatment system and provide average flows. The volume may be estimated from water supply meter readings, pump capacities, etc. Provide the name of the source where appropriate (i.e., Grand River, Lake Michigan, City of Millpond). To submit additional information see page II, item 8

	Name and Location of Source	Average Volume or Flow Rate	Indicate Units
Municipal Supply	Lake Township	0.368	MGD
Surface Water Intake	Lake Michigan	2029	MGD
Private Well	NA	NA	NA
Other (specify)	NA	NA	NA

B. Identify water discharged by the facility and treatment system and provide average flows. If water is first used for one purpose and then is subsequently used for another purpose, indicate the type and amount of the last use. For example, if water is initially used for noncontact cooling water and then for process water, indicate the amount of process water. The amount of water from sources should approximate the amount of water usage. If they are different, provide an explanation.

	Average Flow Rate	Indicate Units		Average Flow Rate	Indicate Units
Process Wastewater	0.809	MGD	Sanitary Wastewater	0.022	MGD
Contact Cooling Water	NA	NA	Regulated Storm Water	5,169 (Calc)	MGD
Noncontact Cooling Water	2029	MGD	High Pressure Test Water	NA	NA
Groundwater Clean Up	NA	NA	Other:	NA	NA

**Note:** For A and B above, indicate units either as MGD (million gallons per day), MGY (million gallons per year), GPD (gallons per day), or other appropriate unit

Michigan Department of Environmental Quality- Water Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
SECTION III - Industrial and Commercial Wastewater

B. Outfall Information

**INSTRUCTIONS FOR COMPLETING SECTION III, ITEM B 1.**

This item requests detailed information on each outfall at the facility. Fill in the Outfall Number in the top right hand box identifying the outfall by number, e.g., 001, 002, etc. (applicants with existing NPDES permits should refer to the facility's current NPDES permit for outfall number identification). For each outfall provide the location, the type of wastewater, the expected and/or measured volume of effluent discharged, the frequency of discharge and the flow variation of the discharge.

- A. **WATERSHED** Identify the receiving stream's watershed. Each receiving stream will eventually discharge into one of the Great Lakes or one of the connecting waters (i.e., Detroit River, St. Mary's River, St. Clair River). Indicate from which river the discharge eventually discharges to the Great Lakes. For example: Sycamore Creek is tributary to the Red Cedar River, which is tributary to the Grand River, which discharges to Lake Michigan. Consequently a discharge to the Sycamore Creek is a discharge to the Grand River Watershed.
- B. **RECEIVING WATER.** Identify the exact location of the wastewater discharge point(s) and all areas through which the discharge flows (e.g., storm sewers, open drains, wetlands), if applicable, between the discharge point and the receiving water. Examples of receiving waters are rivers, creeks, lakes, etc.
- C. **COUNTY / TOWNSHIP:** Provide the county and township where the outfall is located.
- D. **STATE PLANAR COORDINATES:** Provide the location of the discharge to the receiving water in State Planar Coordinates. Report State Planar Coordinates using quarter-quarter section, quarter section, section, town and range (e.g., NE 1/4, SE 1/4, Section 34, T1N, R12E).
- LATITUDE / LONGITUDE:** Provide the latitude and longitude of the discharge accurate within 15 seconds (e.g., Latitude = 42°27'15" Longitude = -83°02'30") or accurate within 0.004 decimal degrees (e.g., Latitude = 42.454167, Longitude -83.041667).
- F. **WASTEWATER TYPES:** Indicate the type(s) of wastewater the facility is requesting authorization to discharge. Check as many types of wastewater as are appropriate for this outfall. If a water is used in multiple areas, such as water that is first used for noncontact cooling, and then for another use, such as process water, indicate the final use only. For other common wastewater types see "Table 9 - Other Types of Wastewater" in the appendix.
- G. **MAXIMUM DESIGN FLOW RATE:** When reporting the Maximum Design Flow Rate, provide the design flow for this specific outfall, (e.g., batch treatment system flow, package treatment system flow, or some other finite treatment system flow). Please provide an explanation if "Pollution Prevention" measures are expected to provide flow reductions.
- H. **MAXIMUM AUTHORIZED DISCHARGE FLOW:** Provide the maximum discharge flow rate that the facility is expecting to discharge in the next five years. **NOTE:** Discharges of flows greater than the Discharge Flow Rates authorized in the permit constitute a violation of Act 451 of 1994, as amended, Part 31, and are subject to the penalties specified therein.
- I. **SEASONAL DISCHARGE:** A discharge is considered to be seasonal if the facility treats and then stores wastewater throughout the year or a portion of the year and discharges it a few days, weeks or months a year. Provide the dates the facility discharges the treated wastewater (e.g., October 15 through November 10) and the average discharge flows (e.g., 5 MGD).
- J. **CONTINUOUS DISCHARGE:** Provide the average number of hours per day and the number of days per year that the discharges occur. Batch dischargers shall provide the peak batch flow rate, the number of batches per day, the per batch minimum, average and maximum volumes in gallons, and the per batch minimum, average and maximum batch discharges in minutes.

**NOTE:** The units are as follows: GPD = gallons per day, MGD = millions of gallons per day, MGY = millions of gallons per year.

## Section III.B

Michigan Department of Environmental Quality- Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
 SECTION III - Industrial and Commercial Wastewater

### B. Outfall Information

Complete a separate Section III.B. - Outfall Information (pages 26-31) for each outfall at the facility. Make copies of this blank section for the application for additional outfalls as necessary.

PLEASE TYPE OR PRINT

FACILITY NAME	NPDES PERMIT NUMBER	OUTFALL NUMBER
Donald C. Cook Nuclear Plant	MI0005827	INTAKE

1. **OUTFALL INFORMATION** (see page 25 for instruction on completion of this page)

A	Watershed Lower St Joseph				
B	Receiving Water Lake Michigan				
C.	County Bernie			Township Lake	
D.	¼, ¼ SW	¼ NW	Section 06	Town 06S	Range 19W
E	Latitude 41 58' 30"			Longitude 86 34' 30"	

F. Type of Wastewater Discharged (Check all that apply to this outfall):

- ☐ Contact Cooling      ☐ Sanitary Wastewater      ☐ Groundwater Cleanup      ☐ Storm Water (regulated)  
☐ Noncontact Cooling      ☐ Process Wastewater      ☐ Hydrostatic Pressure Test      ☐ Storm Water (not regulated)  
☐ Storm water subject to effluent guidelines (indicate under which category) \_\_\_\_\_  
☐ Other – specify (see "Table 8 - Other Common Types of Wastewater" in appendix) \_\_\_\_\_

J. What is the maximum Facility Design Flow Rate. 2369 MGD

G. What is the maximum discharge flow authorized for this outfall

Seasonal Dischargers	_____	MGY Continue with Item H.
Continuous Dischargers	INTAKE	MGD Continue with Item I.

## H Seasonal Discharge

List the discharge periods (by month) and the volume discharged in the space provided below

From	Through	Discharge Volume	Annual Total
From	Through	Discharge Volume	
From	Through	Discharge Volume	
From	Through	Discharge Volume	

### 1. Continuous Discharge

How often is there a discharge from this outfall (on the average)?      INTAKE    Hours/Day      \_\_\_\_\_    Days/Year

**Batch dischargers must provide the following additional information:**

Is there effluent flow equalization? ☐ Yes ☐ No

Batch Peak Flow Rate: \_\_\_\_\_ Number of batches discharged per day \_\_\_\_\_

	Minimum	Average	Maximum
Batch Volume (gallons)			
Batch Duration (minutes)			



Michigan Department of Environmental Quality- Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
SECTION III - Industrial and Commercial Wastewater

B. Outfall Information

PLEASE TYPE OR PRINT

FACILITY NAME Donald C. Cook Nuclear Plant	NPDES PERMIT NUMBER MI0005827	OUTFALL NUMBER INTAKE
<b>2. PROCESS STREAMS CONTRIBUTING TO OUTFALL DISCHARGE</b> This information is used to determine the applicable federal regulations for this discharge. The information required to be reported is dependent on the type of facility. Page 7 of the appendix contains an abbreviated list of various industries and the types of information each shall report in this application. For assistance call the Permits Section. All industries shall provide the name of each process and the SIC or the NAICS code for the process. If the wastestream is not regulated under federal categorical standards, the applicant shall report all pollutants which have the reasonable potential to be present in the discharge. To submit additional information see page ii, item 8.		
<b>PROCESS INFORMATION</b> A. Name of the process contributing to the discharge: _____ B. SIC or NAICS code: _____ C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported): _____		
<b>PROCESS INFORMATION</b> A. Name of the process contributing to the discharge: _____ B. SIC or NAICS code: _____ C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported): _____		
<b>PROCESS INFORMATION</b> A. Name of the process contributing to the discharge: _____ B. SIC or NAICS code: _____ C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported): _____		
<b>PROCESS INFORMATION</b> A. Name of the process contributing to the discharge: _____ B. SIC or NAICS code: _____ C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported): _____		
<b>PROCESS INFORMATION</b> A. Name of the process contributing to the discharge: _____ B. SIC or NAICS code: _____ C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported): _____		

Michigan Department of Environmental Quality- Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
SECTION III - Industrial and Commercial Wastewater

B. Outfall Information

**INSTRUCTIONS FOR COMPLETING SECTION III, ITEM B.3.**

In accordance with 40 CFR 122.21, all applicants must report CBOD<sub>5</sub>, Chemical Oxygen Demand, Total Organic Carbon, Total Suspended Solids, Ammonia as N, Temperature (both summer and winter), and pH. The applicant may, however, request that reporting of data for one or more of these required parameters be waived. Such request must be supported by adequate rationale. The request shall be included as an attachment to this application.

Report available discharge data for the parameters listed. Actual data shall be provided for existing discharges and expected or estimated data provided for proposed discharges. Please include an explanation if "Pollution Prevention" is expected to provide reduction of pollutants. See Page 8 of the appendix for a list of specific parameters for which data must be provided for specific types of discharges (e.g., noncontact cooling waters, gasoline groundwater cleanups, etc.). For assistance in determining the appropriate parameters to report, call the Permits Section.

If data are available for other parameters not listed in Section III.B.3, the applicant shall report these data in the blank spaces provided or attach the information to this application on 8½" x 11" paper.

Report all data in the units provided and for the sample types specified in the table. If more than one option is available, check the appropriate box. The units are as follows: µg/l = micrograms per liter, mg/l = milligrams per liter, °F = degrees Fahrenheit, °C = degrees Celsius. See page ii number 5 for analytical requirements.

To analyze for pH, temperature, total residual chlorine, oil and grease, and fecal coliform use **Grab Samples** unless other frequency-sample type analyses are available. To analyze for total BOD<sub>5</sub>, total phosphorus, COD, TOC, ammonia nitrogen and total suspended solids use **24-hour composite samples** unless other frequency-sample type analyses are available.

For two or more substantially identical outfalls, permission may be requested from the appropriate district office to sample and analyze only one outfall and submit the results of the analysis for other substantially identical outfalls. If the request is granted by the district office, on a separate sheet attached to the application form, identify which outfall was sampled and describe why the outfalls which were not sampled are substantially identical to the outfall which was sampled. See pages ii and iii for sampling definitions, including "maximum daily concentration", and "maximum monthly concentration".

**REPORTING OF INTAKE DATA**

Applicants are required to report intake water data when they are attempting to demonstrate eligibility for "net" effluent limitations for one or more pollutants. A "net" effluent limitation is determined by subtracting the average level of the pollutant(s) present in the intake waters remaining after treatment which is not removed by the treatment system. NPDES regulations allow net limitations only in certain circumstances (see 40 CFR Part 122.45(g)). To demonstrate eligibility, report the average concentration and/or mass of the results of the analyses on the intake water. If the intake water is treated prior to use, report the intake concentrations and/or mass after treatment. In addition to the analytical results, the following information shall be submitted for each parameter:

- a) A statement that the intake water is drawn from the body of water into which the discharge is made. If the discharge is not to the same body of water from which the water is withdrawn, the facility is not eligible for net limitations.
- b) A statement of the extent to which the level of the pollutant in the intake water is reduced by treatment of the wastewater. Limitations for the net removal of pollutants are adjusted only to the extent that the pollutant is not removed.
- c) When applicable (for example, when the pollutant represents a class of compounds, e.g., BOD<sub>5</sub>, TSS, etc.), a demonstration of the extent to which the pollutants in the intake vary physically, chemically and biologically from the pollutants contained in the discharge. Limitations are adjusted only to the extent that the concentrations of the intake pollutants vary from the discharged pollutants.

**Note:** Applicants for groundwater remediation discharges should also report the intake characteristics of contaminated groundwater.

## B. Outfall Information

FACILITY NAME

NPDES PERMIT NUMBER

OUTFALL NUMBER

3 WASTEWATER CHARACTERISTICS - CONVENTIONAL POLLUTANTS - Instructions for completing this page are on the facing page.

[illegible]

Michigan Department of Environmental Quality- Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
SECTION III - Industrial and Commercial Wastewater

B. Outfall Information

PLEASE TYPE OR PRINT

CILITY NAME	NPDES PERMIT NUMBER	OUTFALL NUMBER
Donald C Cook Nuclear Plant	MI0005827	INTAKE

**4. PRIMARY INDUSTRY PRIORITY POLLUTANT INFORMATION**

Existing primary industries that discharge process wastewater must submit the results of at least one effluent analysis for selected organic pollutants identified in Table 2 (as determined from Table 1, Testing Requirements for Organic Toxic Pollutants by Industrial Category), and all the pollutants identified in Table 3. Existing primary industries must also provide the results of at least one effluent analysis for any other chemical listed in Table 2 known or believed to be present in facility effluent.

In addition, submit the results of all other effluent analyses performed within the last 5 years for any chemical listed in Tables 2 and 3.

New primary industries that propose to discharge process wastewater must provide an estimated effluent concentration for any chemical listed in Tables 2 and 3 expected to be present in facility effluent.

**5. DIOXIN AND FURAN CONGENER INFORMATION**

Existing industries that use or manufacture 2,3,5-trichlorophenoxy acetic acid (2,4,5-T), 2- (2,3,5-trichlorophenoxy) propanoic acid, (Silvex, 2,3,5-TP), 2-(2,4,5-trichlorophenoxy) ethyl 2,2-dichloropropionate (Erbon), 0,0-dimethyl 0-(2,4,5-trichlorophenyl) phosphorothionate (Ronnel), 2,4,5-trichlorophenol (TCP) or hexachlorophrene (HCP), or knows or has reason to believe that 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) is present in facility effluent, must submit the results of at least one effluent analysis for the dioxin and furan congeners listed in Table 6. All effluent analyses for dioxin and furan congeners must be conducted using EPA Method 1613.

In addition, submit the results of all other effluent analyses performed within the last 5 years for any dioxin and furan congener listed in Table 6.

New industries that expect to use or manufacture 2,3,5-trichlorophenoxy acetic acid (2,4,5-T), 2- (2,3,5-trichlorophenoxy) propanoic acid (Silvex, 2,3,5-TP); 2-(2,4,5-trichlorophenoxy) ethyl 2,2-dichloropropionate (Erbon), 0,0-dimethyl 0-(2,4,5-trichlorophenyl) phosphorothionate (Ronnel), 2,4,5-trichlorophenol (TCP) or hexachlorophrene (HCP), or knows or has reason to believe that 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) is present in facility effluent must provide estimated effluent concentrations for the dioxin and furan congeners listed in Table 6.

**6. OTHER INDUSTRY PRIORITY POLLUTANT INFORMATION**

Existing secondary industries, or existing primary industries that discharge non-process wastewater, must submit the results of at least one effluent analysis for any chemical listed in Tables 2 and 3 known or believed to be present in facility effluent.

In addition, submit the results of all other effluent analyses performed within the last 5 years for any chemical listed in Tables 2 and 3.

New secondary industries, or new primary industries that propose to discharge non-process wastewater, must provide an estimated effluent concentration for any chemical listed in Tables 2 and 3 expected to be present in facility effluent.

**7. ADDITIONAL TOXIC AND OTHER POLLUTANT INFORMATION**

All existing industries, regardless of discharge type, must provide the results of at least one analyses for any chemical listed in Table 4 known or believed to be present in facility effluent, and a measured or estimated effluent concentration for any chemical listed in Table 5 known or believed to be present in facility effluent. In addition, submit the results of any effluent analysis performed within the last 5 years for any chemical listed in Tables 4 and 5.

New industries, regardless of discharge type, must provide an estimated effluent concentration for any chemical listed in Tables 4 and 5 expected to be in facility effluent.

**8. INJURIOUS CHEMICALS NOT PREVIOUSLY REPORTED**

New or existing industries, regardless of discharge type, must provide a measured or estimated effluent concentration for any toxic or otherwise injurious chemicals known or believed to be present in facility effluent that have not been previously identified in this application. Quantitative effluent data that are less than 5 years old for these chemicals must be reported.

**NOTE:** All effluent data submitted in response to questions 4, 5, 6, 7, and 8 above should be recorded on page 31. To submit additional information see page ii, item 8. If the effluent concentrations are estimated, place an E in the "Analytical Method" column. The following fields must be completed for each data row. Parameter, CAS No., Concentration(s), Sample Type, Analytical Method, Quantification Level and Detection Level. See page ii, number 5 for analytical test requirements.

## Section III.B.6 and 7

Additional Sample Data  
Summary Sheet

Intake

## For Intake

Parameter	03/12/02	03/14/02	03/18/02	03/19/02	03/20/02	03/21/02	03/25/02	03/26/02	03/27/02	04/01/02	04/02/02	04/03/02	05/30/02	Sample type	Max Daily	Analytical	Max monthly	# of Analyses
<b>Table 2</b>																		
No Data																		
<b>Table 3</b>																		
Antimony (ug/l)						<1								Grab	<1	200 7	<1	1
Arsenic (ug/l)						<1								Grab	<1	200 7	<1	1
Beryllium (ug/l)						<0.2								Grab	<0.2	200 7	<0.2	1
Cadmium (ug/l)						<0.2								Grab	<0.2	200 7	<0.2	1
Chromium (ug/l)						<2								Grab	<2	200 7	<2	1
Copper (ug/l)						1							<1	Grab	1	200 7	1	2
Lead (ug/l)						<1								Grab	<1	200 7	<1	1
Selenium (ug/l)						<1								Grab	<1	270 3	<1	1
Silver(ug/l)						<0.2								Grab	<0.2	200 7	<0.2	1
Nickel (ug/l)						<3								Grab	<3	200 7	<3	1
Thallium -(ug/l)						<1								Grab	<1	279 2	<1	1
Zinc (ug/l)						5							<4	Grab	5	200 7	5	2
Cyanide (mg/l)						<0.01								Grab	<0.01	335 2	<0.01	1
Mercury (ng/l)						2.11							1.04 (1.08)	Grab	2.11	1631	2.11	3
<b>Table 4</b>																		
Fluoride (mg/l)	0.2	0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1		Grab	0.1	340.2	0.1	11
Iron (mg/l)	0.35	0.21	0.31	0.24	0.18		0.97	0.72	0.82	0.23	0.2	0.78		Grab	0.97	200.7	0.48	11
Magnesium (mg/l)	11.8	11.7	12.2	12.1	12		14	14.2	14.3	12.1	12.3	12.9		Grab	14.3	200.7	12.8	11
Sulfate (mg/l)	22	22	23	23	22	23	28	26	27	23	24	23		Composite	28	375.4	24	12
<b>Table 5</b>																		
No Data																		
<b>Additional Data</b>																		
Calcium (mg/l)	36.3	36.2	39.5	39.2	37.9		44.4	45.7	45.2	38.7	39	41.5		Grab	45.7	200.7	40.6	11
Chloride (mg/l)	15	13	12	13	12		15	15	15	17	20	16		Grab	20	325.3	17.7	11
Hardness (mg/l)	139	139	149	147	144		169	173	172	146	148	157		Grab	173	130.2	154.0	11
Silica (mg/l)	1.79	1.68	2.07	2.05	1.87	<0.2	1.92	2.14	2.07	1.71	1.73	1.67		Grab	2.14	200.7	1.9	12

Analysis performed by Belomonte Park Labs

Information	12-THP-6020.ADM.010	Rev. 5B	Page 7 of 8
ANALYTICAL RESULTS			
Data Sheet 2	NPDES Results		Page: 7

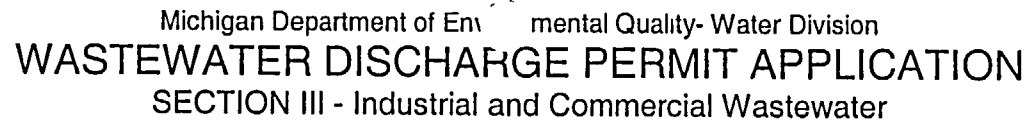
Sample Identification: Circ Intake  
 Sample Date: 3-26-02  
 Received Date/Time: ↓  
 Analysis Date: ↓

Sampler's Initials: AS  
 Sample Time: 0730  
 Receiver's Initials: AS

CALCULATIONS/RESULTS						
TDS	(W <sub>r</sub> )	-(W <sub>i</sub> )	x 1000 / (V)	=	ppm	CDMS Trend (S)(I)(D) Results in Spec
STD#	(W <sub>r</sub> )	-(W <sub>i</sub> )	x 1000 / (V)	=	ppm	
Analysis Time:	Equip ID.:	Analyst's Initials:				
O&G	R = (W <sub>r</sub> )	-(W <sub>i</sub> )	B = (W <sub>r</sub> )	-(W <sub>i</sub> )		CDMS Trend (S)(I)(D) Results in Spec
	(R)	-(B)	/ (V)	=	ppm	
STD#	R = (W <sub>r</sub> )	-(W <sub>i</sub> )	B = (W <sub>r</sub> )	-(W <sub>i</sub> )	mg.	
	(R)	-(B)	/ (V)	=	ppm	
Analysis Time:	Equip ID.:	Analyst's Initials:				
TSS	(A)	-(B)	x 1000 / (C)	=	ppm	CDMS Trend (S)(I)(D) Results in Spec
TSS	(A)	-(B)	x 1000 / (C)	=	ppm	
STD#	(A)	-(B)	x 1000 / (C)	=	ppm	
Analysis Time:	Equip ID.:	Analyst's Initials:				
SO <sub>4</sub>	(Dilution Factor)	x (Sample Reading)		=	mg/L(ppm)	CDMS Trend (S)(I)(D) Results in Spec
STD#	(Dilution Factor)	x (Standard Reading)		=	mg/L(ppm)	
Analysis Time:	Equip ID.:	Analyst's Initials:				
PH	Sample Temperature:	26.5 °C	Result =	7.93		CDMS Trend (S)(I)(D) Results in Spec
STD#	Theoretical Value:	7.00	Standard Temperature:	23.2	Result =	
Analysis Time:	Equip ID.:	CAL 151	Analyst's Initials:	AS		
Total P	Result =	ppm	STD#:	Result =	ppm	CDMS Trend (S)(I)(D) Results in Spec
Analysis Time:	Equip ID.:	Analyst's Initials:				
Analysis	Analysis Time	Equipment ID	Results	Analysts Initials	CDMS Trend	
Concl	0738	CAL 209	379 mg/L	AS	N/A	
Tnc	0740	DR 2010-4	2.08	AS	N/A	

Comments/Corrective Actions/Notifications:

Working Copy  
 Verified By: AS  
 Date: 3/26/02  
 Initial: AS



PLEASE TYPE OR PRINT

EQP( -C (Rev 1/03)

Michigan Department of Environmental Quality- Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
SECTION III - Industrial and Commercial Wastewater  
B. Outfall Information

PLEASE TYPE OR PRINT

<b>FACILITY NAME</b> Donald C. Cook Nuclear Plant	<b>NPDES PERMIT NUMBER</b> MI0005827	<b>OUTFALL NUMBER</b> INTAKE
--	---	---------------------------------

**9. WATER TREATMENT ADDITIVES**  
Water treatment additives include any material that is added to water used at the facility or to a wastewater generated by the facility to condition or treat the water.

Approvals of water treatment additives are authorized by the DEQ under separate correspondence. The issuance of an NPDES permit does not constitute approval of the water treatment additives that are included in this application.

A. Are there water treatment additives in the discharge from this facility?

☒ No, proceed to item 4  
☐ Yes

B. Have these water treatment additives been previously approved?

☐ No, continue with C below.  
☐ Yes. Submit a list of the previously approved water treatment additives and the date they were approved. The information listed in C 1-8 must be updated if it has changed since the previous approval.

C. Submit a list of water treatment additives that are or may be discharged from the facility. Applicants must submit the information listed below for each additive.

1. The water treatment additive Material Safety Data Sheet
2. The proposed water treatment additive discharge concentration.
3. The discharge frequency (i.e., number of hours per day, week, etc.)
4. The outfall the water treatment additive is to be discharged from
5. The type of removal treatment, if any, that the water treatment additive receives prior to discharge
6. The water treatment additive function (i.e., microbiocide, flocculant, etc.)
7. A 48-hour LC50 or EC50 for a North American freshwater planktonic crustacean (either *Ceriodaphnia* sp., *Daphnia* sp., or *Simocephalus* sp.)
8. The results of a toxicity test for one other North American freshwater aquatic species (other than a planktonic crustacean) that meets a minimum requirement of Rule 323.1057(2)(a) of the Water Quality Standards. Examples of tests that would meet this requirement include a 96-hour LC50 for a rainbow trout, bluegill, or fathead minnow.

The required toxicity information (described in items 7 and 8 above) is currently available in the SWQD files for the water treatment additives listed on the DEQ's Internet page <http://www.deq.state.mi.us/swq/gleas/docs/wta/WTAlist.doc>. If you intend to use one of the water treatment additives on this list, only the information in items 1 through 6 above needs to be submitted to the SWQD.

**Note:** The availability of toxicity information for a water treatment additive does not constitute approval to discharge the water treatment additive.

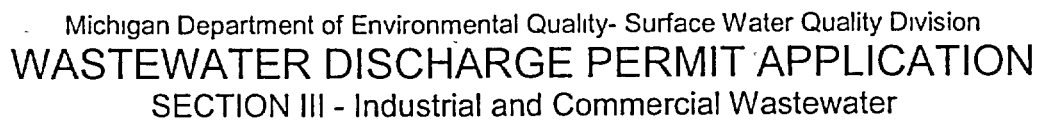
  

**10. WHOLE EFFLUENT TOXICITY TESTS**  
Have any acute or chronic WET tests been conducted on any discharges or receiving water in relation to facility discharges within the last three years? If yes, identify the tests and summarize the results below unless the test has been submitted to the department in the last 5 years.



## Section III.B

### Outfall 001



Complete a separate Section III.B. - Outfall Information (pages 26-31) for each outfall at the facility. Make copies of this blank section of the application for additional outfalls as necessary.

FACILITY NAME Donald C. Cook Nuclear Plant	NPDES PERMIT NUMBER MI0005827	OUTFALL NUMBER 001
---	----------------------------------	-----------------------

## A

B

C

D

F

Longitude  
86 34' 30"

	Minimum	Average	Maximum
Batch Volume (gallons)			
Batch Duration (minutes)			

Michigan Department of Environmental Quality- Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
SECTION III - Industrial and Commercial Wastewater

B. Outfall Information

PLEASE TYPE OR PRINT

<b>FACILITY NAME</b> Donald C. Cook Nuclear Plant	<b>NPDES PERMIT NUMBER</b> MI0005827	<b>OUTFALL NUMBER</b> 001
<b>2. PROCESS STREAMS CONTRIBUTING TO OUTFALL DISCHARGE</b> This information is used to determine the applicable federal regulations for this discharge. The information required to be reported is dependent on the type of facility. Page 7 of the appendix contains an abbreviated list of various industries and the types of information each shall report in this application. For assistance call the Permits Section. All industries shall provide the name of each process and the SIC or the NAICS code for the process. If the wastestream is not regulated under federal categorical standards, the applicant shall report all pollutants which have the reasonable potential to be present in the discharge. To submit additional information see page ii, item 8		
<b>PROCESS INFORMATION</b> A. Name of the process contributing to the discharge: <u>00A</u> B. SIC or NAICS code: <u>4911</u> C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported): Steam Generator Blowdown. 1 MGD maximum flow 2247 MWE total plant electrical generation		
<b>PROCESS INFORMATION</b> A. Name of the process contributing to the discharge: <u>00B</u> B. SIC or NAICS code: <u>4911</u> C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported): Steam Generator Blowdown. 1 MGD maximum flow 2247 MWE total plant electrical generation		
<b>PROCESS INFORMATION</b> A. Name of the process contributing to the discharge: <u>00C</u> B. SIC or NAICS code: <u>4911</u> C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported): Plant heating boiler blowdown. 0.043 MGD maximum flow 2247 MWE total plant electrical generation.		
<b>PROCESS INFORMATION</b> A. Name of the process contributing to the discharge: <u>00G</u> B. SIC or NAICS code: <u>4911</u> C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported): Reverse osmosis reject stream 0.366 MGD maximum flow. 2247 MWE total plant electrical generation		
<b>PROCESS INFORMATION</b> A. Name of the process contributing to the discharge: <u>00H</u> B. SIC or NAICS code: <u>4911</u> C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported): Miscellaneous equipment drains and processes. Maximum flow is 5.2 MGD. 2247 MWE total plant electrical generation. This Outfall is used for emergency purposes only		

Michigan Department of Environmental Quality- Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
**SECTION III - Industrial and Commercial Wastewater**

**B. Outfall Information**

EASE TYPE OR PRINT

FACILITY NAME Donald C Cook Nuclear Plant	NPDES PERMIT NUMBER MI0005827	OUTFALL NUMBER 001
<b>2 PROCESS STREAMS CONTRIBUTING TO OUTFALL DISCHARGE</b> This information is used to determine the applicable federal regulations for this discharge. The information required to be reported is dependent on the type of facility. Page 7 of the appendix contains an abbreviated list of various industries and the types of information each shall report in this application. For assistance call the Permits Section. All industries shall provide the name of each process and the SIC or the NAICS code for the process. If the wastestream is not regulated under federal categorical standards, the applicant shall report all pollutants which have the reasonable potential to be present in the discharge. To submit additional information see page ii, item 8.		
<b>PROCESS INFORMATION</b> A Name of the process contributing to the discharge: <u>Unit One Cooling Water</u> B SIC or NAICS code: <u>4911</u> C Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported) Once-through non-contact cooling, maximum flow is 1500 MGD, 2247 MWE total plant electrical.		
<b>PROCESS INFORMATION</b> A Name of the process contributing to the discharge: <u>Unit Two Cooling Water</u> B SIC or NAICS code: <u>4911</u> C Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported) Once-through non-contact cooling, maximum flow is 1820 MGD, 2247 MWE total plant electrical.		
<b>PROCESS INFORMATION</b> A Name of the process contributing to the discharge: <u>Misc Minor Stormwater drains</u> B SIC or NAICS code: <u>4911</u> C Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported) Roof drains from the screenhouse roof, small roadway gratings above the forebay road.		
<b>PROCESS INFORMATION</b> A Name of the process contributing to the discharge: _____ B SIC or NAICS code: _____ C Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported):		
<b>PROCESS INFORMATION</b> A Name of the process contributing to the discharge: _____ B SIC or NAICS code: _____ C Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported)		

Michigan Department of Environmental Quality- Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
SECTION III - Industrial and Commercial Wastewater

B. Outfall Information

**INSTRUCTIONS FOR COMPLETING SECTION III, ITEM B.3.**

In accordance with 40 CFR 122.21, all applicants must report CBOD<sub>5</sub>, Chemical Oxygen Demand, Total Organic Carbon, Total Suspended Solids, Ammonia as N, Temperature (both summer and winter), and pH. The applicant may, however, request that reporting of data for one or more of these required parameters be waived. Such request must be supported by adequate rationale. The request shall be included as an attachment to this application.

Report available discharge data for the parameters listed. Actual data shall be provided for existing discharges and expected or estimated data provided for proposed discharges. Please include an explanation if "Pollution Prevention" is expected to provide reduction of pollutants. See Page 8 of the appendix for a list of specific parameters for which data must be provided for specific types of discharges (e.g., noncontact cooling waters, gasoline groundwater cleanups, etc.). For assistance in determining the appropriate parameters to report, call the Permits Section.

If data are available for other parameters not listed in Section III.B.3, the applicant shall report these data in the blank spaces provided or attach the information to this application on 8½" x 11" paper.

Report all data in the units provided and for the sample types specified in the table. If more than one option is available, check the appropriate box. The units are as follows: µg/l = micrograms per liter, mg/l = milligrams per liter, °F = degrees Fahrenheit, °C = degrees Celsius. See page ii number 5 for analytical requirements.

To analyze for pH, temperature, total residual chlorine, oil and grease, and fecal coliform use **Grab Samples** unless other frequency-sample type analyses are available. To analyze for total BOD<sub>5</sub>, total phosphorus, COD, TOC, ammonia nitrogen and total suspended solids use **24-hour composite samples** unless other frequency-sample type analyses are available.

For two or more substantially identical outfalls, permission may be requested from the appropriate district office to sample and analyze only one outfall and submit the results of the analysis for other substantially identical outfalls. If the request is granted by the district office, on a separate sheet attached to the application form, identify which outfall was sampled and describe why the outfalls which were not sampled are substantially identical to the outfall which was sampled. See pages ii and iii for sampling definitions, including "maximum daily concentration", and "maximum monthly concentration".

**REPORTING OF INTAKE DATA**

Applicants are required to report intake water data when they are attempting to demonstrate eligibility for "net" effluent limitations for one or more pollutants. A "net" effluent limitation is determined by subtracting the average level of the pollutant(s) present in the intake waters remaining after treatment which is not removed by the treatment system. NPDES regulations allow net limitations only in certain circumstances (see 40 CFR Part 122.45(g)). To demonstrate eligibility, report the average concentration and/or mass of the results of the analyses on the intake water. If the intake water is treated prior to use, report the intake concentrations and/or mass after treatment. In addition to the analytical results, the following information shall be submitted for each parameter:

- a) A statement that the intake water is drawn from the body of water into which the discharge is made. If the discharge is not to the same body of water from which the water is withdrawn, the facility is not eligible for net limitations.
- b) A statement of the extent to which the level of the pollutant in the intake water is reduced by treatment of the wastewater. Limitations for the net removal of pollutants are adjusted only to the extent that the pollutant is not removed.
- c) When applicable (for example, when the pollutant represents a class of compounds, e.g., BOD<sub>5</sub>, TSS, etc.), a demonstration of the extent to which the pollutants in the intake vary physically, chemically and biologically from the pollutants contained in the discharge. Limitations are adjusted only to the extent that the concentrations of the intake pollutants vary from the discharged pollutants.

**Note:** Applicants for groundwater remediation discharges should also report the intake characteristics of contaminated groundwater.

STATE OF MICHIGAN



JOHN ENGLER, Governor  
**DEPARTMENT OF ENVIRONMENTAL QUALITY**

*"Better Service for a Better Environment"*  
HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

INTERNET [www.deq.state.mi.us](http://www.deq.state.mi.us)  
RUSSELL J. HARDING, Director

REPLY TO:

PLAINWELL DISTRICT OFFICE  
1342 SR 89 W STE B  
PLAINWELL MI 49080-1915

January 28, 1999

Mr. John P. Carlson  
Environmental Compliance Manager  
Cook Nuclear Plant  
One Cook Place  
Bridgman, Michigan 49106

Dear Mr. Carlson:

SUBJECT: Application for Renewal of NPDES Permit No. MI0005827

We have reviewed the information provided in your letter of January 25, 1999. In that letter you request that representative outfalls be used to characterize effluent characteristics for similar outfalls. We approve your request as follows:

1. Effluent from Outfall 001 will be considered representative of outfalls 001, 002, and 003.
2. Effluent from Outfall 00B will be considered representative of outfalls 00A and 00B.

Please feel free to contact me if you have any questions.

Sincerely,

Gregory A. Danneffel  
Plainwell District Office  
Surface Water Quality Division  
616-692-6968

cc: Mr. Blair Zordell, Cook Nuclear Plant  
Mr. Dan Dell, Permits Section, SWQD  
Ms. Sylvia Heaton, GLEAS, SWQD

American Electric Power  
Cook Nuclear Plant  
One Cook Place  
Bridgman, MI 49106  
616 465 5901



Mr. Fred Morley  
Surface Water Quality Division  
Michigan Department of Environmental Quality  
1342 SR89 West Suite B  
Plainwell, MI 49080

January 25, 1999

Dear Mr. Morley:

Subject: NPDES Permit No. MI0005827 Application

We are currently preparing the Wastewater Discharge Permit Application to renew our current NPDES operating permit. As noted in Section III - Industrial and Commercial Wastewater, Part B. Outfall Information Item 6, paragraph 5 contains instructions to request permission to use a single sample for similar outfalls for application purposes.

We request that Outfall 001 be used as a representative sample for Outfalls 002 (Unit Two Noncontact Cooling Water) and Outfall 003 (De-icing Mode) for application use only. Outfalls 002 and 003 are substantially identical to Outfall 001. The source of these Outfalls is Lake Michigan; similar waste streams enter each Outfall prior to discharge.

In addition, we are requesting Outfall 00B (Unit Two Steam Generator Blowdown) to be used as a representative sample for Outfall 00A (Unit One Steam Generator Blowdown). Outfall 00A and Outfall 00B are substantially identical discharges, with the exception that Outfall 00A originates from the Unit One Steam Generators, and Outfall 00B originates from the Unit Two Steam Generators.

If you have any questions, please contact me at (616) 465-5901, ext. 1153.

Sincerely,

A handwritten signature in dark ink, appearing to read 'J.P. Carlson', is written over a horizontal line.

John P. Carlson  
Environmental Compliance Manager

/tln

c: Greg Danneffel - MDEQ Plainwell  
Sylvia Heaton - MDEQ Lansing

Page Two  
Mr. Morley  
January 25, 1999

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this and all attached documents, and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.



D. E. Cooper  
Plant Manager



### B. Outfall Information

PLANT NAME	NPDES PERMIT NUMBER	OUTFALL NUMBER
Donald C Cook Nuclear Plant	MI0005827	001

☒ Check this box if additional information is included as an attachment. To submit additional information see page ii, item 8.

[illegible]

Michigan Department of Environmental Quality- Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
SECTION III - Industrial and Commercial Wastewater

B. Outfall Information

EASE TYPE OR PRINT

FACILITY NAME	NPDES PERMIT NUMBER	OUTFALL NUMBER
Donald C Cook Nuclear Plant	MI0005827	001

4 PRIMARY INDUSTRY PRIORITY POLLUTANT INFORMATION

Existing primary industries that discharge process wastewater must submit the results of at least one effluent analysis for selected organic pollutants identified in Table 2 (as determined from Table 1, Testing Requirements for Organic Toxic Pollutants by Industrial Category), and all the pollutants identified in Table 3. Existing primary industries must also provide the results of at least one effluent analysis for any other chemical listed in Table 2 known or believed to be present in facility effluent.

In addition, submit the results of all other effluent analyses performed within the last 5 years for any chemical listed in Tables 2 and 3.

New primary industries that propose to discharge process wastewater must provide an estimated effluent concentration for any chemical listed in Tables 2 and 3 expected to be present in facility effluent.

5 DIOXIN AND FURAN CONGENER INFORMATION

Existing industries that use or manufacture 2,3,5-trichlorophenoxy acetic acid (2,4,5-T), 2- (2,3,5-trichlorophenoxy) propanoic acid, (Silvex, 2,3,5-TP); 2-(2,4,5-trichlorophenoxy) ethyl 2,2-dichloropropionate (Erbon), 0,0-dimethyl 0-(2,4,5-trichlorophenyl) phosphorothionate (Ronne), 2,4,5-trichlorophenol (TCP) or hexachlorophrene (HCP), or knows or has reason to believe that 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) is present in facility effluent, must submit the results of at least one effluent analysis for the dioxin and furan congeners listed in Table 6. All effluent analyses for dioxin and furan congeners must be conducted using EPA Method 1613.

In addition, submit the results of all other effluent analyses performed within the last 5 years for any dioxin and furan congener listed in Table 6.

New industries that expect to use or manufacture 2,3,5-trichlorophenoxy acetic acid (2,4,5-T), 2- (2,3,5-trichlorophenoxy) propanoic acid (Silvex, 2,3,5-TP), 2-(2,4,5-trichlorophenoxy) ethyl 2,2-dichloropropionate (Erbon), 0,0-dimethyl 0-(2,4,5-trichlorophenyl) phosphorothionate (Ronne), 2,4,5-trichlorophenol (TCP) or hexachlorophrene (HCP), or knows or has reason to believe that 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) is present in facility effluent must provide estimated effluent concentrations for the dioxin and furan congeners listed in Table 6.

6 OTHER INDUSTRY PRIORITY POLLUTANT INFORMATION

Existing secondary industries, or existing primary industries that discharge non-process wastewater, must submit the results of at least one effluent analysis for any chemical listed in Tables 2 and 3 known or believed to be present in facility effluent.

In addition, submit the results of all other effluent analyses performed within the last 5 years for any chemical listed in Tables 2 and 3.

New secondary industries, or new primary industries that propose to discharge non-process wastewater, must provide an estimated effluent concentration for any chemical listed in Tables 2 and 3 expected to be present in facility effluent.

7. ADDITIONAL TOXIC AND OTHER POLLUTANT INFORMATION

All existing industries, regardless of discharge type, must provide the results of at least one analyses for any chemical listed in Table 4 known or believed to be present in facility effluent, and a measured or estimated effluent concentration for any chemical listed in Table 5 known or believed to be present in facility effluent. In addition, submit the results of any effluent analysis performed within the last 5 years for any chemical listed in Tables 4 and 5.

New industries, regardless of discharge type, must provide an estimated effluent concentration for any chemical listed in Tables 4 and 5 expected to be in facility effluent.

8. INJURIOUS CHEMICALS NOT PREVIOUSLY REPORTED

New or existing industries, regardless of discharge type, must provide a measured or estimated effluent concentration for any toxic or otherwise injurious chemicals known or believed to be present in facility effluent that have not been previously identified in this application. Quantitative effluent data that are less than 5 years old for these chemicals must be reported.

**NOTE:** All effluent data submitted in response to questions 4, 5, 6, 7, and 8 above should be recorded on page 31. To submit additional information see page ii, item 8.. If the effluent concentrations are estimated, place an E in the "Analytical Method" column. The following fields must be completed for each data row: Parameter, CAS No., Concentration(s), Sample Type, Analytical Method, Quantification Level and Detection Level. See page ii, number 5 for analytical test requirements.



## PLEASE TYPE OR PRINT

(

Parameter	2/1/99	3/21/02	5/30/02	Sample type	Max Daily	Analytical	Max monthly	# Analyses
<b>Table 2</b>								
See Attached data set from Belmonte Park Laboratories.								
<b>Table 3</b>								
Antimony (ug/l)	<1	<1	-	Grab	<1	204.2/200.7	<1	2
Arsenic (ug/l)	<1	1	<1	Grab	1	206.2/200.7	1	3
Beryllium (ug/l)	<1	<0.2	-	Grab	<1	200.7	<1	2
Cadmium (ug/l)	<0.2	<0.2	-	Grab	<0.2	213.2/200.7	<0.2	2
Chromium (ug/l)	<10	<2	-	Grab	<10	200.7	<10	2
Copper (ug/l)	<1	3	2	Grab	3	220.2/200.7	3	3
Lead (ug/l)	<1	1	<2	Grab	1	239.2/200.7	1	3
Nickel (ug/l)	<5	<3	-	Grab	<5	249.2/200.7	<5	2
Total Phenols (ug/l)	<10	-	-	Grab	<10	420.1	<10	1
Selenium (ug/l)	-	<1.0	-	Grab	<1.0	270.3	<1.0	1
Silver(ug/l)	<0.5	<0.2	-	Grab	<0.5	272.2/200.7	<0.5	2
Thallium -(ug/l)	<1	<1	-	Grab	<1	279.2	<1	2
Zinc (ug/l)	-	<4	-	Grab	<4	200.7	<4	1
Cyanide (mg/l)	<0.01	<0.01	-	Grab	<0.01	335.2	<0.01	2
Mercury (ng/l)	-	2.69	0.954	Grab	2.69	1631	2.69	2
<b>Table 4</b>								
Sulfate (mg/l)	<10	23	-	Composite	23	375.4	23	2
Additional Data From Belmonte Park Laboratories is attached								
See Attached Data set from Cook Nuclear Plant Laboratory								
<b>Table 5</b>								
See Attached data set from Belmonte Park Laboratories.								
See Attached Data set from Cook Nuclear Plant Laboratory								

## Section III.B.6

Non-routine sample data  
From Table 4001 TRC  
USEPA Method 330.5Outfall  
001

	Jan-01	Feb-01	Mar-01	Apr-01	May-01	Jun-01	Jul-01	Aug-01	Sep-01	Oct-01	Nov-01	Dec-01	Jan-02	Feb-02	Mar-02	Apr-02	May-02	Jun-02	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02
1						1		37			1	1	1									135	149
2								48			9	1	<1									149	
3												1	<1								110	150	
4	76					1	125					3	<1					140			80	187	176
5	78					101						3	<1					78			67		162
6	141					70		41				1	<1					103		171	55		148
7	84					83		51				1	<1									143	152
8	113					81		96				1	<1									156	143
9	115											1	<1								50	137	
10	75											8	<1	131					90		18	135	
11					139	91				172		6	<1	147					87		108	145	148
12					79	84				119		4	1	109						89	131		174
13					88	69	61	27				4	1	123						47	101		146.3
14					79			39	1			5		147			<1					143	180.3
15						5		37	4	33		2		49			1					159	194.3
16	1						20	26	5	67		1		21			2		114	79	135	174	386
17					87		20		4			1		55			<1		129		123	198	
18						26	6	80	2			1					2				125	166	
19					101	39	1		7			2					<1			56	120		
20					99	68	1	71	5			2					1			75	129		
21					107	75		32	5		158	2					1			113	139	149	
22					91	6		67	11			1								85	139	166	
23					99		1	77	13	71		1					1		106		141	178	
24				1	90		1	117	7	143		3							159			116	
25				2	91	37	1	110	9	148		5							92			122	
26				2		22		119				3					2			64	181		
27				2		30	13	107				6					2			76	153		
28				3	86			97				6					2	51		151	186	173	
29				2	80			170				4					2			96		181	
30				1	74		1					2					1			104	151	178	
31					71		1			16		2					2					176	

DAILY MAX	141	0	0	3	139	101	125	170	13	172	158	8	1	147	0	0	2	140	159	171	186	198	386
Monthly avg	85	0	0	2	91	49	19	72	6	96	56	3	1	98	0	0	2	93	111	93	116	157	180

Number of analyses	239	
Number of <det values	13	Daily Max 386 ug/L
Total	252	Monthly Max 180 ug/L



AMERICAN ELECTRIC POWER (AEP)  
1 COOK PLACE  
BRIDGMAN, MICHIGAN 49106

Attn: BLAIR ZORDELL

Purchase Order: 4307976  
Invoice Number:

Order #: 99-02-060  
Date: 03/16/99 09:22  
Work ID: OUTFALL 001 - 00C  
Date Received: 02/02/99  
Date Completed: 03/16/99

Client Code: AEP\_4

ND= NONE DETECTED  
OHIO CERT.# 12345

SAMPLE IDENTIFICATION

Sample Number	Sample Description	Sample Number	Sample Description		
01	OUTFALL 001	02/01/99	24	OUTFALL 00G	02/01/99
02	OUTFALL 001	02/01/99	25	OUTFALL 00G	02/01/99
03	OUTFALL 001	02/01/99	26	OUTFALL 00G	02/01/99
04	OUTFALL 001	02/01/99	27	OUTFALL 00G	02/01/99
05	OUTFALL 001	02/01/99	28	OUTFALL 00G	02/01/99
06	OUTFALL 001	02/01/99	29	OUTFALL 00G	02/01/99
07	OUTFALL 001	02/01/99	30	OUTFALL 00G	02/01/99
08	OUTFALL 001	02/01/99	31	OUTFALL 00C	02/01/99
09	OUTFALL 001	02/01/99	32	OUTFALL 00C	02/01/99
10	OUTFALL 001	02/01/99	33	OUTFALL 00C	02/01/99
11	OUTFALL 001	02/01/99	34	OUTFALL 00C	02/01/99
12	OUTFALL 001	02/01/99	35	OUTFALL 00C	02/01/99
13	OUTFALL 001	02/01/99	36	OUTFALL 00C	02/01/99
14	OUTFALL 001	02/01/99	37	OUTFALL 00C	02/01/99
15	OUTFALL 001	02/01/99	38	OUTFALL 00C	02/01/99
16	OUTFALL 00G	02/01/99	39	OUTFALL 00C	02/01/99
17	OUTFALL 00G	02/01/99	40	OUTFALL 00C	02/01/99
18	OUTFALL 00G	02/01/99	41	OUTFALL 00C	02/01/99
19	OUTFALL 00G	02/01/99	42	OUTFALL 00C	02/01/99
20	OUTFALL 00G	02/01/99	43	OUTFALL 00C	02/01/99
21	OUTFALL 00G	02/01/99	44	OUTFALL 00C	02/01/99
22	OUTFALL 00G	02/01/99	45	OUTFALL 00C	02/01/99
23	OUTFALL 00G	02/01/99			

Committed to Quality Since 1958

11 East Main Street

Dayton, Ohio 45426

(937) 837-3744



Belmonte Park  
Environmental  
Laboratories

Order # 99-02-060  
03/16/99 09:22

Page 2

Enclosed are results of specified samples submitted for analyses. If there are any questions, please contact Matt Lake. Our Ohio EPA Certification numbers are 836 & 837. Any result of "BDL" indicates "BELOW DETECTION LIMIT".

*M. Lake*

Certified By  
MATT LAKE



Order # 99-02-060  
03/16/99 09:22

Page 3

TEST RESULTS BY SAMPLE

Sample: 01A . OUTFALL 001 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
5day CBOD, EPA 405.1	3	2	mg/L	02/08/99	PT
SUSPENDED SOLIDS, EPA 160.2	BDL	5	mg/L	02/11/99	KC

Sample: 02A OUTFALL 001 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
COD, EPA 410.4	6	5	mg/L	02/19/99	LG
TOC, EPA 415.1	4.5	1	mg/L	02/09/99	JW

Sample: 03A OUTFALL 001 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
AMMONIA N, EPA 350.2	BDL	0.5	mg/L	02/11/99	JB

Sample: 05A OUTFALL 001 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
EPA 625 SEMI VOL. EXTRACT	-	-	-	-	SD
EXTRACTION, EPA 608	-	-	-	-	SD

Sample: 06A OUTFALL 001 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
ALUMINUM, EPA 200.7	0.05	0.05	mg/L	02/12/99	RJE
ANTIMONY, EPA 204.2	BDL	0.001	mg/L	03/05/99	RJE
ARSENIC, EPA 206.2	BDL	0.001	mg/L	03/05/99	RJE
BARIUM, EPA 200.7	0.021	0.005	mg/L	02/11/99	RJE
BERYLLIUM, EPA 200.7	BDL	0.001	mg/L	02/11/99	RJE
BORON, EPA 200.7	0.07	0.05	mg/L	02/12/99	RJE
CADMIUM, EPA 213.2	BDL	0.0002	mg/L	03/08/99	RJE
CHROMIUM, EPA 200.7	BDL	0.01	mg/L	02/11/99	RJE
COBALT, EPA 200.7	BDL	0.01	mg/L	02/11/99	RJE
COPPER, EPA 220.2	BDL	0.001	mg/L	03/08/99	RJE
IRON, EPA 200.7	BDL	0.1	mg/L	02/11/99	RJE
LEAD, EPA 239.2	BDL	0.001	mg/L	03/05/99	RJE
LITHIUM, EPA 200.7	0.01	0.01	mg/L	02/12/99	RJE

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<u>Test Description</u>		<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
MAGNESIUM,	EPA 200.7	11	1	mg/L	02/12/99	RJE
MANGANESE,	EPA 200.7	BDL	0.01	mg/L	02/11/99	RJE
MERCURY,	EPA 245.1	BDL	0.0002	mg/L	02/11/99	RJE
METALS DIGESTION,	WATER	-		-		EP
MOLYBDENUM,	EPA 200.7	BDL	0.01	mg/L	02/11/99	RJE
NICKEL,	EPA 249.2	BDL	0.005	mg/L	03/08/99	RJE
SELENIUM,	EPA 200.7	BDL	0.1	mg/L	02/11/99	RJE
SILVER,	EPA 272.2	BDL	0.0005	mg/L	03/08/99	RJE
STRONTIUM,	EPA 200.7	0.12	0.01	mg/L	02/12/99	RJE
THALLIUM,	EPA 279.2	BDL	0.001	mg/L	03/05/99	RJE
URANIUM	EPA 200.7	BDL	0.1	mg/L	02/15/99	RJE
ZINC,	EPA 200.7	BDL	0.02	mg/L	02/11/99	RJE

Sample: 07A OUTFALL 001

02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>		<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
SULFIDE,	EPA 376.1	BDL	1	mg/L	03/05/99	LG
TOTAL CYANIDE,	EPA 335.2	BDL	0.01	mg/L	03/04/99	LG

Sample: 08A OUTFALL 001

02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>		<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
PHENOLICS,	EPA 420.1	BDL	0.01	mg/L	02/23/99	JB

Sample: 09A OUTFALL 001

02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>		<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
CHLORINE, RESIDUAL TOTAL		BDL	0.05	mg/L	02/03/99	ML

Sample: 10A OUTFALL 001

02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>		<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
NITRATE-NITRITE N		0.38	0.2	mg/L	02/05/99	LG
ORGANIC NITROGEN		BDL	0.5	mg/L	02/11/99	JB
PHOSPHORUS,	EPA 365.1	0.37	0.1	mg/L	02/18/99	LG
TKN,	EPA 351.3	BDL	0.5	mg/L	02/06/99	JB

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TEST RESULTS BY SAMPLE

Sample: 11A OUTFALL 001 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
OIL & GREASE, EPA 413.1	BDL	5	mg/L	02/10/99	PT

Sample: 12A OUTFALL 001 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
GROSS ALPHA, IN WATER	BDL	3	pCi/L	03/08/99	SF
GROSS BETA, IN WATER	BDL	4	pCi/L	03/08/99	SF
RADIUM, IN WATER	BDL	1	pCi/L	03/10/99	SF
RADIUM-226, IN WATER	BDL	1	pCi/L	03/10/99	SF

Sample: 13A OUTFALL 001 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
METHYLENE BLUE ACTIVE SUB.	BDL	0.01	mg/L	02/17/99	ML
SULFATE, EPA 375.4	BDL	10	mg/L	02/18/99	JB
SULFITE,	BDL	2	mg/L	02/17/99	ML

Sample: 14A OUTFALL 001 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
ASBESTOS WATER	ND	0.2	MF/L, >10um	02/12/99	EM

Sample: 16A OUTFALL 00G 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
5day CBOD, EPA 405.1	4	2	mg/L	02/08/99	PT
SUSPENDED SOLIDS, EPA 160.2	BDL	5	mg/L	02/11/99	KC

Sample: 17A OUTFALL 00G 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
COD, EPA 410.4	BDL	5	mg/L	02/19/99	LG
TOC, EPA 415.1	2.1	1	mg/L	02/09/99	JW



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TEST RESULTS BY SAMPLE

Sample: 18A OUTFALL 00G 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
AMMONIA N, EPA 350.2	BDL	0.5	mg/L	02/11/99	JB

Sample: 20A OUTFALL 00G 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
EPA 625 SEMI VOL. EXTRACT	-		-		SD
EXTRACTION, EPA 608	-		-		SD

Sample: 21A OUTFALL 00G 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
ALUMINUM, EPA 200.7	BDL	0.05	mg/L	02/12/99	RJE
ANTIMONY, EPA 204.2	BDL	0.001	mg/L	03/05/99	RJE
ARSENIC, EPA 206.2	BDL	0.001	mg/L	03/05/99	RJE
BARIUM, EPA 200.7	0.022	0.005	mg/L	02/11/99	RJE
BERYLLIUM, EPA 200.7	BDL	0.001	mg/L	02/11/99	RJE
BORON, EPA 200.7	0.06	0.05	mg/L	02/12/99	RJE
CADMIUM, EPA 213.2	BDL	0.0002	mg/L	03/08/99	RJE
CHROMIUM, EPA 200.7	BDL	0.01	mg/L	02/11/99	RJE
COBALT, EPA 200.7	BDL	0.01	mg/L	02/11/99	RJE
COPPER, EPA 220.2	BDL	0.001	mg/L	03/08/99	RJE
IRON, EPA 200.7	BDL	0.1	mg/L	02/11/99	RJE
LEAD, EPA 239.2	BDL	0.001	mg/L	03/05/99	RJE
LITHIUM, EPA 200.7	BDL	0.01	mg/L	02/12/99	RJE
MAGNESIUM, EPA 200.7	12	1	mg/L	02/12/99	RJE
MANGANESE, EPA 200.7	BDL	0.01	mg/L	02/11/99	RJE
MERCURY, EPA 245.1	BDL	0.0002	mg/L	02/11/99	RJE
METALS DIGESTION, WATER	-		-		EP
MOLYBDENUM, EPA 200.7	BDL	0.01	mg/L	02/11/99	RJE
NICKEL, EPA 249.2	BDL	0.005	mg/L	03/08/99	RJE
SELENIUM, EPA 200.7	BDL	0.1	mg/L	02/11/99	RJE
SILVER, EPA 272.2	BDL	0.0005	mg/L	03/08/99	RJE
STRONTIUM, EPA 200.7	0.14	0.01	mg/L	02/12/99	RJE
THALLIUM, EPA 279.2	BDL	0.001	mg/L	03/05/99	RJE
URANIUM, EPA 200.7	BDL	0.1	mg/L	02/15/99	RJE
ZINC, EPA 200.7	BDL	0.02	mg/L	02/11/99	RJE



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TEST RESULTS BY SAMPLE

Sample: 22A    OUTFALL 00G    02/01/99    Collected: 02/01/99    Category: AQUEOUS

<u>Test Description</u>		<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
SULFIDE,	EPA 376.1	BDL	1	mg/L	03/05/99	LG
TOTAL CYANIDE,	EPA 335.2	BDL	0.01	mg/L	03/15/99	LG

Sample: 23A    OUTFALL 00G    02/01/99    Collected: 02/01/99    Category: AQUEOUS

<u>Test Description</u>		<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
PHENOLICS,	EPA 420.1	BDL	0.01	mg/L	02/23/99	JB

Sample: 24A    OUTFALL 00G    02/01/99    Collected: 02/01/99    Category: AQUEOUS

<u>Test Description</u>		<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
CHLORINE, RESIDUAL TOTAL		BDL	0.05	mg/L	02/03/99	ML

Sample: 25A    OUTFALL 00G    02/01/99    Collected: 02/01/99    Category: AQUEOUS

<u>Test Description</u>		<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
NITRATE-NITRITE N		0.50	0.2	mg/L	02/05/99	LG
ORGANIC NITROGEN		BDL	0.5	mg/L	02/11/99	JB
PHOSPHORUS,	EPA 365.1	BDL	0.1	mg/L	02/18/99	LG
TKN,	EPA 351.3	BDL	0.5	mg/L	02/06/99	JB

Sample: 26A    OUTFALL 00G    02/01/99    Collected: 02/01/99    Category: AQUEOUS

<u>Test Description</u>		<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
OIL & GREASE,	EPA 413.1	BDL	5	mg/L	02/10/99	PT

Sample: 27A    OUTFALL 00G    02/01/99    Collected: 02/01/99    Category: AQUEOUS

<u>Test Description</u>		<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
GROSS ALPHA,	IN WATER	BDL	3	pCi/L	03/08/99	SF
GROSS BETA,	IN WATER	BDL	4	pCi/L	03/08/99	SF
RADIUM,	IN WATER	BDL	1	pCi/L	03/10/99	SF
RADIUM-226,	IN WATER	BDL	1	pCi/L	03/10/99	SF



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TEST RESULTS BY SAMPLE

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Sample: 28A OUTFALL 00G 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
METHYLENE BLUE ACTIVE SUB.	BDL	0.01	mg/L	02/17/99	ML
SULFATE, EPA 375.4	113	10	mg/L	02/18/99	JB
SULFITE,	BDL	2	mg/L	02/17/99	ML

Sample: 29A OUTFALL 00G 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
ASBESTOS WATER	ND	0.2	MF/L, >10um	02/12/99	EM

Sample: 31A OUTFALL 00C 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
5day CBOD, EPA 405.1	4	2	mg/L	02/08/99	PT
SUSPENDED SOLIDS, EPA 160.2	BDL	5	mg/L	02/11/99	KC

Sample: 32A OUTFALL 00C 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
COD, EPA 410.4	BDL	5	mg/L	02/19/99	LG
TOC, EPA 415.1	BDL	1	mg/L	02/09/99	JW

Sample: 33A OUTFALL 00C 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
AMMONIA N, EPA 350.2	BDL	0.5	mg/L	02/11/99	JB

Sample: 35A OUTFALL 00C 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
EPA 625 SEMI VOL. EXTRACT	-	-	-	-	SD
EXTRACTION, EPA 608	-	-	-	-	SD



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TEST RESULTS BY SAMPLE

Sample: 36A OUTFALL 00C

02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>		<u>Result</u>	<u>Detection</u> <u>Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
ALUMINUM,	EPA 200.7	BDL	0.05	mg/L	02/12/99	RJE
ANTIMONY,	EPA 204.2	0.002	0.001	mg/L	03/05/99	RJE
ARSENIC,	EPA 206.2	BDL	0.001	mg/L	03/05/99	RJE
BARIUM,	EPA 200.7	BDL	0.005	mg/L	02/11/99	RJE
BERYLLIUM,	EPA 200.7	BDL	0.001	mg/L	02/11/99	RJE
BORON,	EPA 200.7	BDL	0.05	mg/L	02/12/99	RJE
CADMIUM,	EPA 213.2	BDL	0.0002	mg/L	03/08/99	RJE
CHROMIUM,	EPA 200.7	BDL	0.01	mg/L	02/11/99	RJE
COBALT,	EPA 200.7	BDL	0.01	mg/L	02/11/99	RJE
COPPER,	EPA 220.2	0.012	0.001	mg/L	03/08/99	RJE
IRON,	EPA 200.7	BDL	0.1	mg/L	02/11/99	RJE
LEAD,	EPA 239.2	BDL	0.001	mg/L	03/05/99	RJE
LITHIUM,	EPA 200.7	BDL	0.01	mg/L	02/12/99	RJE
MAGNESIUM,	EPA 200.7	BDL	1	mg/L	02/12/99	RJE
MANGANESE,	EPA 200.7	0.01	0.01	mg/L	02/11/99	RJE
MERCURY,	EPA 245.1	BDL	0.0002	mg/L	02/11/99	RJE
METALS DIGESTION,	WATER	-	-	-	-	EP
MOLYBDENUM,	EPA 200.7	BDL	0.01	mg/L	02/11/99	RJE
NICKEL,	EPA 249.2	BDL	0.005	mg/L	03/08/99	RJE
SELENIUM,	EPA 200.7	BDL	0.1	mg/L	02/11/99	RJE
SILVER,	EPA 272.2	BDL	0.0005	mg/L	03/08/99	RJE
STRONTIUM,	EPA 200.7	BDL	0.01	mg/L	02/12/99	RJE
THALLIUM,	EPA 279.2	BDL	0.001	mg/L	03/05/99	RJE
URANIUM	EPA 200.7	BDL	0.1	mg/L	02/15/99	RJE
ZINC,	EPA 200.7	BDL	0.02	mg/L	02/11/99	RJE

Sample: 37A OUTFALL 00C

02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>		<u>Result</u>	<u>Detection</u> <u>Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
SULFIDE,	EPA 376.1	BDL	1	mg/L	03/05/99	LG
TOTAL CYANIDE,	EPA 335.2	BDL	0.01	mg/L	03/04/99	LG

Sample: 38A OUTFALL 00C

02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>		<u>Result</u>	<u>Detection</u> <u>Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
PHENOLICS,	EPA 420.1	BDL	0.01	mg/L	02/23/99	JB

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TEST RESULTS BY SAMPLE

Sample: 39A OUTFALL 00C 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
CHLORINE, RESIDUAL TOTAL	BDL	0.05	mg/L	02/03/99	ML

Sample: 40A OUTFALL 00C 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
NITRATE-NITRITE N	BDL	0.2	mg/L	02/05/99	LG
ORGANIC NITROGEN	BDL	0.5	mg/L	02/11/99	JB
PHOSPHORUS, EPA 365.1	BDL	0.1	mg/L	02/18/99	LG
TKN, EPA 351.3	BDL	0.5	mg/L	02/06/99	JB

Sample: 41A OUTFALL 00C 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
OIL & GREASE, EPA 413.1	BDL	5	mg/L	02/10/99	PT

Sample: 42A OUTFALL 00C 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
GROSS ALPHA, IN WATER	BDL	3	pCi/L	03/08/99	SF
GROSS BETA, IN WATER	BDL	4	pCi/L	03/08/99	SF
RADIUM, IN WATER	BDL	1	pCi/L	03/10/99	SF
RADIUM-226, IN WATER	BDL	1	pCi/L	03/10/99	SF

Sample: 43A OUTFALL 00C 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
METHYLENE BLUE ACTIVE SUB.	BDL	0.01	mg/L	02/17/99	ML
SULFATE, EPA 375.4	BDL	10	mg/L	02/18/99	JB
SULFITE,	BDL	2	mg/L	02/17/99	ML

Sample: 44A OUTFALL 00C 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
ASBESTOS WATER	ND	0.2	MF/L, >10um	02/12/98	EM

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TEST RESULTS BY SAMPLE

Sample Description: OUTFALL 001  
Test Description: EPA 624  
Collected: 02/01/99

02/01/99 Lab No: 04A  
Method: 624  
Category: AQUEOUS

Test Code: 624\_X

PARAMETER	RESULT	LIMIT
ACROLEIN	BDL	20
ACRYLONITRILE	BDL	20
2-CHLOROETHYL VINYL ETHER	BDL	20
BENZENE	BDL	2
CARBON TETRACHLORIDE	BDL	2
CHLOROBENZENE	BDL	2
1,2-DICHLOROETHANE	BDL	2
1,1,1-TRICHLOROETHANE	BDL	2
1,1-DICHLOROETHANE	BDL	2
1,1,2-TRICHLOROETHANE	BDL	2
1,1,2,2-TETRACHLOROETHANE	BDL	2
CHLOROETHANE	BDL	10
CHLOROFORM	BDL	2
1,1-DICHLOROETHYLENE	BDL	2
1,2-TRANS-DICHLOROETHYLENE	BDL	2
1,2-DICHLOROPROPANE	BDL	2
CIS-1,3-DICHLOROPROPYLENE	BDL	2
TRANS-1,3-DICHLOROPROPYLENE	BDL	2
ETHYLBENZENE	BDL	2
1,2-DICHLOROBENZENE	BDL	2
1,3-DICHLOROBENZENE	BDL	2
1,4-DICHLOROBENZENE	BDL	2
METHYLENE CHLORIDE	BDL	10
CHLOROMETHANE	BDL	10
BROMOMETHANE	BDL	2
BROMOFORM	BDL	2
DICHLOROBROMOMETHANE	BDL	2
TRICHLOROFLUOROMETHANE	BDL	2
CHLORODIBROMOMETHANE	BDL	2
TETRACHLOROETHYLENE	BDL	2
TOLUENE	BDL	2
TRICHLOROETHENE	BDL	2
VINYL CHLORIDE	BDL	10
XYLENES	BDL	10

SURROGATE	%RECOVERY	LIMITS
D4-1,2 DICHLOROETHANE	112	76 - 114
D8-TOLUENE	94	88 - 110





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TEST RESULTS BY SAMPLE

Sample Description: OUTFALL 001  
Test Description: EPA 624  
Collected: 02/01/99

02/01/99 Lab No: 04A  
Method: 624  
Category: AQUEOUS

Test Code: 624\_X

4-BROMOFLUOROBENZENE      96      86 - 115

Notes and Definitions for this Report:

DATE RUN 02/09/99  
ANALYST JMM  
INSTRUMENT GC/MS  
FILE ID 9020934  
UNITS ug/L  
METHOD EPA 624  
BDL BELOW DETECTION LIMIT

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TEST RESULTS BY SAMPLE

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Sample Description: OUTFALL 001      02/01/99      Lab No: 05A  
Test Description: EPA 625 SEMI VOLATILES      Method: 625  
Collected: 02/01/99      Category: AQUEOUS

Test Code: 625\_AE

PARAMETER	RESULT	LIMIT
2,4,6-TRICHLOROPHENOL	BDL	10
4-CHLORO-3-METHYLPHENOL	BDL	10
2-CHLOROPHENOL	BDL	10
2,4-DICHLOROPHENOL	BDL	10
2,4-DIMETHYLPHENOL	BDL	10
2-NITROPHENOL	BDL	10
4-NITROPHENOL	BDL	50
2,4-DINITROPHENOL	BDL	50
2-METHYL-4,6-DINITROPHENOL	BDL	50
PENTACHLOROPHENOL	BDL	50
PHENOL	BDL	10
ACENAPHTHENE	BDL	10
BENZIDENE	BDL	50
1,2,4-TRICHLOROBENZENE	BDL	10
HEXACHLOROBENZENE	BDL	10
HEXACHLOROETHANE	BDL	10
BIS(2-CHLOROETHYL) ETHER	BDL	10
2-CHLORONAPHTHALENE	BDL	10
1,2-DICHLOROBENZENE	BDL	10
1,3-DICHLOROBENZENE	BDL	10
1,4-DICHLOROBENZENE	BDL	10
3,3-DICHLOROBENZIDINE	BDL	20
2,4-DINITROTOLUENE	BDL	10
2,6-DINITROTOLUENE	BDL	10
FLUORANTHENE	BDL	10
4-CHLOROPHENYL PHENYL ETHER	BDL	10
4-BROMOPHENYL PHENYL ETHER	BDL	10
BIS(2-CHLOROISOPROPYL) ETHER	BDL	10
BIS(2-CHLOROETHOXY) METHANE	BDL	10
HEXACHLOROBUTADIENE	BDL	10
HEXACHLOROCYCLOPENTADIENE	BDL	10
ISOPHORONE	BDL	10
NAPHTHALENE	BDL	10
NITROBENZENE	BDL	10
N-NITROSODIMETHYLAMINE	BDL	10
N-NITROSODIPHENYLAMINE	BDL	10
N-NITROSODI-N-PROPYLAMINE	BDL	10
BIS(2-ETHYLHEXYL) PHTHALATE	BDL	10



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TEST RESULTS BY SAMPLE

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Sample Description: OUTFALL 001 02/01/99 Lab No: 05A  
Test Description: EPA 625 SEMI VOLATILES Method: 625  
Collected: 02/01/99 Category: AQUEOUS

Test Code: 625\_AE

BUTYL BENZYLPHTHALATE	BDL	10
DI-N-BUTYL PHTHALATE	BDL	10
DI-N-OCTYL PHTHALATE	BDL	10
DIETHYL PHTHALATE	BDL	10
DIMETHYL PHTHALATE	BDL	10
BENZO (A) ANTHRACENE	BDL	10
BENZO (A) PYRENE	BDL	10
3,4-BENZOFUORANTHENE	BDL	10
BENZO (K) FLUORANTHENE	BDL	10
CHRYSENE	BDL	10
ACENAPHTHYLENE	BDL	10
ANTHRACENE	BDL	10
BENZO (GHI) PERYLENE	BDL	50
FLUORENE	BDL	10
PHENANTHRENE	BDL	10
DIBENZO (A, H) ANTHRACENE	BDL	50
INDENO (1, 2, 3-CD) PYRENE	BDL	50
PYRENE	BDL	10
ETHANOL AMINE	BDL	100
HYDRAZINE	BDL	200

SURROGATE	%RECOVERY	LIMITS
NITROBENZENE-d5	85	35 - 114
2-FLUOROBIPHENYL	72	43 - 116
p-TERPHENYL-d14	95	33 - 141
PHENOL-d6	46	10 - 94
2-FLUOROPHENOL	74	21 - 100
2,4,6-TRIBROMOPHENOL	50	10 - 123

Notes and Definitions for this Report:

EXTRACTED 02/07/99  
DATE RUN 02/25/99  
ANALYST TC  
INSTRUMENT GC/MS  
FILE ID S9022524  
UNITS ug/L  
METHOD EPA 625  
BDL BELOW DETECTION LIMIT

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03/16/99 09:22

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TEST RESULTS BY SAMPLE

Sample Description: OUTFALL 001      02/01/99      Lab No: 05A  
Test Description: PCB/PESTICIDES EPA 608      Method: 608  
Collected: 02/01/99      Category: AQUEOUS

Test Code: 608

PARAMETER	RESULT	LIMIT
ALDRIN	BDL	0.010
ALPHA-BHC	BDL	0.010
BETA-BHC	BDL	0.010
DELTA-BHC	BDL	0.010
GAMMA-BHC	BDL	0.010
CHLORDANE	BDL	0.010
4,4-DDT	BDL	0.010
4,4-DDE	BDL	0.010
4,4-DDD	BDL	0.010
DIELDRIN	BDL	0.010
ALPHA ENDOSULFAN	BDL	0.010
BETA ENDOSULFAN	BDL	0.010
ENDOSULFAN SULFATE	BDL	0.10
ENDRIN	BDL	0.010
ENDRIN ALDEHYDE	BDL	0.020
HEPTACHLOR	BDL	0.030
HEPTACHLOR EPOXIDE	BDL	0.10
PCB-1016	BDL	0.10
PCB-1221	BDL	0.20
PCB-1232	BDL	0.10
PCB-1242	BDL	0.10
PCB-1248	BDL	0.10
PCB-1254	BDL	0.10
PCB-1260	BDL	0.10
TOXAPHENE	BDL	0.20

SURROGATE	%RECOVERY	LIMITS
DBC (SURROGATE, % RECOVERY)	90	70 - 130
2,4,5,6-TCX (SURROGATE % REC.)	93	70 - 130

Notes and Definitions for this Report:

EXTRACTED 02/06/99  
DATE RUN 02/09/99  
ANALYST JW  
INSTRUMENT GC  
FILE ID A020913  
UNITS ug/L



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TEST RESULTS BY SAMPLE

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Sample Description: OUTFALL 001      02/01/99      Lab No: 05A  
Test Description: PCB/PESTICIDES EPA 608      Method: 608  
Collected: 02/01/99      Category: AQUEOUS

Test Code: 608

METHOD EPA 608  
BDL BELOW DETECTION LIMIT



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TEST RESULTS BY SAMPLE

Sample Description: OUTFALL 001      02/01/99      Lab No: 15A  
Test Description: Triaryl Phosphate Sub-Out      Method: Special Test      Test Code: 8270\_U  
Collected: 02/01/99      Category: AQUEOUS

PARAMETER	RESULT	LIMIT
TRIPHENYL PHOSPHATE ESTER	<u>BDL</u>	<u>5</u>
TRICRESYL PHOSPHATE ESTER	<u>BDL</u>	<u>5</u>

SURROGATE	%RECOVERY	LIMITS
NITROBENZENE-D5	<u>65</u>	<u>35</u> - <u>114</u>
2-FLUOROBIPHENYL	<u>78</u>	<u>43</u> - <u>116</u>
p-TERPHENYL-d14	<u>113</u>	<u>33</u> - <u>141</u>
PHENOL-d6	<u>25</u>	<u>10</u> - <u>94</u>
2-FLUOROPHENOL	<u>30</u>	<u>21</u> - <u>100</u>
2,4,6-TRIBROMOPHENOL	<u>93</u>	<u>10</u> - <u>123</u>

Notes and Definitions for this Report:

EXTRACTED 02/08/99  
DATE RUN 02/11/99  
ANALYST JAT  
INSTRUMENT SATURN  
FILE ID 0206501W  
UNITS ug/L  
METHOD 8270  
BDL BELOW DETECTION LIMIT



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TEST RESULTS BY SAMPLE

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Sample Description: OUTFALL 00G  
Test Description: EPA 624  
Collected: 02/01/99

02/01/99 Lab No: 19A  
Method: 624  
Category: AQUEOUS

Test Code: 624\_X

PARAMETER	RESULT	LIMIT
ACROLEIN	BDL	20
ACRYLONITRILE	BDL	20
2-CHLOROETHYL VINYL ETHER	BDL	20
BENZENE	BDL	2
CARBON TETRACHLORIDE	BDL	2
CHLOROBENZENE	BDL	2
1,2-DICHLOROETHANE	BDL	2
1,1,1-TRICHLOROETHANE	BDL	2
1,1-DICHLOROETHANE	BDL	2
1,1,2-TRICHLOROETHANE	BDL	2
1,1,2,2-TETRACHLOROETHANE	BDL	2
CHLOROETHANE	BDL	10
CHLOROFORM	BDL	2
1,1-DICHLOROETHYLENE	BDL	2
1,2-TRANS-DICHLOROETHYLENE	BDL	2
1,2-DICHLOROPROPANE	BDL	2
CIS-1,3-DICHLOROPROPYLENE	BDL	2
TRANS-1,3-DICHLOROPROPYLENE	BDL	2
ETHYLBENZENE	BDL	2
1,2-DICHLOROBENZENE	BDL	2
1,3-DICHLOROBENZENE	BDL	2
1,4-DICHLOROBENZENE	BDL	2
METHYLENE CHLORIDE	BDL	10
CHLOROMETHANE	BDL	10
BROMOMETHANE	BDL	2
BROMOFORM	BDL	2
DICHLOROBROMOMETHANE	BDL	2
TRICHLOROFLUOROMETHANE	BDL	2
CHLORODIBROMOMETHANE	BDL	2
TETRACHLOROETHYLENE	BDL	2
TOLUENE	BDL	2
TRICHLOROETHENE	BDL	2
VINYL CHLORIDE	BDL	10
XYLENES	BDL	10

SURROGATE	%RECOVERY	LIMITS
D4-1,2 DICHLOROETHANE	113	76 - 114
D8-TOLUENE	92	88 - 110

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TEST RESULTS BY SAMPLE

Sample Description: OUTFALL 00G  
Test Description: EPA 624  
Collected: 02/01/99

02/01/99 Lab No: 19A  
Method: 624  
Category: AQUEOUS

Test Code: 624\_X

4-BROMOFLUOROBENZENE      93      86 - 115

Notes and Definitions for this Report:

DATE RUN 02/09/99  
ANALYST JMM  
INSTRUMENT GC/MS  
FILE ID 9020935  
UNITS ug/L  
METHOD EPA 624  
BDL BELOW DETECTION LIMIT





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TEST RESULTS BY SAMPLE

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Sample Description: OUTFALL 00G      02/01/99      Lab No: 20A  
Test Description: EPA 625 SEMI VOLATILES      Method: 625  
Collected: 02/01/99      Category: AQUEOUS

Test Code: 625\_AE

PARAMETER	RESULT	LIMIT
2,4,6-TRICHLOROPHENOL	BDL	10
4-CHLORO-3-METHYLPHENOL	BDL	10
2-CHLOROPHENOL	BDL	10
2,4-DICHLOROPHENOL	BDL	10
2,4-DIMETHYLPHENOL	BDL	10
2-NITROPHENOL	BDL	10
4-NITROPHENOL	BDL	50
2,4-DINITROPHENOL	BDL	50
2-METHYL-4,6-DINITROPHENOL	BDL	50
PENTACHLOROPHENOL	BDL	50
PHENOL	BDL	10
ACENAPHTHENE	BDL	10
BENZIDENE	BDL	50
1,2,4-TRICHLOROBENZENE	BDL	10
HEXACHLOROBENZENE	BDL	10
HEXACHLOROETHANE	BDL	10
BIS(2-CHLOROETHYL) ETHER	BDL	10
2-CHLORONAPHTHALENE	BDL	10
1,2-DICHLOROBENZENE	BDL	10
1,3-DICHLOROBENZENE	BDL	10
1,4-DICHLOROBENZENE	BDL	10
3,3-DICHLOROBENZIDINE	BDL	20
2,4-DINITROTOLUENE	BDL	10
2,6-DINITROTOLUENE	BDL	10
FLUORANTHENE	BDL	10
4-CHLOROPHENYL PHENYL ETHER	BDL	10
4-BROMOPHENYL PHENYL ETHER	BDL	10
BIS(2-CHLOROISOPROPYL) ETHER	BDL	10
BIS(2-CHLOROETHOXY) METHANE	BDL	10
HEXACHLOROBUTADIENE	BDL	10
HEXACHLOROCYCLOPENTADIENE	BDL	10
ISOPHORONE	BDL	10
NAPHTHALENE	BDL	10
NITROBENZENE	BDL	10
N-NITROSODIMETHYLAMINE	BDL	10
N-NITROSODIPHENYLAMINE	BDL	10
N-NITROSODI-N-PROPYLAMINE	BDL	10
BIS(2-ETHYLHEXYL) PHTHALATE	BDL	10

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TEST RESULTS BY SAMPLE

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Sample Description: OUTFALL 00G      02/01/99      Lab No: 20A  
Test Description: EPA 625 SEMI VOLATILES      Method: 625  
Collected: 02/01/99      Category: AQUEOUS

Test Code: 625\_AE

BUTYL BENZYLPHTHALATE	BDL	10
DI-N-BUTYL PHTHALATE	BDL	10
DI-N-OCTYL PHTHALATE	BDL	10
DIETHYL PHTHALATE	BDL	10
DIMETHYL PHTHALATE	BDL	10
BENZO (A) ANTHRACENE	BDL	10
BENZO (A) PYRENE	BDL	10
3,4-BENZOFUORANTHENE	BDL	10
BENZO (K) FLUORANTHENE	BDL	10
CHRYSENE	BDL	10
ACENAPHTHYLENE	BDL	10
ANTHRACENE	BDL	10
BENZO (GHI) PERYLENE	BDL	50
FLUORENE	BDL	10
PHENANTHRENE	BDL	10
DIBENZO (A,H) ANTHRACENE	BDL	50
INDENO (1,2,3-CD) PYRENE	BDL	50
PYRENE	BDL	10
ETHANOL AMINE	BDL	100
HYDRAZINE	BDL	200

SURROGATE	%RECOVERY	LIMITS
NITROBENZENE-d5	64	35 - 114
2-FLUOROBIPHENYL	65	43 - 116
p-TERPHENYL-d14	77	33 - 141
PHENOL-d6	35	10 - 94
2-FLUOROPHENOL	33	21 - 100
2,4,6-TRIBROMOPHENOL	65	10 - 123

Notes and Definitions for this Report:

EXTRACTED 02/07/99  
DATE RUN 02/25/99  
ANALYST TC  
INSTRUMENT GC/MS  
FILE ID S9022525  
UNITS ug/L  
METHOD EPA 625  
BDL BELOW DETECTION LIMIT

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TEST RESULTS BY SAMPLE

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Sample Description: OUTFALL 00G      02/01/99      Lab No: 20A  
Test Description: PCB/PESTICIDES EPA 608      Method: 608  
Collected: 02/01/99      Category: AQUEOUS

Test Code: 608

PARAMETER	RESULT	LIMIT
ALDRIN	BDL	0.010
ALPHA-BHC	BDL	0.010
BETA-BHC	BDL	0.010
DELTA-BHC	BDL	0.010
GAMMA-BHC	BDL	0.010
CHLORDANE	BDL	0.010
4,4-DDT	BDL	0.010
4,4-DDE	BDL	0.010
4,4-DDD	BDL	0.010
DIELDRIN	BDL	0.010
ALPHA ENDOSULFAN	BDL	0.010
BETA ENDOSULFAN	BDL	0.010
ENDOSULFAN SULFATE	BDL	0.10
ENDRIN	BDL	0.010
ENDRIN ALDEHYDE	BDL	0.020
HEPTACHLOR	BDL	0.030
HEPTACHLOR EPOXIDE	BDL	0.10
PCB-1016	BDL	0.10
PCB-1221	BDL	0.20
PCB-1232	BDL	0.10
PCB-1242	BDL	0.10
PCB-1248	BDL	0.10
PCB-1254	BDL	0.10
PCB-1260	BDL	0.10
TOXAPHENE	BDL	0.20

SURROGATE	%RECOVERY	LIMITS
DBC(SURROGATE, % RECOVERY)	89	70 - 130
2,4,5,6-TCX(SURROGATE % REC.)	94	70 - 130

Notes and Definitions for this Report:

EXTRACTED 02/06/99  
DATE RUN 02/09/99  
ANALYST JW  
INSTRUMENT GC  
FILE ID A020914  
UNITS ug/L

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TEST RESULTS BY SAMPLE

Sample Description: OUTFALL 00G      02/01/99      Lab No: 20A  
Test Description: PCB/PESTICIDES EPA 608      Method: 608  
Collected: 02/01/99      Category: AQUEOUS

Test Code: 608

METHOD EPA 608  
BDL BELOW DETECTION LIMIT



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TEST RESULTS BY SAMPLE

Sample Description: OUTFALL 00G      02/01/99      Lab No: 30A  
Test Description: Triaryl Phosphate Sub-Out      Method: Special Test      Test Code: 8270\_U  
Collected: 02/01/99      Category: AQUEOUS

PARAMETER	RESULT	LIMIT
TRIPHENYL PHOSPHATE ESTER	<u>BDL</u>	<u>5</u>
TRICRESYL PHOSPHATE ESTER	<u>BDL</u>	<u>5</u>

SURROGATE	%RECOVERY	LIMITS
NITROBENZENE-D5	<u>60</u>	<u>35</u> - <u>114</u>
2-FLUOROBIPHENYL	<u>78</u>	<u>43</u> - <u>116</u>
p-TERPHENYL-d14	<u>115</u>	<u>33</u> - <u>141</u>
PHENOL-d6	<u>28</u>	<u>10</u> - <u>94</u>
2-FLUOROPHENOL	<u>35</u>	<u>21</u> - <u>100</u>
2,4,6-TRIBROMOPHENOL	<u>85</u>	<u>10</u> - <u>123</u>

Notes and Definitions for this Report:

EXTRACTED 02/08/99  
DATE RUN 02/11/99  
ANALYST JAT  
INSTRUMENT SATURN  
FILE ID 0206504W  
UNITS ug/L  
METHOD 8270  
BDL BELOW DETECTION LIMIT

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Order # 99-02-060  
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TEST RESULTS BY SAMPLE

Sample Description: OUTFALL 00C      02/01/99      Lab No: 34A  
Test Description: EPA 624      Method: 624      Test Code: 624\_X  
Collected: 02/01/99      Category: AQUEOUS

PARAMETER	RESULT	LIMIT
ACROLEIN	BDL	20
ACRYLONITRILE	BDL	20
2-CHLOROETHYL VINYL ETHER	BDL	20
BENZENE	BDL	2
CARBON TETRACHLORIDE	BDL	2
CHLOROBENZENE	BDL	2
1,2-DICHLOROETHANE	BDL	2
1,1,1-TRICHLOROETHANE	BDL	2
1,1-DICHLOROETHANE	BDL	2
1,1,2-TRICHLOROETHANE	BDL	2
1,1,2,2-TETRACHLOROETHANE	BDL	2
CHLOROETHANE	BDL	10
CHLOROFORM	BDL	2
1,1-DICHLOROETHYLENE	BDL	2
1,2-TRANS-DICHLOROETHYLENE	BDL	2
1,2-DICHLOROPROPANE	BDL	2
CIS-1,3-DICHLOROPROPYLENE	BDL	2
TRANS-1,3-DICHLOROPROPYLENE	BDL	2
ETHYLBENZENE	BDL	2
1,2-DICHLOROBENZENE	BDL	2
1,3-DICHLOROBENZENE	BDL	2
1,4-DICHLOROBENZENE	BDL	2
METHYLENE CHLORIDE	BDL	10
CHLOROMETHANE	BDL	10
BROMOMETHANE	BDL	2
BROMOFORM	BDL	2
DICHLOROBROMOMETHANE	BDL	2
TRICHLOROFLUOROMETHANE	BDL	2
CHLORODIBROMOMETHANE	BDL	2
TETRACHLOROETHYLENE	BDL	2
TOLUENE	BDL	2
TRICHLOROETHENE	BDL	2
VINYL CHLORIDE	BDL	10
XYLENES	BDL	10

SURROGATE	%RECOVERY	LIMITS
D4-1,2 DICHLOROETHANE	114	76 - 114
D8-TOLUENE	94	88 - 110



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TEST RESULTS BY SAMPLE

Sample Description: OUTFALL 00C      02/01/99    Lab No: 34A  
Test Description: EPA 624                      Method: 624                      Test Code: 624\_X  
Collected: 02/01/99                      Category: AQUEOUS

4-BROMOFLUOROBENZENE      93      86 - 115

Notes and Definitions for this Report:

DATE RUN 02/09/99  
ANALYST JMM  
INSTRUMENT GC/MS  
FILE ID 9020936  
UNITS ug/L  
METHOD EPA 624  
BDL BELOW DETECTION LIMIT

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TEST RESULTS BY SAMPLE

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Sample Description: OUTFALL 00C      02/01/99      Lab No: 35A  
Test Description: EPA 625 SEMI VOLATILES      Method: 625  
Collected: 02/01/99      Category: AQUEOUS

Test Code: 625\_AE

PARAMETER	RESULT	LIMIT
2,4,6-TRICHLOROPHENOL	BDL	10
4-CHLORO-3-METHYLPHENOL	BDL	10
2-CHLOROPHENOL	BDL	10
2,4-DICHLOROPHENOL	BDL	10
2,4-DIMETHYLPHENOL	BDL	10
2-NITROPHENOL	BDL	10
4-NITROPHENOL	BDL	50
2,4-DINITROPHENOL	BDL	50
2-METHYL-4,6-DINITROPHENOL	BDL	50
PENTACHLOROPHENOL	BDL	50
PHENOL	BDL	10
ACENAPHTHENE	BDL	10
BENZIDENE	BDL	50
1,2,4-TRICHLOROBENZENE	BDL	10
HEXACHLOROBENZENE	BDL	10
HEXACHLOROETHANE	BDL	10
BIS(2-CHLOROETHYL) ETHER	BDL	10
2-CHLORONAPHTHALENE	BDL	10
1,2-DICHLOROBENZENE	BDL	10
1,3-DICHLOROBENZENE	BDL	10
1,4-DICHLOROBENZENE	BDL	10
3,3-DICHLOROBENZIDINE	BDL	20
2,4-DINITROTOLUENE	BDL	10
2,6-DINITROTOLUENE	BDL	10
FLUORANTHENE	BDL	10
4-CHLOROPHENYL PHENYL ETHER	BDL	10
4-BROMOPHENYL PHENYL ETHER	BDL	10
BIS(2-CHLOROISOPROPYL) ETHER	BDL	10
BIS(2-CHLOROETHOXY) METHANE	BDL	10
HEXACHLOROBUTADIENE	BDL	10
HEXACHLOROCYCLOPENTADIENE	BDL	10
ISOPHORONE	BDL	10
NAPHTHALENE	BDL	10
NITROBENZENE	BDL	10
N-NITROSODIMETHYLAMINE	BDL	10
N-NITROSODIPHENYLAMINE	BDL	10
N-NITROSODI-N-PROPYLAMINE	BDL	10
BIS(2-ETHYLHEXYL) PHTHALATE	BDL	10





Belmonte Park  
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Laboratories

Order # 99-02-060  
03/16/99 09:22

TEST RESULTS BY SAMPLE

Page 28

Sample Description: OUTFALL 00C      02/01/99      Lab No: 35A  
Test Description: EPA 625 SEMI VOLATILES      Method: 625  
Collected: 02/01/99      Category: AQUEOUS

Test Code: 625\_AE

BUTYL BENZYLPHthalATE	BDL	10
DI-N-BUTYL PHTHALATE	BDL	10
DI-N-OCTYL PHTHALATE	BDL	10
DIETHYL PHTHALATE	BDL	10
DIMETHYL PHTHALATE	BDL	10
BENZO (A) ANTHRACENE	BDL	10
BENZO (A) PYRENE	BDL	10
3,4-BENZOFUORANTHENE	BDL	10
BENZO (K) FLUORANTHENE	BDL	10
CHRYSENE	BDL	10
ACENAPHTHYLENE	BDL	10
ANTHRACENE	BDL	10
BENZO (GHI) PERYLENE	BDL	50
FLUORENE	BDL	10
PHENANTHRENE	BDL	10
DIBENZO (A, H) ANTHRACENE	BDL	50
INDENO (1, 2, 3-CD) PYRENE	BDL	50
PYRENE	BDL	10
ETHANOL AMINE	BDL	100
HYDRAZINE	BDL	200

SURROGATE	%RECOVERY	LIMITS
NITROBENZENE-d5	77	35 - 114
2-FLUOROBIPHENYL	66	43 - 116
p-TERPHENYL-d14	82	33 - 141
PHENOL-d6	62	10 - 94
2-FLUOROPHENOL	71	21 - 100
2,4,6-TRIBROMOPHENOL	66	10 - 123

Notes and Definitions for this Report:

EXTRACTED 02/07/99  
DATE RUN 02/25/99  
ANALYST TC  
INSTRUMENT GC/MS  
FILE ID S9022526  
UNITS ug/L  
METHOD EPA 625  
BDL BELOW DETECTION LIMIT

Committed to Quality Since 1958

11 East Main Street

Dayton, Ohio 45426

(937) 837-3744



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Order # 99-02-060  
03/16/99 09:22

TEST RESULTS BY SAMPLE

Page 29

Sample Description: OUTFALL 00C      02/01/99      Lab No: 35A  
Test Description: PCB/PESTICIDES EPA 608      Method: 608  
Collected: 02/01/99      Category: AQUEOUS

Test Code: 608

PARAMETER	RESULT	LIMIT
ALDRIN	BDL	0.010
ALPHA-BHC	BDL	0.010
BETA-BHC	BDL	0.010
DELTA-BHC	BDL	0.010
GAMMA-BHC	BDL	0.010
CHLORDANE	BDL	0.010
4,4-DDT	BDL	0.010
4,4-DDE	BDL	0.010
4,4-DDD	BDL	0.010
DIELDRIN	BDL	0.010
ALPHA ENDOSULFAN	BDL	0.010
BETA ENDOSULFAN	BDL	0.010
ENDOSULFAN SULFATE	BDL	0.10
ENDRIN	BDL	0.010
ENDRIN ALDEHYDE	BDL	0.020
HEPTACHLOR	BDL	0.030
HEPTACHLOR EPOXIDE	BDL	0.10
PCB-1016	BDL	0.10
PCB-1221	BDL	0.20
PCB-1232	BDL	0.10
PCB-1242	BDL	0.10
PCB-1248	BDL	0.10
PCB-1254	BDL	0.10
PCB-1260	BDL	0.10
TOXAPHENE	BDL	0.20

SURROGATE	%RECOVERY	LIMITS
DBC (SURROGATE, % RECOVERY)	93	70 - 130
2,4,5,6-TCX (SURROGATE % REC.)	92	70 - 130

Notes and Definitions for this Report:

EXTRACTED 02/06/99  
DATE RUN 02/09/99  
ANALYST JW  
INSTRUMENT GC  
FILE ID A020915  
UNITS ug/L

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Order # 99-02-060  
03/16/99 09:22

TEST RESULTS BY SAMPLE

Page 30

Sample Description: OUTFALL 00C      02/01/99      Lab No: 35A  
Test Description: PCB/PESTICIDES EPA 608      Method: 608  
Collected: 02/01/99      Category: AQUEOUS

Test Code: 608

METHOD EPA 608  
BDL BELOW DETECTION LIMIT

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Dayton, Ohio 45426

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Order # 99-02-060  
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TEST RESULTS BY SAMPLE

Sample Description: OUTFALL 00C      02/01/99      Lab No: 45A  
Test Description: Triaryl Phosphate Sub-Out      Method: Special Test      Test Code: 8270\_U  
Collected: 02/01/99      Category: AQUEOUS

PARAMETER	RESULT	LIMIT
TRIPHENYL PHOSPHATE ESTER	<u>BDL</u>	<u>5</u>
TRICRESYL PHOSPHATE ESTER	<u>BDL</u>	<u>5</u>

SURROGATE	%RECOVERY	LIMITS
NITROBENZENE-D5	<u>63</u>	<u>35</u> - <u>114</u>
2-FLUOROBIPHENYL	<u>70</u>	<u>43</u> - <u>116</u>
p-TERPHENYL-d14	<u>100</u>	<u>33</u> - <u>141</u>
PHENOL-d6	<u>25</u>	<u>10</u> - <u>94</u>
2-FLUOROPHENOL	<u>38</u>	<u>21</u> - <u>100</u>
2,4,6-TRIBROMOPHENOL	<u>83</u>	<u>10</u> - <u>123</u>

Notes and Definitions for this Report:

EXTRACTED 02/08/99  
DATE RUN 02/11/99  
ANALYST JAT  
INSTRUMENT SATURN  
FILE ID 0206503W  
UNITS ug/L  
METHOD 8270  
BDL BELOW DETECTION LIMIT

Facility name: Donald C. Cook Nuclear Plant	NPDES Permit number: MI0005827	Outfall Number: 001
--	-----------------------------------	------------------------

**Addendum to NPDES Renewal Application Section III.B.10  
Toxic Pollutant Reasonable Potential Effluent Data**

Sampling results indicate the presence of toxic pollutants in the Cook Nuclear Plant discharges as follows:

Strontium was detected in Outfall 001 (Unit 1 Non-Contact Cooling Water Discharge). There are no plant processes that use strontium. Strontium is a trace element (21<sup>st</sup> among the elements in the earth's crust) usually associated with calcium and barium minerals in veins in limestone. The chief use of strontium is in fireworks, red signal flares, or on tracer bullets. Therefore, we do not believe that there is reasonable potential for strontium to be present in these discharges as a result of plant operations. We believe that strontium is present in the intake.

Michigan Department of Environmental Quality- Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
SECTION III - Industrial and Commercial Wastewater  
B. Outfall Information

PLEASE TYPE OR PRINT

FACILITY NAME Donald C. Cook Nuclear Plant	NPDES PERMIT NUMBER MI0005827	OUTFALL NUMBER 001
---	----------------------------------	-----------------------

9. WATER TREATMENT ADDITIVES

Water treatment additives include any material that is added to water used at the facility or to a wastewater generated by the facility to condition or treat the water.

Approvals of water treatment additives are authorized by the DEQ under separate correspondence. The issuance of an NPDES permit does not constitute approval of the water treatment additives that are included in this application.

A. Are there water treatment additives in the discharge from this facility?

☐ No, proceed to item 4.

☒ Yes.

B. Have these water treatment additives been previously approved?

☐ No, continue with C. below.

☒ Yes. Submit a list of the previously approved water treatment additives and the date they were approved. The information listed in C. 1-8 must be updated if it has changed since the previous approval.

C. Submit a list of water treatment additives that are or may be discharged from the facility. Applicants must submit the information listed below for each additive.

1. The water treatment additive Material Safety Data Sheet
2. The proposed water treatment additive discharge concentration.
3. The discharge frequency (i.e., number of hours per day, week, etc.)
4. The outfall the water treatment additive is to be discharged from
5. The type of removal treatment, if any, that the water treatment additive receives prior to discharge.
6. The water treatment additive function (i.e., microbiocide, flocculant, etc.)
7. A 48-hour LC50 or EC50 for a North American freshwater planktonic crustacean (either *Ceriodaphnia* sp., *Daphnia* sp., or *Simocephalus* sp.)
8. The results of a toxicity test for one other North American freshwater aquatic species (other than a planktonic crustacean) that meets a minimum requirement of Rule 323.1057(2)(a) of the Water Quality Standards. Examples of tests that would meet this requirement include a 96-hour LC50 for a rainbow trout, bluegill, or fathead minnow.

The required toxicity information (described in items 7 and 8 above) is currently available in the SWQD files for the water treatment additives listed on the DEQ's Internet page <http://www.deq.state.mi.us/swq/gleas/docs/wta/WTAlist.doc>. If you intend to use one of the water treatment additives on this list, only the information in items 1 through 6 above needs to be submitted to the SWQD.

Note: The availability of toxicity information for a water treatment additive does not constitute approval to discharge the water treatment additive.

10. WHOLE EFFLUENT TOXICITY TESTS

Have any acute or chronic WET tests been conducted on any discharges or receiving water in relation to facility discharges within the last three years? If yes, identify the tests and summarize the results below unless the test has been submitted to the department in the last 5 years

NO

Michigan Department of Environmental Quality-Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
 SECTION III - Industrial and Commercial Wastewater  
 B. Outfall Information

PLEASE TYPE OR PRINT

FACILITY NAME <b>Donald C. Cook Nuclear Plant</b>	NPDES or COC PERMIT NUMBER <b>MI0005827</b>	Outfall Number <b>001</b>
9. WATER TREATMENT ADDITIVES		
<b>Water Treatment Additive</b>	<b>Approval Date</b>	
Sodium Hypochlorite	5/23/00 NPDES Permit approval 9/28/95	
Betz CT-1300 Formerly called Betz CT-2	5/23/00, 2/28/02, 9/13/94, NPDES Permit approval 9/28/95	
Betz CT-4	5/23/00, NPDES Permit approval 9/28/95	
Calgon H-130M	8/16/95, 5/23/00	
Calgon EVAC	8/8/00	
Nalco Macrotrol 9380	8/16/95, 5/23/00, 2/28/02	
Nalco Macrotrol 9210	8/16/95, 5/23/00, 2/28/02	
Nalco TRASAR 23299	5/23/00, 9/17/96	
Fluorescein Dye	9/21/98	
Bentonite Clay	5/23/2000, NPDES Permit approval 9/28/95	
Betz Ferroquest FQ LP 7200 (Formerly Call Betz Depositrol 855D)	11/14/94, 5/23/00, 9/17/96, NPDES Permit approval 9/28/95 <i>11-8-96</i>	
Sodium Tetraborate (Borax)	5/23/00	
SF6 (Sulphur hexafluoride gas)	NPDES Permit approval 9/28/95	
Betz Corrshield NT 4205 (Formerly Powerline 3231)	6/23/99, 9/17/96	
Calgon LCS-60	6/23/99, NPDES Permit approval 9/28/95	
Betz Corrshield NT4201	5/17/02	
Betz Corrshield NT 2403	9/18/02	
Spectrus NX 1105 (Formerly Betz Biotrol 107)	6/23/99, 5/23/00	
Calgon H-300	6/23/99, 5/23/00	
Betz AZ 8103 (Formerly Betz Copper-Trol Cu1	12/18/95, 6/23/99, 5/23/00	
Betz 3610	6/23/99	
Betz MD-4103	3/26/02	
Nalco 22199	9/17/96	

## Section III.B

### Outfall 002





Michigan Department of Environmental Quality- Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
SECTION III - Industrial and Commercial Wastewater

B. Outfall Information

Complete a separate Section III.B. - Outfall Information (pages 26-31) for each outfall at the facility. Make copies of this blank section of the application for additional outfalls as necessary.

PLEASE TYPE OR PRINT

FACILITY NAME Donald C. Cook Nuclear Plant	NPDES PERMIT NUMBER MI0005827	OUTFALL NUMBER 002
---	----------------------------------	-----------------------

1. OUTFALL INFORMATION (see page 25 for instruction on completion of this page)

A. Watershed  
Lower St Joseph

B. Receiving Water  
Lake Michigan

C. County  
Bernie Township  
Lake

D.  $\frac{1}{4}$ ,  $\frac{1}{4}$  SW  $\frac{1}{4}$  NW Section 06 Town 06S Range 19W

E. Latitude 41 58' 30" Longitude 86 34' 30"

F. Type of Wastewater Discharged (Check all that apply to this outfall)

☐ Contact Cooling ☐ Sanitary Wastewater ☐ Groundwater Cleanup ☒ Storm Water (regulated)

☒ Noncontact Cooling ☒ Process Wastewater ☐ Hydrostatic Pressure Test ☐ Storm Water (not regulated)

☒ Storm water subject to effluent guidelines (indicate under which category) 423-Steam Electric

☐ Other - specify (see "Table 8 - Other Common Types of Wastewater" in appendix) \_\_\_\_\_

J. What is the maximum Facility Design Flow Rate: 2074 MGD

G. What is the maximum discharge flow authorized for this outfall: Seasonal Dischargers \_\_\_\_\_ MGY Continue with Item H.  
Continuous Dischargers 1820 MGD Continue with Item I

H. Seasonal Discharge

List the discharge periods (by month) and the volume discharged in the space provided below.

From	Through	Discharge Volume	Annual Total
From	Through	Discharge Volume	
From	Through	Discharge Volume	
From	Through	Discharge Volume	

I. Continuous Discharge

How often is there a discharge from this outfall (on the average)? 24 Hours/Day 365 Days/Year

Batch dischargers must provide the following additional information:

Is there effluent flow equalization? ☐ Yes ☐ No

Batch Peak Flow Rate: \_\_\_\_\_ Number of batches discharged per day. \_\_\_\_\_

	Minimum	Average	Maximum
Batch Volume (gallons)			
Batch Duration (minutes)			

Michigan Department of Environmental Quality- Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
SECTION III - Industrial and Commercial Wastewater

B. Outfall Information

PLEASE TYPE OR PRINT

FACILITY NAME

Donald C. Cook Nuclear Plant

NPDES PERMIT NUMBER

MI0005827

OUTFALL NUMBER

002

2. PROCESS STREAMS CONTRIBUTING TO OUTFALL DISCHARGE

This information is used to determine the applicable federal regulations for this discharge. The information required to be reported is dependent on the type of facility. Page 7 of the appendix contains an abbreviated list of various industries and the types of information each shall report in this application. For assistance call the Permits Section. All industries shall provide the name of each process and the SIC or the NAICS code for the process. If the wastestream is not regulated under federal categorical standards, the applicant shall report all pollutants which have the reasonable potential to be present in the discharge. To submit additional information see page ii, item 8.

PROCESS INFORMATION

A. Name of the process contributing to the discharge: 00A

B. SIC or NAICS code: 4911

C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported): Steam Generator Blowdown. 1 MGD maximum flow 2247 MWE total plant electrical generation

PROCESS INFORMATION

A. Name of the process contributing to the discharge: 00B

B. SIC or NAICS code: 4911

C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported): Steam Generator Blowdown. 1 MGD maximum flow 2247 MWE total plant electrical generation.

PROCESS INFORMATION

A. Name of the process contributing to the discharge: 00C

B. SIC or NAICS code: 4911

C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported): Plant heating boiler blowdown 0.043 MGD maximum flow. 2247 MWE total plant electrical generation

PROCESS INFORMATION

A. Name of the process contributing to the discharge: 00G

B. SIC or NAICS code: 4911

C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported): Reverse osmosis reject stream 0.366 MGD maximum flow. 2247 MWE total plant electrical generation

PROCESS INFORMATION

A. Name of the process contributing to the discharge: 00H

B. SIC or NAICS code: 4911

C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported). Miscellaneous equipment drains and processes Maximum flow is 5.2 MGD. 2247 MWE total plant electrical generation. This Outfall is used for emergency purposes only.

Michigan Department of Environmental Quality- Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
SECTION III - Industrial and Commercial Wastewater

B Outfall Information

PLEASE TYPE OR PRINT

FACILITY NAME Donald C Cook Nuclear Plant	NPDES PERMIT NUMBER MI0005827	OUTFALL NUMBER 002
<b>2. PROCESS STREAMS CONTRIBUTING TO OUTFALL DISCHARGE</b> This information is used to determine the applicable federal regulations for this discharge. The information required to be reported is dependent on the type of facility. Page 7 of the appendix contains an abbreviated list of various industries and the types of information each shall report in this application. For assistance call the Permits Section. All industries shall provide the name of each process and the SIC or the NAICS code for the process. If the wastestream is not regulated under federal categorical standards, the applicant shall report all pollutants which have the reasonable potential to be present in the discharge. To submit additional information see page ii, item 8.		
<b>PROCESS INFORMATION</b> A. Name of the process contributing to the discharge <u>Unit One Cooling Water</u> B. SIC or NAICS code. <u>4911</u> C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported) Once-through non-contact cooling, maximum flow is 1500 MGD, 2247 MWE total plant electrical.		
<b>PROCESS INFORMATION</b> A. Name of the process contributing to the discharge. <u>Unit Two Cooling Water</u> B. SIC or NAICS code. <u>4911</u> C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported) Once through non-contact cooling, maximum flow is 1820 MGD, 2247 MWE total plant electrical.		
<b>PROCESS INFORMATION</b> A. Name of the process contributing to the discharge <u>Misc minor stormwater drains</u> B. SIC or NAICS code <u>4911</u> C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported): Roof drains from the screenhouse roof, small roadway gratings above the forebay road.		
<b>PROCESS INFORMATION</b> A. Name of the process contributing to the discharge _____ B. SIC or NAICS code _____ C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported)		
<b>PROCESS INFORMATION</b> A. Name of the process contributing to the discharge: _____ B. SIC or NAICS code _____ C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported)		

Michigan Department of Environmental Quality- Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
SECTION III - Industrial and Commercial Wastewater

B. Outfall Information

**INSTRUCTIONS FOR COMPLETING SECTION III, ITEM B.3.**

In accordance with 40 CFR 122.21, all applicants must report CBOD<sub>5</sub>, Chemical Oxygen Demand, Total Organic Carbon, Total Suspended Solids, Ammonia as N, Temperature (both summer and winter), and pH. The applicant may, however, request that reporting of data for one or more of these required parameters be waived. Such request must be supported by adequate rationale. The request shall be included as an attachment to this application.

Report available discharge data for the parameters listed. Actual data shall be provided for existing discharges and expected or estimated data provided for proposed discharges. Please include an explanation if "Pollution Prevention" is expected to provide reduction of pollutants. See Page 8 of the appendix for a list of specific parameters for which data must be provided for specific types of discharges (e.g., noncontact cooling waters, gasoline groundwater cleanups, etc.). For assistance in determining the appropriate parameters to report, call the Permits Section.

If data are available for other parameters not listed in Section III.B 3., the applicant shall report these data in the blank spaces provided or attach the information to this application on 8½" x 11" paper.

Report all data in the units provided and for the sample types specified in the table. If more than one option is available, check the appropriate box. The units are as follows: µg/l = micrograms per liter, mg/l = milligrams per liter, °F = degrees Fahrenheit, °C = degrees Celsius. See page ii number 5 for analytical requirements.

To analyze for pH, temperature, total residual chlorine, oil and grease, and fecal coliform use **Grab Samples** unless other frequency-sample type analyses are available. To analyze for total BOD<sub>5</sub>, total phosphorus, COD, TOC, ammonia nitrogen and total suspended solids use **24-hour composite samples** unless other frequency-sample type analyses are available.

For two or more substantially identical outfalls, permission may be requested from the appropriate district office to sample and analyze only one outfall and submit the results of the analysis for other substantially identical outfalls. If the request is granted by the district office, on a separate sheet attached to the application form, identify which outfall was sampled and describe why the outfalls which were not sampled are substantially identical to the outfall which was sampled. See pages ii and iii for sampling definitions, including "maximum daily concentration", and "maximum monthly concentration".

**REPORTING OF INTAKE DATA**

Applicants are required to report intake water data when they are attempting to demonstrate eligibility for "net" effluent limitations for one or more pollutants. A "net" effluent limitation is determined by subtracting the average level of the pollutant(s) present in the intake waters remaining after treatment which is not removed by the treatment system. NPDES regulations allow net limitations only in certain circumstances (see 40 CFR Part 122.45(g)). To demonstrate eligibility, report the average concentration and/or mass of the results of the analyses on the intake water. If the intake water is treated prior to use, report the intake concentrations and/or mass after treatment. In addition to the analytical results, the following information shall be submitted for each parameter:

- a) A statement that the intake water is drawn from the body of water into which the discharge is made. If the discharge is not to the same body of water from which the water is withdrawn, the facility is not eligible for net limitations.
- b) A statement of the extent to which the level of the pollutant in the intake water is reduced by treatment of the wastewater. Limitations for the net removal of pollutants are adjusted only to the extent that the pollutant is not removed.
- c) When applicable (for example, when the pollutant represents a class of compounds, e.g., BOD<sub>5</sub>, TSS, etc.), a demonstration of the extent to which the pollutants in the intake vary physically, chemically and biologically from the pollutants contained in the discharge. Limitations are adjusted only to the extent that the concentrations of the intake pollutants vary from the discharged pollutants.

**Note:** Applicants for groundwater remediation discharges should also report the intake characteristics of contaminated groundwater.

STATE OF MICHIGAN



JOHN ENGLER, Governor  
DEPARTMENT OF ENVIRONMENTAL QUALITY

"Better Service for a Better Environment"  
HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

INTERNET: [www.deq.state.mi.us](http://www.deq.state.mi.us)  
RUSSELL J. HARDING, Director

REPLY TO

PLAINWELL DISTRICT OFFICE  
1342 SR 89 W STE B  
PLAINWELL MI 49080-1915

January 28, 1999

Mr. John P. Carlson  
Environmental Compliance Manager  
Cook Nuclear Plant  
One Cook Place  
Bridgman, Michigan 49106

Dear Mr. Carlson:

SUBJECT: Application for Renewal of NPDES Permit No. MI0005827

We have reviewed the information provided in your letter of January 25, 1999. In that letter you request that representative outfalls be used to characterize effluent characteristics for similar outfalls. We approve your request as follows:

1. Effluent from Outfall 001 will be considered representative of outfalls 001, 002, and 003.
2. Effluent from Outfall 00B will be considered representative of outfalls 00A and 00B.

Please feel free to contact me if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Gregory A. Danneffel".

Gregory A. Danneffel  
Plainwell District Office  
Surface Water Quality Division  
616-692-6968

cc: Mr. Blair Zordell, Cook Nuclear Plant  
Mr. Dan Dell, Permits Section, SWQD  
Ms. Sylvia Heaton, GLEAS, SWQD

American Electric Power  
Cook Nuclear Plant  
One Cook Place  
Bridgman, MI 49106  
616 465 5901



Mr. Fred Morley  
Surface Water Quality Division  
Michigan Department of Environmental Quality  
1342 SR89 West Suite B  
Plainwell, MI 49080

January 25, 1999

Dear Mr. Morley:

Subject: NPDES Permit No. MI0005827 Application

We are currently preparing the Wastewater Discharge Permit Application to renew our current NPDES operating permit. As noted in Section III - Industrial and Commercial Wastewater, Part B. Outfall Information Item 6, paragraph 5 contains instructions to request permission to use a single sample for similar outfalls for application purposes.

We request that Outfall 001 be used as a representative sample for Outfalls 002 (Unit Two Noncontact Cooling Water) and Outfall 003 (De-icing Mode) for application use only. Outfalls 002 and 003 are substantially identical to Outfall 001. The source of these Outfalls is Lake Michigan; similar waste streams enter each Outfall prior to discharge.

In addition, we are requesting Outfall 00B (Unit Two Steam Generator Blowdown) to be used as a representative sample for Outfall 00A (Unit One Steam Generator Blowdown). Outfall 00A and Outfall 00B are substantially identical discharges, with the exception that Outfall 00A originates from the Unit One Steam Generators, and Outfall 00B originates from the Unit Two Steam Generators.

If you have any questions, please contact me at (616) 465-5901, ext. 1153.

Sincerely,

A handwritten signature in dark ink, appearing to read 'J.P. Carlson', is written over the typed name.

John P. Carlson  
Environmental Compliance Manager

/tlm

c: Greg Danneffel - MDEQ Plainwell  
Sylvia Heaton - MDEQ Lansing

Page Two  
Mr. Morley  
January 25, 1999

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this and all attached documents, and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.



D. E. Cooper  
Plant Manager

Michigan Department of Environmental Quality- Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
 SECTION III - Industrial and Commercial Wastewater

B. Outfall Information

PLEASE TYPE OR PRINT

FACILITY NAME Donald C Cook Nuclear Plant	NPDES PERMIT NUMBER MI0005827	OUTFALL NUMBER 002
--	----------------------------------	-----------------------

3. WASTEWATER CHARACTERISTICS - CONVENTIONAL POLLUTANTS - Instructions for completing this page are on the facing page.  
☒ Check this box if additional information is included as an attachment To submit additional information see page II, item 8.

Parameter	Maximum Daily Concentration	Maximum Monthly Concentration	Units	Number of Analyses	Sample Type
Biochemical Oxygen Demand - five day (BOD <sub>5</sub> )	3	3	mg/l	* 2	<input type="checkbox"/> Grab <input checked="" type="checkbox"/> 24 Hr Comp
COD (Chemical oxygen demand)	6	6	mg/l	* 2	<input type="checkbox"/> Grab <input checked="" type="checkbox"/> 24 Hr Comp
TOC (Total organic carbon)	4.5	4.5	mg/l	* 2	<input type="checkbox"/> Grab <input checked="" type="checkbox"/> 24 Hr Comp
Ammonia Nitrogen (as N)	<0.5	<0.5	mg/l	* 2	<input type="checkbox"/> Grab <input checked="" type="checkbox"/> 24 Hr Comp
Total Suspended Solids	8	8	mg/l	* 2	<input type="checkbox"/> Grab <input checked="" type="checkbox"/> 24 Hr Comp
Total Dissolved Solids	NA	NA	mg/l	NA	<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
Total Phosphorus (as P)	0.37	0.37	mg/l	* 1	<input type="checkbox"/> Grab <input checked="" type="checkbox"/> 24 Hr Comp
Fecal Coliform Bacteria (report geometric means)	maximum-7day NA	NA	counts/100ml	NA	Grab
Total Residual Chlorine	200	169	<input type="checkbox"/> mg/l <input checked="" type="checkbox"/> µg/l	212	Grab
Dissolved Oxygen	minimum daily NA	<del>Do Not Use</del>	mg/l	NA	<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
pH (report maximum and minimum of individual samples)	minimum 7.9	maximum 8.5	standard units	96	<input checked="" type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
Temperature, Summer	96.0	88.3	<input checked="" type="checkbox"/> °F <input type="checkbox"/> °C	176	<input checked="" type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
Temperature, Winter	65.3	58.9	<input checked="" type="checkbox"/> °F <input type="checkbox"/> °C	170	<input checked="" type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
Oil & Grease	<5	<5	mg/l	* 2	Grab
					<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
See Attached for additional Data					<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
					<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
					<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
*Water discharged from Outfall 002					<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
is the same as Outfall 001 and 003					<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
Permission has been granted to use the					<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
Screening data from Outfall 001 to					<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
characterize this discharge.					<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp



Michigan Department of Environmental Quality- Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
**SECTION III - Industrial and Commercial Wastewater**

**B. Outfall Information**

PLEASE TYPE OR PRINT

<b>FACILITY NAME</b> Donald C. Cook Nuclear Plant	<b>NPDES PERMIT NUMBER</b> MI0005827	<b>OUTFALL NUMBER</b> 002
--	---	------------------------------

**4. PRIMARY INDUSTRY PRIORITY POLLUTANT INFORMATION**

Existing primary industries that discharge process wastewater must submit the results of at least one effluent analysis for selected organic pollutants identified in Table 2 (as determined from Table 1, Testing Requirements for Organic Toxic Pollutants by Industrial Category), and all the pollutants identified in Table 3. Existing primary industries must also provide the results of at least one effluent analysis for any other chemical listed in Table 2 known or believed to be present in facility effluent.

In addition, submit the results of all other effluent analyses performed within the last 5 years for any chemical listed in Tables 2 and 3.

New primary industries that propose to discharge process wastewater must provide an estimated effluent concentration for any chemical listed in Tables 2 and 3 expected to be present in facility effluent.

**5. DIOXIN AND FURAN CONGENER INFORMATION**

Existing industries that use or manufacture 2,3,5-trichlorophenoxy acetic acid (2,4,5-T), 2- (2,3,5-trichlorophenoxy) propanoic acid, (Silvex, 2,3,5-TP); 2-(2,4,5-trichlorophenoxy) ethyl 2,2-dichloropropionate (Erbon); 0,0-dimethyl 0-(2,4,5-trichlorophenyl) phosphorothionate (Ronnel), 2,4,5-trichlorophenol (TCP) or hexachlorophrene (HCP), or knows or has reason to believe that 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) is present in facility effluent, must submit the results of at least one effluent analysis for the dioxin and furan congeners listed in Table 6. All effluent analyses for dioxin and furan congeners must be conducted using EPA Method 1613.

In addition, submit the results of all other effluent analyses performed within the last 5 years for any dioxin and furan congener listed in Table 6.

New industries that expect to use or manufacture 2,3,5-trichlorophenoxy acetic acid (2,4,5-T), 2- (2,3,5-trichlorophenoxy) propanoic acid (Silvex, 2,3,5-TP), 2-(2,4,5-trichlorophenoxy) ethyl 2,2-dichloropropionate (Erbon), 0,0-dimethyl 0-(2,4,5-trichlorophenyl) phosphorothionate (Ronnel), 2,4,5-trichlorophenol (TCP) or hexachlorophrene (HCP), or knows or has reason to believe that 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) is present in facility effluent must provide estimated effluent concentrations for the dioxin and furan congeners listed in Table 6.

**6. OTHER INDUSTRY PRIORITY POLLUTANT INFORMATION**

Existing secondary industries, or existing primary industries that discharge non-process wastewater, must submit the results of at least one effluent analysis for any chemical listed in Tables 2 and 3 known or believed to be present in facility effluent.

In addition, submit the results of all other effluent analyses performed within the last 5 years for any chemical listed in Tables 2 and 3.

New secondary industries, or new primary industries that propose to discharge non-process wastewater, must provide an estimated effluent concentration for any chemical listed in Tables 2 and 3 expected to be present in facility effluent.

**7. ADDITIONAL TOXIC AND OTHER POLLUTANT INFORMATION**

All existing industries, regardless of discharge type, must provide the results of at least one analyses for any chemical listed in Table 4 known or believed to be present in facility effluent, and a measured or estimated effluent concentration for any chemical listed in Table 5 known or believed to be present in facility effluent. In addition, submit the results of any effluent analysis performed within the last 5 years for any chemical listed in Tables 4 and 5.

New industries, regardless of discharge type, must provide an estimated effluent concentration for any chemical listed in Tables 4 and 5 expected to be in facility effluent.

**8. INJURIOUS CHEMICALS NOT PREVIOUSLY REPORTED**

New or existing industries, regardless of discharge type, must provide a measured or estimated effluent concentration for any toxic or otherwise injurious chemicals known or believed to be present in facility effluent that have not been previously identified in this application. Quantitative effluent data that are less than 5 years old for these chemicals must be reported.

**NOTE:** All effluent data submitted in response to questions 4, 5, 6, 7, and 8 above should be recorded on page 31. To submit additional information see page ii, item 8. If the effluent concentrations are estimated, place an E in the "Analytical Method" column. The following fields must be completed for each data row: Parameter, CAS No., Concentration(s), Sample Type, Analytical Method, Quantification Level and Detection Level. See page ii, number 5 for analytical test requirements.



## PLEASE TYPE OR PRINT

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## For Outfall 002

Parameter	2/1/99	3/21/02	5/30/02	Sample type	Max Daily	Analytical	Max monthly	# of Analyses
<b>Table 2</b>								
See Attached data set from Belmonte Park Laboratories.								
<b>Table 3</b>								
Antimony (ug/l)	<1**	<1	-	Grab	<1	204 2/200 7	<1	2
Arsenic (ug/l)	<1**	2	<1	Grab	2	206 2/200 7	2	3
Beryllium (ug/l)	<1**	<0 2	-	Grab	<1	200 7	<1	2
Cadmium (ug/l)	<0 2**	<0 2	-	Grab	<0 2	213 2/200 7	<0 2	2
Chromium (ug/l)	<10**	3	<2	Grab	3	200 7	3	3
Copper (ug/l)	<1**	5	1	Grab	5	220.2/200.7	5	3
Lead (ug/l)	<1**	2	<2	Grab	2	239 2/200 7	2	3
Nickel (ug/l)	<5**	<3	-	Grab	<5	249 2/200 7	<5	2
Total Phenols (ug/l)	<10**	-	-	Grab	<10	420 1	<10	1
Selenium (ug/l)	-	<1	-	Grab	<1	270 3	<1	1
Silver(ug/l)	<0 5**	<0 2	-	Grab	<0 5	272 2/200 7	<0 5	2
Thallium -(ug/l)	<1**	<1	-	Grab	<1	279 2	<1	2
Zinc (ug/l)	-	7	<4	Grab	7	200 7	7	2
Cyanide (mg/l)	<0 01**	<0 01	-	Grab	<0 01	335 2	<0 01	2
Mercury (ng/l)	-	7.36	1 1	Grab	7.36	1631	7 36	2
<b>Table 4</b>								
Sulfate (mg/l)	<10**	23	-	Composite	23	375 4	23	2
Additional Data From Belmonte Park Laboratories is attached								
See Attached Data set from Cook Nuclear Plant Laboratory								
<b>Table 5</b>								
See Attached data set from Belmonte Park Laboratories.								
See Attached Data set from Cook Nuclear Plant Laboratory								

\*\*001 used for 002

## Section III.B.6

Non-routine sample data  
From Table 4002 TRC  
USEPA Method 330.5

Outfall 002

	Jan-01	Feb-01	Mar-01	Apr-01	May-01	Jun-01	Jul-01	Aug-01	Sep-01	Oct-01	Nov-01	Dec-01	Jan-02	Feb-02	Mar-02	Apr-02	May-02	Jun-02	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02
1						97		53			10	9	3									119	159
2								51			1	6	2									143	
3												5	3								11	141	
4	48					81	120					2	1					123			2	184	176
5	52					108						4	1					184			3		158
6	74					94		107				4	1					188		110	<1		165
7	35					88		67				3	1									144	172
8	46					81		69				6	1									165	162
9	44											6	1									145	
10	30											2	1						85		<1	24	
11					34	85				152		2	1						138		4	157	130
12					16	80				166		1	2							67	29		167
13					15	82	200	66				2	3								34		
14					8			71				2											131
15						68		70		107		2											161
16	6						45	69		160		2		1			173		125	1	13	180	
17					84		70					2		71			172		136		24	180	
18						74	41	129				3									17	164	
19					131	93	19					5									15		
20					127	109	15	107				4									22		
21					116	111		97			67	3									158	174	
22					118	36		93				3					134				151	170	
23					103		10	103		172		2					139		116		168	157	
24				3	104		7	140		159		6					145		125			155	
25				1	103	95	12	144		99		7							93			170	
26				5		48		117				7									188		
27				2		52	99	148				8									179		
28				3	92			143				12						180			165	154	
29				5	88			111				5										158	
30				2	96		76					4					158			4	104	164	
31					101		66			41		4					170					176	

DAILY MAX	74		5	131	111	200	148		172	67	12	3	71	0	0	173	188	138	110	188	184	176
Monthly avg	42		3	84	82	60	98		132	26	4	2	36	0	0	156	169	117	45	71	153	161

Number of analyses	210
Number of <det values	2
Total	212

Daily Max	200	ug/l
Monthly Max	169	ug/l



Belmonte Park  
Environmental  
Laboratories

AMERICAN ELECTRIC POWER (AEP)  
1 COOK PLACE  
BRIDGMAN, MICHIGAN 49106

Attn: BLAIR ZORDELL

Purchase Order: 4307976  
Invoice Number:

Order #: 99-02-060  
Date: 03/16/99 09:22  
Work ID: OUTFALL 001 - 00C  
Date Received: 02/02/99  
Date Completed: 03/16/99

Client Code: AEP\_4

ND= NONE DETECTED  
OHIO CERT.# 12345

SAMPLE IDENTIFICATION

Sample Number	Sample Description		Sample Number	Sample Description	
01	OUTFALL 001	02/01/99	24	OUTFALL 00G	02/01/99
02	OUTFALL 001	02/01/99	25	OUTFALL 00G	02/01/99
03	OUTFALL 001	02/01/99	26	OUTFALL 00G	02/01/99
04	OUTFALL 001	02/01/99	27	OUTFALL 00G	02/01/99
05	OUTFALL 001	02/01/99	28	OUTFALL 00G	02/01/99
06	OUTFALL 001	02/01/99	29	OUTFALL 00G	02/01/99
07	OUTFALL 001	02/01/99	30	OUTFALL 00G	02/01/99
08	OUTFALL 001	02/01/99	31	OUTFALL 00C	02/01/99
09	OUTFALL 001	02/01/99	32	OUTFALL 00C	02/01/99
10	OUTFALL 001	02/01/99	33	OUTFALL 00C	02/01/99
11	OUTFALL 001	02/01/99	34	OUTFALL 00C	02/01/99
12	OUTFALL 001	02/01/99	35	OUTFALL 00C	02/01/99
13	OUTFALL 001	02/01/99	36	OUTFALL 00C	02/01/99
14	OUTFALL 001	02/01/99	37	OUTFALL 00C	02/01/99
15	OUTFALL 001	02/01/99	38	OUTFALL 00C	02/01/99
16	OUTFALL 00G	02/01/99	39	OUTFALL 00C	02/01/99
17	OUTFALL 00G	02/01/99	40	OUTFALL 00C	02/01/99
18	OUTFALL 00G	02/01/99	41	OUTFALL 00C	02/01/99
19	OUTFALL 00G	02/01/99	42	OUTFALL 00C	02/01/99
20	OUTFALL 00G	02/01/99	43	OUTFALL 00C	02/01/99
21	OUTFALL 00G	02/01/99	44	OUTFALL 00C	02/01/99
22	OUTFALL 00G	02/01/99	45	OUTFALL 00C	02/01/99
23	OUTFALL 00G	02/01/99			



Belmonte Park  
Environmental  
Laboratories

Order # 99-02-060  
03/16/99 09:22

Page 2

Enclosed are results of specified samples submitted for analyses. If there are any questions, please contact Matt Lake. Our Ohio EPA Certification numbers are 836 & 837. Any result of "BDL" indicates "BELOW DETECTION LIMIT".

*M. Lake*

Certified By  
MATT LAKE



Belmonte Park  
Environmental  
Laboratories

Order # 99-02-060  
03/16/99 09:22

Page 3

TEST RESULTS BY SAMPLE

Sample: 01A . OUTFALL 001 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
5day CBOD, EPA 405.1	3	2	mg/L	02/08/99	PT
SUSPENDED SOLIDS, EPA 160.2	BDL	5	mg/L	02/11/99	KC

Sample: 02A OUTFALL 001 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
COD, EPA 410.4	6	5	mg/L	02/19/99	LG
TOC, EPA 415.1	4.5	1	mg/L	02/09/99	JW

Sample: 03A OUTFALL 001 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
AMMONIA N, EPA 350.2	BDL	0.5	mg/L	02/11/99	JB

Sample: 05A OUTFALL 001 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
EPA 625 SEMI VOL. EXTRACT	-	-	-	-	SD
EXTRACTION, EPA 608	-	-	-	-	SD

Sample: 06A OUTFALL 001 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
ALUMINUM, EPA 200.7	0.05	0.05	mg/L	02/12/99	RJE
ANTIMONY, EPA 204.2	BDL	0.001	mg/L	03/05/99	RJE
ARSENIC, EPA 206.2	BDL	0.001	mg/L	03/05/99	RJE
BARIUM, EPA 200.7	0.021	0.005	mg/L	02/11/99	RJE
BERYLLIUM, EPA 200.7	BDL	0.001	mg/L	02/11/99	RJE
BORON, EPA 200.7	0.07	0.05	mg/L	02/12/99	RJE
CADMIUM, EPA 213.2	BDL	0.0002	mg/L	03/08/99	RJE
CHROMIUM, EPA 200.7	BDL	0.01	mg/L	02/11/99	RJE
COBALT, EPA 200.7	BDL	0.01	mg/L	02/11/99	RJE
COPPER, EPA 220.2	BDL	0.001	mg/L	03/08/99	RJE
IRON, EPA 200.7	BDL	0.1	mg/L	02/11/99	RJE
LEAD, EPA 239.2	BDL	0.001	mg/L	03/05/99	RJE
LITHIUM, EPA 200.7	0.01	0.01	mg/L	02/12/99	RJE



Belmonte Park  
Environmental  
Laboratories

Order # 99-02-060  
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TEST RESULTS BY SAMPLE

<u>Test Description</u>		<u>Result</u>	<u>Detection</u> <u>Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
MAGNESIUM,	EPA 200.7	11	1	mg/L	02/12/99	RJE
MANGANESE,	EPA 200.7	BDL	0.01	mg/L	02/11/99	RJE
MERCURY,	EPA 245.1	BDL	0.0002	mg/L	02/11/99	RJE
METALS DIGESTION,	WATER	-		-		EP
MOLYBDENUM,	EPA 200.7	BDL	0.01	mg/L	02/11/99	RJE
NICKEL,	EPA 249.2	BDL	0.005	mg/L	03/08/99	RJE
SELENIUM,	EPA 200.7	BDL	0.1	mg/L	02/11/99	RJE
SILVER,	EPA 272.2	BDL	0.0005	mg/L	03/08/99	RJE
STRONTIUM,	EPA 200.7	0.12	0.01	mg/L	02/12/99	RJE
THALLIUM,	EPA 279.2	BDL	0.001	mg/L	03/05/99	RJE
URANIUM	EPA 200.7	BDL	0.1	mg/L	02/15/99	RJE
ZINC,	EPA 200.7	BDL	0.02	mg/L	02/11/99	RJE

Sample: 07A    OUTFALL 001    02/01/99    Collected: 02/01/99    Category: AQUEOUS

<u>Test Description</u>		<u>Result</u>	<u>Detection</u> <u>Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
SULFIDE,	EPA 376.1	BDL	1	mg/L	03/05/99	LG
TOTAL CYANIDE,	EPA 335.2	BDL	0.01	mg/L	03/04/99	LG

Sample: 08A    OUTFALL 001    02/01/99    Collected: 02/01/99    Category: AQUEOUS

<u>Test Description</u>		<u>Result</u>	<u>Detection</u> <u>Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
PHENOLICS,	EPA 420.1	BDL	0.01	mg/L	02/23/99	JB

Sample: 09A    OUTFALL 001    02/01/99    Collected: 02/01/99    Category: AQUEOUS

<u>Test Description</u>		<u>Result</u>	<u>Detection</u> <u>Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
CHLORINE, RESIDUAL TOTAL		BDL	0.05	mg/L	02/03/99	ML

Sample: 10A    OUTFALL 001    02/01/99    Collected: 02/01/99    Category: AQUEOUS

<u>Test Description</u>		<u>Result</u>	<u>Detection</u> <u>Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
NITRATE-NITRITE N		0.38	0.2	mg/L	02/05/99	LG
ORGANIC NITROGEN		BDL	0.5	mg/L	02/11/99	JB
PHOSPHORUS,	EPA 365.1	0.37	0.1	mg/L	02/18/99	LG
TKN,	EPA 351.3	BDL	0.5	mg/L	02/06/99	JB





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### TEST RESULTS BY SAMPLE

02/01/99 Collected: 02/01/99 Category: AQUEOUS

Sample: 12A    OUTFALL 001    02/01/99    Collected: 02/01/99    Category: AQUEOUS

Sample: 13A    OUTFALL 001    02/01/99    Collected: 02/01/99    Category: AQUEOUS

Sample: 14A    OUTFALL 001    02/01/99    Collected: 02/01/99    Category: AQUEOUS

Sample: 16A    OUTFALL 00G    02/01/99    Collected: 02/01/99    Category: AQUEOUS

Sample: 17A    OUTFALL 00G    02/01/99    Collected: 02/01/99    Category: AQUEOUS

<u>Test Description</u>		<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
COD,	EPA 410.4	BDL	5	mg/L	02/19/99	LG
TOC,	EPA 415.1	2.1	1	mg/L	02/09/99	JW



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TEST RESULTS BY SAMPLE

Sample: 18A    OUTFALL 00G    02/01/99    Collected: 02/01/99    Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
AMMONIA N,    EPA 350.2	BDL	0.5	mg/L	02/11/99	JB

Sample: 20A    OUTFALL 00G    02/01/99    Collected: 02/01/99    Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
EPA 625 SEMI VOL. EXTRACT	-		-		SD
EXTRACTION,    EPA 608	-		-		SD

Sample: 21A    OUTFALL 00G    02/01/99    Collected: 02/01/99    Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
ALUMINUM,    EPA 200.7	BDL	0.05	mg/L	02/12/99	RJE
ANTIMONY,    EPA 204.2	BDL	0.001	mg/L	03/05/99	RJE
ARSENIC,    EPA 206.2	BDL	0.001	mg/L	03/05/99	RJE
BARIUM,    EPA 200.7	0.022	0.005	mg/L	02/11/99	RJE
BERYLLIUM,    EPA 200.7	BDL	0.001	mg/L	02/11/99	RJE
BORON,    EPA 200.7	0.06	0.05	mg/L	02/12/99	RJE
CADMIUM,    EPA 213.2	BDL	0.0002	mg/L	03/08/99	RJE
CHROMIUM,    EPA 200.7	BDL	0.01	mg/L	02/11/99	RJE
COBALT,    EPA 200.7	BDL	0.01	mg/L	02/11/99	RJE
COPPER,    EPA 220.2	BDL	0.001	mg/L	03/08/99	RJE
IRON,    EPA 200.7	BDL	0.1	mg/L	02/11/99	RJE
LEAD,    EPA 239.2	BDL	0.001	mg/L	03/05/99	RJE
LITHIUM,    EPA 200.7	BDL	0.01	mg/L	02/12/99	RJE
MAGNESIUM,    EPA 200.7	12	1	mg/L	02/12/99	RJE
MANGANESE,    EPA 200.7	BDL	0.01	mg/L	02/11/99	RJE
MERCURY,    EPA 245.1	BDL	0.0002	mg/L	02/11/99	RJE
METALS DIGESTION,    WATER	-		-		EP
MOLYBDENUM,    EPA 200.7	BDL	0.01	mg/L	02/11/99	RJE
NICKEL,    EPA 249.2	BDL	0.005	mg/L	03/08/99	RJE
SELENIUM,    EPA 200.7	BDL	0.1	mg/L	02/11/99	RJE
SILVER,    EPA 272.2	BDL	0.0005	mg/L	03/08/99	RJE
STRONTIUM,    EPA 200.7	0.14	0.01	mg/L	02/12/99	RJE
THALLIUM,    EPA 279.2	BDL	0.001	mg/L	03/05/99	RJE
URANIUM    EPA 200.7	BDL	0.1	mg/L	02/15/99	RJE
ZINC,    EPA 200.7	BDL	0.02	mg/L	02/11/99	RJE



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TEST RESULTS BY SAMPLE

Sample: 22A OUTFALL 00G 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>		<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
SULFIDE,	EPA 376.1	BDL	1	mg/L	03/05/99	LG
TOTAL CYANIDE,	EPA 335.2	BDL	0.01	mg/L	03/15/99	LG

Sample: 23A OUTFALL 00G 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>		<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
PHENOLICS,	EPA 420.1	BDL	0.01	mg/L	02/23/99	JB

Sample: 24A OUTFALL 00G 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>		<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
CHLORINE, RESIDUAL TOTAL		BDL	0.05	mg/L	02/03/99	ML

Sample: 25A OUTFALL 00G 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>		<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
NITRATE-NITRITE N		0.50	0.2	mg/L	02/05/99	LG
ORGANIC NITROGEN		BDL	0.5	mg/L	02/11/99	JB
PHOSPHORUS,	EPA 365.1	BDL	0.1	mg/L	02/18/99	LG
TKN,	EPA 351.3	BDL	0.5	mg/L	02/06/99	JB

Sample: 26A OUTFALL 00G 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>		<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
OIL & GREASE,	EPA 413.1	BDL	5	mg/L	02/10/99	PT

Sample: 27A OUTFALL 00G 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>		<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
GROSS ALPHA,	IN WATER	BDL	3	pCi/L	03/08/99	SF
GROSS BETA,	IN WATER	BDL	4	pCi/L	03/08/99	SF
RADIUM,	IN WATER	BDL	1	pCi/L	03/10/99	SF
RADIUM-226,	IN WATER	BDL	1	pCi/L	03/10/99	SF

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TEST RESULTS BY SAMPLE

Sample: 28A OUTFALL 00G 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
METHYLENE BLUE ACTIVE SUB.	BDL	0.01	mg/L	02/17/99	ML
SULFATE, EPA 375.4	113	10	mg/L	02/18/99	JB
SULFITE,	BDL	2	mg/L	02/17/99	ML

Sample: 29A OUTFALL 00G 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
ASBESTOS WATER	ND	0.2	MF/L, >10um	02/12/99	EM

Sample: 31A OUTFALL 00C 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
5day CBOD, EPA 405.1	4	2	mg/L	02/08/99	PT
SUSPENDED SOLIDS, EPA 160.2	BDL	5	mg/L	02/11/99	KC

Sample: 32A OUTFALL 00C 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
COD, EPA 410.4	BDL	5	mg/L	02/19/99	LG
TOC, EPA 415.1	BDL	1	mg/L	02/09/99	JW

Sample: 33A OUTFALL 00C 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
AMMONIA N, EPA 350.2	BDL	0.5	mg/L	02/11/99	JB

Sample: 35A OUTFALL 00C 02/01/99 Collected: 02/01/99 Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
EPA 625 SEMI VOL. EXTRACT	-	-	-	-	SD
EXTRACTION, EPA 608	-	-	-	-	SD



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TEST RESULTS BY SAMPLE

Sample: 36A    OUTFALL 00C

02/01/99    Collected: 02/01/99    Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
ALUMINUM,            EPA 200.7	BDL	0.05	mg/L	02/12/99	RJE
ANTIMONY,           EPA 204.2	0.002	0.001	mg/L	03/05/99	RJE
ARSENIC,            EPA 206.2	BDL	0.001	mg/L	03/05/99	RJE
BARIUM,             EPA 200.7	BDL	0.005	mg/L	02/11/99	RJE
BERYLLIUM,          EPA 200.7	BDL	0.001	mg/L	02/11/99	RJE
BORON,              EPA 200.7	BDL	0.05	mg/L	02/12/99	RJE
CADMIUM,            EPA 213.2	BDL	0.0002	mg/L	03/08/99	RJE
CHROMIUM,           EPA 200.7	BDL	0.01	mg/L	02/11/99	RJE
COBALT,             EPA 200.7	BDL	0.01	mg/L	02/11/99	RJE
COPPER,              EPA 220.2	0.012	0.001	mg/L	03/08/99	RJE
IRON,                EPA 200.7	BDL	0.1	mg/L	02/11/99	RJE
LEAD,                EPA 239.2	BDL	0.001	mg/L	03/05/99	RJE
LITHIUM,            EPA 200.7	BDL	0.01	mg/L	02/12/99	RJE
MAGNESIUM,          EPA 200.7	BDL	1	mg/L	02/12/99	RJE
MANGANESE,          EPA 200.7	0.01	0.01	mg/L	02/11/99	RJE
MERCURY,            EPA 245.1	BDL	0.0002	mg/L	02/11/99	RJE
METALS DIGESTION,    WATER	-	-	-	-	EP
MOLYBDENUM,        EPA 200.7	BDL	0.01	mg/L	02/11/99	RJE
NICKEL,              EPA 249.2	BDL	0.005	mg/L	03/08/99	RJE
SELENIUM,           EPA 200.7	BDL	0.1	mg/L	02/11/99	RJE
SILVER,              EPA 272.2	BDL	0.0005	mg/L	03/08/99	RJE
STRONTIUM,          EPA 200.7	BDL	0.01	mg/L	02/12/99	RJE
THALLIUM,           EPA 279.2	BDL	0.001	mg/L	03/05/99	RJE
URANIUM             EPA 200.7	BDL	0.1	mg/L	02/15/99	RJE
ZINC,                EPA 200.7	BDL	0.02	mg/L	02/11/99	RJE

Sample: 37A    OUTFALL 00C

02/01/99    Collected: 02/01/99    Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
SULFIDE,            EPA 376.1	BDL	1	mg/L	03/05/99	LG
TOTAL CYANIDE,     EPA 335.2	BDL	0.01	mg/L	03/04/99	LG

Sample: 38A    OUTFALL 00C

02/01/99    Collected: 02/01/99    Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
PHENOLICS,          EPA 420.1	BDL	0.01	mg/L	02/23/99	JB



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TEST RESULTS BY SAMPLE

Sample: 39A    OUTFALL 00C    02/01/99    Collected: 02/01/99    Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
CHLORINE, RESIDUAL TOTAL	BDL	0.05	mg/L	02/03/99	ML

Sample: 40A    OUTFALL 00C    02/01/99    Collected: 02/01/99    Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
NITRATE-NITRITE N	BDL	0.2	mg/L	02/05/99	LG
ORGANIC NITROGEN	BDL	0.5	mg/L	02/11/99	JB
PHOSPHORUS,        EPA 365.1	BDL	0.1	mg/L	02/18/99	LG
TKN,                EPA 351.3	BDL	0.5	mg/L	02/06/99	JB

Sample: 41A    OUTFALL 00C    02/01/99    Collected: 02/01/99    Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
OIL & GREASE,        EPA 413.1	BDL	5	mg/L	02/10/99	PT

Sample: 42A    OUTFALL 00C    02/01/99    Collected: 02/01/99    Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
GROSS ALPHA,        IN WATER	BDL	3	pCi/L	03/08/99	SF
GROSS BETA,         IN WATER	BDL	4	pCi/L	03/08/99	SF
RADIUM,             IN WATER	BDL	1	pCi/L	03/10/99	SF
RADIUM-226,         IN WATER	BDL	1	pCi/L	03/10/99	SF

Sample: 43A    OUTFALL 00C    02/01/99    Collected: 02/01/99    Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
METHYLENE BLUE ACTIVE SUB.	BDL	0.01	mg/L	02/17/99	ML
SULFATE,            EPA 375.4	BDL	10	mg/L	02/18/99	JB
SULFITE,	BDL	2	mg/L	02/17/99	ML

Sample: 44A    OUTFALL 00C    02/01/99    Collected: 02/01/99    Category: AQUEOUS

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
ASBESTOS WATER	ND	0.2	MF/L, >10um	02/12/98	EM



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TEST RESULTS BY SAMPLE

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Sample Description: OUTFALL 001  
Test Description: EPA 624  
Collected: 02/01/99

02/01/99 Lab No: 04A  
Method: 624  
Category: AQUEOUS

Test Code: 624\_X

PARAMETER	RESULT	LIMIT
ACROLEIN	BDL	20
ACRYLONITRILE	BDL	20
2-CHLOROETHYLVINYL ETHER	BDL	20
BENZENE	BDL	2
CARBON TETRACHLORIDE	BDL	2
CHLOROBENZENE	BDL	2
1,2-DICHLOROETHANE	BDL	2
1,1,1-TRICHLOROETHANE	BDL	2
1,1-DICHLOROETHANE	BDL	2
1,1,2-TRICHLOROETHANE	BDL	2
1,1,2,2-TETRACHLOROETHANE	BDL	2
CHLOROETHANE	BDL	10
CHLOROFORM	BDL	2
1,1-DICHLOROETHYLENE	BDL	2
1,2-TRANS-DICHLOROETHYLENE	BDL	2
1,2-DICHLOROPROPANE	BDL	2
CIS-1,3-DICHLOROPROPYLENE	BDL	2
TRANS-1,3-DICHLOROPROPYLENE	BDL	2
ETHYLBENZENE	BDL	2
1,2-DICHLOROBENZENE	BDL	2
1,3-DICHLOROBENZENE	BDL	2
1,4-DICHLOROBENZENE	BDL	2
METHYLENE CHLORIDE	BDL	10
CHLOROMETHANE	BDL	10
BROMOMETHANE	BDL	2
BROMOFORM	BDL	2
DICHLOROBROMOMETHANE	BDL	2
TRICHLOROFLUOROMETHANE	BDL	2
CHLORODIBROMOMETHANE	BDL	2
TETRACHLOROETHYLENE	BDL	2
TOLUENE	BDL	2
TRICHLOROETHENE	BDL	2
VINYL CHLORIDE	BDL	10
XYLENES	BDL	10

SURROGATE	%RECOVERY	LIMITS
D4-1,2 DICHLOROETHANE	112	76 - 114
D8-TOLUENE	94	88 - 110



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TEST RESULTS BY SAMPLE

Sample Description: OUTFALL 001

02/01/99 Lab No: 04A

Test Description: EPA 624

Method: 624

Test Code: 624\_X

Collected: 02/01/99

Category: AQUEOUS

4-BROMOFLUOROBENZENE      96      86 - 115

Notes and Definitions for this Report:

DATE RUN 02/09/99

ANALYST JMM

INSTRUMENT GC/MS

FILE ID 9020934

UNITS ug/L

METHOD EPA 624

BDL BELOW DETECTION LIMIT



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TEST RESULTS BY SAMPLE

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Sample Description: OUTFALL 001      02/01/99      Lab No: 05A  
Test Description: EPA 625 SEMI VOLATILES      Method: 625  
Collected: 02/01/99      Category: AQUEOUS

Test Code: 625\_AE

PARAMETER	RESULT	LIMIT
2,4,6-TRICHLOROPHENOL	BDL	10
4-CHLORO-3-METHYLPHENOL	BDL	10
2-CHLOROPHENOL	BDL	10
2,4-DICHLOROPHENOL	BDL	10
2,4-DIMETHYLPHENOL	BDL	10
2-NITROPHENOL	BDL	10
4-NITROPHENOL	BDL	50
2,4-DINITROPHENOL	BDL	50
2-METHYL-4,6-DINITROPHENOL	BDL	50
PENTACHLOROPHENOL	BDL	50
PHENOL	BDL	10
ACENAPHTHENE	BDL	10
BENZIDENE	BDL	50
1,2,4-TRICHLOROBENZENE	BDL	10
HEXACHLOROBENZENE	BDL	10
HEXACHLOROETHANE	BDL	10
BIS(2-CHLOROETHYL) ETHER	BDL	10
2-CHLORONAPHTHALENE	BDL	10
1,2-DICHLOROBENZENE	BDL	10
1,3-DICHLOROBENZENE	BDL	10
1,4-DICHLOROBENZENE	BDL	10
3,3-DICHLOROBENZIDINE	BDL	20
2,4-DINITROTOLUENE	BDL	10
2,6-DINITROTOLUENE	BDL	10
FLUORANTHENE	BDL	10
4-CHLOROPHENYL PHENYL ETHER	BDL	10
4-BROMOPHENYL PHENYL ETHER	BDL	10
BIS(2-CHLOROISOPROPYL) ETHER	BDL	10
BIS(2-CHLOROETHOXY) METHANE	BDL	10
HEXACHLOROBUTADIENE	BDL	10
HEXACHLOROCYCLOPENTADIENE	BDL	10
ISOPHORONE	BDL	10
NAPHTHALENE	BDL	10
NITROBENZENE	BDL	10
N-NITROSODIMETHYLAMINE	BDL	10
N-NITROSODIPHENYLAMINE	BDL	10
N-NITROSODI-N-PROPYLAMINE	BDL	10
BIS(2-ETHYLHEXYL) PHTHALATE	BDL	10



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TEST RESULTS BY SAMPLE

Sample Description: OUTFALL 001      02/01/99      Lab No: 05A  
Test Description: EPA 625 SEMI VOLATILES      Method: 625      Test Code: 625\_AE  
Collected: 02/01/99      Category: AQUEOUS

BUTYL BENZYLPHTHALATE	BDL	10
DI-N-BUTYL PHTHALATE	BDL	10
DI-N-OCTYL PHTHALATE	BDL	10
DIETHYL PHTHALATE	BDL	10
DIMETHYL PHTHALATE	BDL	10
BENZO (A) ANTHRACENE	BDL	10
BENZO (A) PYRENE	BDL	10
3,4-BENZOFUORANTHENE	BDL	10
BENZO (K) FLUORANTHENE	BDL	10
CHRYSENE	BDL	10
ACENAPHTHYLENE	BDL	10
ANTHRACENE	BDL	10
BENZO (GHI) PERYLENE	BDL	50
FLUORENE	BDL	10
PHENANTHRENE	BDL	10
DIBENZO (A,H) ANTHRACENE	BDL	50
INDENO (1,2,3-CD) PYRENE	BDL	50
PYRENE	BDL	10
ETHANOL AMINE	BDL	100
HYDRAZINE	BDL	200

SURROGATE	%RECOVERY	LIMITS
NITROBENZENE-d5	85	35 - 114
2-FLUOROBIPHENYL	72	43 - 116
p-TERPHENYL-d14	95	33 - 141
PHENOL-d6	46	10 - 94
2-FLUOROPHENOL	74	21 - 100
2,4,6-TRIBROMOPHENOL	50	10 - 123

Notes and Definitions for this Report:

EXTRACTED 02/07/99  
DATE RUN 02/25/99  
ANALYST TC  
INSTRUMENT GC/MS  
FILE ID S9022524  
UNITS ug/L  
METHOD EPA 625  
BDL BELOW DETECTION LIMIT



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TEST RESULTS BY SAMPLE

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Sample Description: OUTFALL 001      02/01/99      Lab No: 05A  
Test Description: PCB/PESTICIDES EPA 608      Method: 608  
Collected: 02/01/99      Category: AQUEOUS

Test Code: 608

PARAMETER	RESULT	LIMIT
ALDRIN	BDL	0.010
ALPHA-BHC	BDL	0.010
BETA-BHC	BDL	0.010
DELTA-BHC	BDL	0.010
GAMMA-BHC	BDL	0.010
CHLORDANE	BDL	0.010
4,4-DDT	BDL	0.010
4,4-DDE	BDL	0.010
4,4-DDD	BDL	0.010
DIELDRIN	BDL	0.010
ALPHA ENDOSULFAN	BDL	0.010
BETA ENDOSULFAN	BDL	0.010
ENDOSULFAN SULFATE	BDL	0.10
ENDRIN	BDL	0.010
ENDRIN ALDEHYDE	BDL	0.020
HEPTACHLOR	BDL	0.030
HEPTACHLOR EPOXIDE	BDL	0.10
PCB-1016	BDL	0.10
PCB-1221	BDL	0.20
PCB-1232	BDL	0.10
PCB-1242	BDL	0.10
PCB-1248	BDL	0.10
PCB-1254	BDL	0.10
PCB-1260	BDL	0.10
TOXAPHENE	BDL	0.20

SURROGATE	%RECOVERY	LIMITS
DBC (SURROGATE, % RECOVERY)	90	70 - 130
2,4,5,6-TCX (SURROGATE % REC.)	93	70 - 130

Notes and Definitions for this Report:

EXTRACTED 02/06/99  
DATE RUN 02/09/99  
ANALYST JW  
INSTRUMENT GC  
FILE ID A020913  
UNITS ug/L



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TEST RESULTS BY SAMPLE

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Sample Description: OUTFALL 001      02/01/99      Lab No: 05A  
Test Description: PCB/PESTICIDES EPA 608      Method: 608  
Collected: 02/01/99      Category: AQUEOUS

Test Code: 608

METHOD EPA 608  
BDL BELOW DETECTION LIMIT



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TEST RESULTS BY SAMPLE

Sample Description: OUTFALL 001      02/01/99      Lab No: 15A  
Test Description: Triaryl Phosphate Sub-Out      Method: Special Test Test Code: 8270\_U  
Collected: 02/01/99      Category: AQUEOUS

PARAMETER	RESULT	LIMIT
TRIPHENYL PHOSPHATE ESTER	<u>BDL</u>	<u>5</u>
TRICRESYL PHOSPHATE ESTER	<u>BDL</u>	<u>5</u>

SURROGATE	%RECOVERY	LIMITS
NITROBENZENE-D5	<u>65</u>	<u>35</u> - <u>114</u>
2-FLUOROBIPHENYL	<u>78</u>	<u>43</u> - <u>116</u>
p-TERPHENYL-d14	<u>113</u>	<u>33</u> - <u>141</u>
PHENOL-d6	<u>25</u>	<u>10</u> - <u>94</u>
2-FLUOROPHENOL	<u>30</u>	<u>21</u> - <u>100</u>
2,4,6-TRIBROMOPHENOL	<u>93</u>	<u>10</u> - <u>123</u>

Notes and Definitions for this Report:

EXTRACTED 02/08/99  
DATE RUN 02/11/99  
ANALYST JAT  
INSTRUMENT SATURN  
FILE ID 0206501W  
UNITS ug/L  
METHOD 8270  
BDL BELOW DETECTION LIMIT



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TEST RESULTS BY SAMPLE

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Sample Description: OUTFALL 00G  
Test Description: EPA 624  
Collected: 02/01/99

02/01/99 Lab No: 19A  
Method: 624  
Category: AQUEOUS

Test Code: 624\_X

PARAMETER	RESULT	LIMIT
ACROLEIN	BDL	20
ACRYLONITRILE	BDL	20
2-CHLOROETHYLVINYL ETHER	BDL	20
BENZENE	BDL	2
CARBON TETRACHLORIDE	BDL	2
CHLOROBENZENE	BDL	2
1,2-DICHLOROETHANE	BDL	2
1,1,1-TRICHLOROETHANE	BDL	2
1,1-DICHLOROETHANE	BDL	2
1,1,2-TRICHLOROETHANE	BDL	2
1,1,2,2-TETRACHLOROETHANE	BDL	2
CHLOROETHANE	BDL	10
CHLOROFORM	BDL	2
1,1-DICHLOROETHYLENE	BDL	2
1,2-TRANS-DICHLOROETHYLENE	BDL	2
1,2-DICHLOROPROPANE	BDL	2
CIS-1,3-DICHLOROPROPYLENE	BDL	2
TRANS-1,3-DICHLOROPROPYLENE	BDL	2
ETHYLBENZENE	BDL	2
1,2-DICHLOROBENZENE	BDL	2
1,3-DICHLOROBENZENE	BDL	2
1,4-DICHLOROBENZENE	BDL	2
METHYLENE CHLORIDE	BDL	10
CHLOROMETHANE	BDL	10
BROMOMETHANE	BDL	2
BROMOFORM	BDL	2
DICHLOROBROMOMETHANE	BDL	2
TRICHLOROFLUOROMETHANE	BDL	2
CHLORODIBROMOMETHANE	BDL	2
TETRACHLOROETHYLENE	BDL	2
TOLUENE	BDL	2
TRICHLOROETHENE	BDL	2
VINYL CHLORIDE	BDL	10
XYLENES	BDL	10

SURROGATE	%RECOVERY	LIMITS
D4-1,2 DICHLOROETHANE	113	76 - 114
D8-TOLUENE	92	88 - 110



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TEST RESULTS BY SAMPLE

Sample Description: OUTFALL 00G  
Test Description: EPA 624  
Collected: 02/01/99

02/01/99 Lab No: 19A  
Method: 624  
Category: AQUEOUS

Test Code: 624\_X

4-BROMOFLUOROBENZENE      93      86 - 115

Notes and Definitions for this Report:

DATE RUN 02/09/99  
ANALYST JMM  
INSTRUMENT GC/MS  
FILE ID 9020935  
UNITS ug/L  
METHOD EPA 624  
BDL BELOW DETECTION LIMIT



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TEST RESULTS BY SAMPLE

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Sample Description: OUTFALL 00G      02/01/99      Lab No: 20A  
Test Description: EPA 625 SEMI VOLATILES      Method: 625  
Collected: 02/01/99      Category: AQUEOUS

Test Code: 625\_AE

PARAMETER	RESULT	LIMIT
2,4,6-TRICHLOROPHENOL	BDL	10
4-CHLORO-3-METHYLPHENOL	BDL	10
2-CHLOROPHENOL	BDL	10
2,4-DICHLOROPHENOL	BDL	10
2,4-DIMETHYLPHENOL	BDL	10
2-NITROPHENOL	BDL	10
4-NITROPHENOL	BDL	50
2,4-DINITROPHENOL	BDL	50
2-METHYL-4,6-DINITROPHENOL	BDL	50
PENTACHLOROPHENOL	BDL	50
PHENOL	BDL	10
ACENAPHTHENE	BDL	10
BENZIDENE	BDL	50
1,2,4-TRICHLOROBENZENE	BDL	10
HEXACHLOROBENZENE	BDL	10
HEXACHLOROETHANE	BDL	10
BIS(2-CHLOROETHYL) ETHER	BDL	10
2-CHLORONAPHTHALENE	BDL	10
1,2-DICHLOROBENZENE	BDL	10
1,3-DICHLOROBENZENE	BDL	10
1,4-DICHLOROBENZENE	BDL	10
3,3-DICHLOROBENZIDINE	BDL	20
2,4-DINITROTOLUENE	BDL	10
2,6-DINITROTOLUENE	BDL	10
FLUORANTHENE	BDL	10
4-CHLOROPHENYL PHENYL ETHER	BDL	10
4-BROMOPHENYL PHENYL ETHER	BDL	10
BIS(2-CHLOROISOPROPYL) ETHER	BDL	10
BIS(2-CHLOROETHOXY) METHANE	BDL	10
HEXACHLOROBUTADIENE	BDL	10
HEXACHLOROCYCLOPENTADIENE	BDL	10
ISOPHORONE	BDL	10
NAPHTHALENE	BDL	10
NITROBENZENE	BDL	10
N-NITROSODIMETHYLAMINE	BDL	10
N-NITROSODIPHENYLAMINE	BDL	10
N-NITROSODI-N-PROPYLAMINE	BDL	10
BIS(2-ETHYLHEXYL) PHTHALATE	BDL	10



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TEST RESULTS BY SAMPLE

Sample Description: OUTFALL 00G      02/01/99      Lab No: 20A  
Test Description: EPA 625 SEMI VOLATILES      Method: 625  
Collected: 02/01/99      Category: AQUEOUS

Test Code: 625\_AE

BUTYL BENZYLPHthalate	BDL	10
DI-N-BUTYL PHTHALATE	BDL	10
DI-N-OCTYL PHTHALATE	BDL	10
DIETHYL PHTHALATE	BDL	10
DIMETHYL PHTHALATE	BDL	10
BENZO (A) ANTHRACENE	BDL	10
BENZO (A) PYRENE	BDL	10
3,4-BENZOFUORANTHENE	BDL	10
BENZO (K) FLUORANTHENE	BDL	10
CHRYSENE	BDL	10
ACENAPHTHYLENE	BDL	10
ANTHRACENE	BDL	10
BENZO (GHI) PERYLENE	BDL	50
FLUORENE	BDL	10
PHENANTHRENE	BDL	10
DIBENZO (A,H) ANTHRACENE	BDL	50
INDENO (1,2,3-CD) PYRENE	BDL	50
PYRENE	BDL	10
ETHANOL AMINE	BDL	100
HYDRAZINE	BDL	200

SURROGATE	%RECOVERY	LIMITS
NITROBENZENE-d5	64	35 - 114
2-FLUOROBIPHENYL	65	43 - 116
p-TERPHENYL-d14	77	33 - 141
PHENOL-d6	35	10 - 94
2-FLUOROPHENOL	33	21 - 100
2,4,6-TRIBROMOPHENOL	65	10 - 123

Notes and Definitions for this Report:

EXTRACTED 02/07/99  
DATE RUN 02/25/99  
ANALYST TC  
INSTRUMENT GC/MS  
FILE ID S9022525  
UNITS ug/L  
METHOD EPA 625  
BDL BELOW DETECTION LIMIT



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TEST RESULTS BY SAMPLE

Sample Description: OUTFALL 00G 02/01/99 Lab No: 20A  
Test Description: PCB/PESTICIDES EPA 608 Method: 608  
Collected: 02/01/99 Category: AQUEOUS

Test Code: 608

PARAMETER	RESULT	LIMIT
ALDRIN	BDL	0.010
ALPHA-BHC	BDL	0.010
BETA-BHC	BDL	0.010
DELTA-BHC	BDL	0.010
GAMMA-BHC	BDL	0.010
CHLORDANE	BDL	0.010
4,4-DDT	BDL	0.010
4,4-DDE	BDL	0.010
4,4-DDD	BDL	0.010
DIELDRIN	BDL	0.010
ALPHA ENDOSULFAN	BDL	0.010
BETA ENDOSULFAN	BDL	0.010
ENDOSULFAN SULFATE	BDL	0.10
ENDRIN	BDL	0.010
ENDRIN ALDEHYDE	BDL	0.020
HEPTACHLOR	BDL	0.030
HEPTACHLOR EPOXIDE	BDL	0.10
PCB-1016	BDL	0.10
PCB-1221	BDL	0.20
PCB-1232	BDL	0.10
PCB-1242	BDL	0.10
PCB-1248	BDL	0.10
PCB-1254	BDL	0.10
PCB-1260	BDL	0.10
TOXAPHENE	BDL	0.20

SURROGATE	%RECOVERY	LIMITS
DBC (SURROGATE, % RECOVERY)	89	70 - 130
2,4,5,6-TCX (SURROGATE % REC.)	94	70 - 130

Notes and Definitions for this Report:

EXTRACTED 02/06/99  
DATE RUN 02/09/99  
ANALYST JW  
INSTRUMENT GC  
FILE ID A020914  
UNITS ug/L



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TEST RESULTS BY SAMPLE

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Sample Description: OUTFALL 00G      02/01/99      Lab No: 20A  
Test Description: PCB/PESTICIDES EPA 608      Method: 608  
Collected: 02/01/99      Category: AQUEOUS

Test Code: 608

METHOD EPA 608  
BDL BELOW DETECTION LIMIT



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TEST RESULTS BY SAMPLE

Sample Description: OUTFALL 00G      02/01/99      Lab No: 30A  
Test Description: Triaryl Phosphate Sub-Out      Method: Special Test      Test Code: 8270\_U  
Collected: 02/01/99      Category: AQUEOUS

PARAMETER	RESULT	LIMIT
TRIPHENYL PHOSPHATE ESTER	<u>BDL</u>	<u>5</u>
TRICRESYL PHOSPHATE ESTER	<u>BDL</u>	<u>5</u>

SURROGATE	%RECOVERY	LIMITS
NITROBENZENE-D5	<u>60</u>	<u>35</u> - <u>114</u>
2-FLUOROBIPHENYL	<u>78</u>	<u>43</u> - <u>116</u>
p-TERPHENYL-d14	<u>115</u>	<u>33</u> - <u>141</u>
PHENOL-d6	<u>28</u>	<u>10</u> - <u>94</u>
2-FLUOROPHENOL	<u>35</u>	<u>21</u> - <u>100</u>
2,4,6-TRIBROMOPHENOL	<u>85</u>	<u>10</u> - <u>123</u>

Notes and Definitions for this Report:

EXTRACTED 02/08/99  
DATE RUN 02/11/99  
ANALYST JAT  
INSTRUMENT SATURN  
FILE ID 0206504W  
UNITS ug/L  
METHOD 8270  
BDL BELOW DETECTION LIMIT



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TEST RESULTS BY SAMPLE

Sample Description: OUTFALL 00C  
Test Description: EPA 624  
Collected: 02/01/99

02/01/99 Lab No: 34A  
Method: 624  
Category: AQUEOUS

Test Code: 624\_X

PARAMETER	RESULT	LIMIT
ACROLEIN	BDL	20
ACRYLONITRILE	BDL	20
2-CHLOROETHYLVINYL ETHER	BDL	20
BENZENE	BDL	2
CARBON TETRACHLORIDE	BDL	2
CHLOROBENZENE	BDL	2
1,2-DICHLOROETHANE	BDL	2
1,1,1-TRICHLOROETHANE	BDL	2
1,1-DICHLOROETHANE	BDL	2
1,1,2-TRICHLOROETHANE	BDL	2
1,1,2,2-TETRACHLOROETHANE	BDL	2
CHLOROETHANE	BDL	10
CHLOROFORM	BDL	2
1,1-DICHLOROETHYLENE	BDL	2
1,2-TRANS-DICHLOROETHYLENE	BDL	2
1,2-DICHLOROPROPANE	BDL	2
CIS-1,3-DICHLOROPROPYLENE	BDL	2
TRANS-1,3-DICHLOROPROPYLENE	BDL	2
ETHYLBENZENE	BDL	2
1,2-DICHLOROBENZENE	BDL	2
1,3-DICHLOROBENZENE	BDL	2
1,4-DICHLOROBENZENE	BDL	2
METHYLENE CHLORIDE	BDL	10
CHLOROMETHANE	BDL	10
BROMOMETHANE	BDL	2
BROMOFORM	BDL	2
DICHLOROBROMOMETHANE	BDL	2
TRICHLOROFLUOROMETHANE	BDL	2
CHLORODIBROMOMETHANE	BDL	2
TETRACHLOROETHYLENE	BDL	2
TOLUENE	BDL	2
TRICHLOROETHENE	BDL	2
VINYL CHLORIDE	BDL	10
XYLENES	BDL	10

SURROGATE	%RECOVERY	LIMITS
D4-1,2 DICHLOROETHANE	114	76 - 114
D8-TOLUENE	94	88 - 110



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TEST RESULTS BY SAMPLE

Sample Description: OUTFALL 00C  
Test Description: EPA 624  
Collected: 02/01/99

02/01/99 Lab No: 34A  
Method: 624  
Category: AQUEOUS

Test Code: 624\_X

4-BROMOFLUOROBENZENE      93      86 - 115

Notes and Definitions for this Report:

DATE RUN 02/09/99  
ANALYST JMM  
INSTRUMENT GC/MS  
FILE ID 9020936  
UNITS ug/L  
METHOD EPA 624  
BDL BELOW DETECTION LIMIT



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TEST RESULTS BY SAMPLE

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Sample Description: OUTFALL 00C      02/01/99      Lab No: 35A  
Test Description: EPA 625 SEMI VOLATILES      Method: 625  
Collected: 02/01/99      Category: AQUEOUS

Test Code: 625\_AE

PARAMETER	RESULT	LIMIT
2,4,6-TRICHLOROPHENOL	BDL	10
4-CHLORO-3-METHYLPHENOL	BDL	10
2-CHLOROPHENOL	BDL	10
2,4-DICHLOROPHENOL	BDL	10
2,4-DIMETHYLPHENOL	BDL	10
2-NITROPHENOL	BDL	10
4-NITROPHENOL	BDL	50
2,4-DINITROPHENOL	BDL	50
2-METHYL-4,6-DINITROPHENOL	BDL	50
PENTACHLOROPHENOL	BDL	50
PHENOL	BDL	10
ACENAPHTHENE	BDL	10
BENZIDENE	BDL	50
1,2,4-TRICHLOROBENZENE	BDL	10
HEXACHLOROBENZENE	BDL	10
HEXACHLOROETHANE	BDL	10
BIS(2-CHLOROETHYL) ETHER	BDL	10
2-CHLORONAPHTHALENE	BDL	10
1,2-DICHLOROBENZENE	BDL	10
1,3-DICHLOROBENZENE	BDL	10
1,4-DICHLOROBENZENE	BDL	10
3,3-DICHLOROBENZIDINE	BDL	20
2,4-DINITROTOLUENE	BDL	10
2,6-DINITROTOLUENE	BDL	10
FLUORANTHENE	BDL	10
4-CHLOROPHENYL PHENYL ETHER	BDL	10
4-BROMOPHENYL PHENYL ETHER	BDL	10
BIS(2-CHLOROISOPROPYL) ETHER	BDL	10
BIS(2-CHLOROETHOXY) METHANE	BDL	10
HEXACHLOROBUTADIENE	BDL	10
HEXACHLOROCYCLOPENTADIENE	BDL	10
ISOPHORONE	BDL	10
NAPHTHALENE	BDL	10
NITROBENZENE	BDL	10
N-NITROSODIMETHYLAMINE	BDL	10
N-NITROSODIPHENYLAMINE	BDL	10
N-NITROSODI-N-PROPYLAMINE	BDL	10
BIS(2-ETHYLHEXYL) PHTHALATE	BDL	10



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TEST RESULTS BY SAMPLE

Sample Description: OUTFALL 00C      02/01/99      Lab No: 35A  
Test Description: EPA 625 SEMI VOLATILES      Method: 625  
Collected: 02/01/99      Category: AQUEOUS

Test Code: 625\_AE

BUTYL BENZYLPHthalATE	BDL	10
DI-N-BUTYL PHTHALATE	BDL	10
DI-N-OCTYL PHTHALATE	BDL	10
DIETHYL PHTHALATE	BDL	10
DIMETHYL PHTHALATE	BDL	10
BENZO (A) ANTHRACENE	BDL	10
BENZO (A) PYRENE	BDL	10
3,4-BENZOFUORANTHENE	BDL	10
BENZO (K) FLUORANTHENE	BDL	10
CHRYSENE	BDL	10
ACENAPHTHYLENE	BDL	10
ANTHRACENE	BDL	10
BENZO (GHI) PERYLENE	BDL	50
FLUORENE	BDL	10
PHENANTHRENE	BDL	10
DIBENZO (A,H) ANTHRACENE	BDL	50
INDENO (1,2,3-CD) PYRENE	BDL	50
PYRENE	BDL	10
ETHANOL AMINE	BDL	100
HYDRAZINE	BDL	200

SURROGATE	%RECOVERY	LIMITS
NITROBENZENE-d5	77	35 - 114
2-FLUOROBIPHENYL	66	43 - 116
p-TERPHENYL-d14	82	33 - 141
PHENOL-d6	62	10 - 94
2-FLUOROPHENOL	71	21 - 100
2,4,6-TRIBROMOPHENOL	66	10 - 123

Notes and Definitions for this Report:

EXTRACTED 02/07/99  
DATE RUN 02/25/99  
ANALYST TC  
INSTRUMENT GC/MS  
FILE ID S9022526  
UNITS ug/L  
METHOD EPA 625  
BDL BELOW DETECTION LIMIT





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TEST RESULTS BY SAMPLE

Sample Description: OUTFALL 00C      02/01/99      Lab No: 35A  
Test Description: PCB/PESTICIDES EPA 608      Method: 608  
Collected: 02/01/99      Category: AQUEOUS

Test Code: 608

PARAMETER	RESULT	LIMIT
ALDRIN	BDL	0.010
ALPHA-BHC	BDL	0.010
BETA-BHC	BDL	0.010
DELTA-BHC	BDL	0.010
GAMMA-BHC	BDL	0.010
CHLORDANE	BDL	0.010
4,4-DDT	BDL	0.010
4,4-DDE	BDL	0.010
4,4-DDD	BDL	0.010
DIELDRIN	BDL	0.010
ALPHA ENDOSULFAN	BDL	0.010
BETA ENDOSULFAN	BDL	0.010
ENDOSULFAN SULFATE	BDL	0.10
ENDRIN	BDL	0.010
ENDRIN ALDEHYDE	BDL	0.020
HEPTACHLOR	BDL	0.030
HEPTACHLOR EPOXIDE	BDL	0.10
PCB-1016	BDL	0.10
PCB-1221	BDL	0.20
PCB-1232	BDL	0.10
PCB-1242	BDL	0.10
PCB-1248	BDL	0.10
PCB-1254	BDL	0.10
PCB-1260	BDL	0.10
TOXAPHENE	BDL	0.20

SURROGATE	%RECOVERY	LIMITS
DBC(SURROGATE, % RECOVERY)	93	70 - 130
2,4,5,6-TCX(SURROGATE % REC.)	92	70 - 130

Notes and Definitions for this Report:

EXTRACTED 02/06/99  
DATE RUN 02/09/99  
ANALYST JW  
INSTRUMENT GC  
FILE ID A020915  
UNITS ug/L



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TEST RESULTS BY SAMPLE

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Sample Description: OUTFALL 00C      02/01/99      Lab No: 35A  
Test Description: PCB/PESTICIDES EPA 608      Method: 608  
Collected: 02/01/99      Category: AQUEOUS

Test Code: 608

METHOD EPA 608  
BDL BELOW DETECTION LIMIT



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TEST RESULTS BY SAMPLE

Sample Description: OUTFALL 00C      02/01/99      Lab No: 45A  
Test Description: Triaryl Phosphate Sub-Out      Method: Special Test      Test Code: 8270\_U  
Collected: 02/01/99      Category: AQUEOUS

PARAMETER	RESULT	LIMIT
TRIPHENYL PHOSPHATE ESTER	<u>BDL</u>	<u>5</u>
TRICRESYL PHOSPHATE ESTER	<u>BDL</u>	<u>5</u>

SURROGATE	%RECOVERY	LIMITS
NITROBENZENE-D5	<u>63</u>	<u>35</u> - <u>114</u>
2-FLUOROBIPHENYL	<u>70</u>	<u>43</u> - <u>116</u>
p-TERPHENYL-d14	<u>100</u>	<u>33</u> - <u>141</u>
PHENOL-d6	<u>25</u>	<u>10</u> - <u>94</u>
2-FLUOROPHENOL	<u>38</u>	<u>21</u> - <u>100</u>
2,4,6-TRIBROMOPHENOL	<u>83</u>	<u>10</u> - <u>123</u>

Notes and Definitions for this Report:

EXTRACTED 02/08/99  
DATE RUN 02/11/99  
ANALYST JAT  
INSTRUMENT SATURN  
FILE ID 0206503W  
UNITS ug/L  
METHOD 8270  
BDL BELOW DETECTION LIMIT

Facility name: Donald C. Cook Nuclear Plant	NPDES Permit number: MI0005827	Outfall Number: 001
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**Addendum to NPDES Renewal Application Section III.B.10  
Toxic Pollutant Reasonable Potential Effluent Data**

Sampling results indicate the presence of toxic pollutants in the Cook Nuclear Plant discharges as follows:

Strontium was detected in Outfall 001 (Unit 1 Non-Contact Cooling Water Discharge). There are no plant processes that use strontium. Strontium is a trace element (21<sup>st</sup> among the elements in the earth's crust) usually associated with calcium and barium minerals in veins in limestone. The chief use of strontium is in fireworks, red signal flares, or on tracer bullets. Therefore, we do not believe that there is reasonable potential for strontium to be present in these discharges as a result of plant operations. We believe that strontium is present in the intake.

Michigan Department of Environmental Quality- Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
SECTION III - Industrial and Commercial Wastewater  
B. Outfall Information

PLEASE TYPE OR PRINT

FACILITY NAME Donald C Cook Nuclear Plant	NPDES PERMIT NUMBER MI0005827	OUTFALL NUMBER 002
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9. WATER TREATMENT ADDITIVES

Water treatment additives include any material that is added to water used at the facility or to a wastewater generated by the facility to condition or treat the water

Approvals of water treatment additives are authorized by the DEQ under separate correspondence. The issuance of an NPDES permit does not constitute approval of the water treatment additives that are included in this application.

A. Are there water treatment additives in the discharge from this facility?

☒ No, proceed to item 4

☐ Yes.

B. Have these water treatment additives been previously approved?

☐ No, continue with C below

☐ Yes. Submit a list of the previously approved water treatment additives and the date they were approved. The information listed in C. 1-8 must be updated if it has changed since the previous approval.

C. Submit a list of water treatment additives that are or may be discharged from the facility. Applicants must submit the information listed below for each additive.

1. The water treatment additive Material Safety Data Sheet
2. The proposed water treatment additive discharge concentration.
3. The discharge frequency (i.e., number of hours per day, week, etc.)
4. The outfall the water treatment additive is to be discharged from
5. The type of removal treatment, if any, that the water treatment additive receives prior to discharge.
6. The water treatment additive function (i.e., microbicide, flocculant, etc.)
7. A 48-hour LC50 or EC50 for a North American freshwater planktonic crustacean (either *Ceriodaphnia* sp., *Daphnia* sp., or *Simocephalus* sp.)
8. The results of a toxicity test for one other North American freshwater aquatic species (other than a planktonic crustacean) that meets a minimum requirement of Rule 323.1057(2)(a) of the Water Quality Standards. Examples of tests that would meet this requirement include a 96-hour LC50 for a rainbow trout, bluegill, or fathead minnow.

The required toxicity information (described in items 7 and 8 above) is currently available in the SWQD files for the water treatment additives listed on the DEQ's Internet page <http://www.deq.state.mi.us/swq/gleas/docs/wta/MTAlist.doc>. If you intend to use one of the water treatment additives on this list, only the information in items 1 through 6 above needs to be submitted to the SWQD.

**Note:** The availability of toxicity information for a water treatment additive does not constitute approval to discharge the water treatment additive.

10. WHOLE EFFLUENT TOXICITY TESTS

Have any acute or chronic WET tests been conducted on any discharges or receiving water in relation to facility discharges within the last three years? If yes, identify the tests and summarize the results below unless the test has been submitted to the department in the last 5 years.

Michigan Department of Environmental Quality-Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
 SECTION III - Industrial and Commercial Wastewater  
 B. Outfall Information

PLEASE TYPE OR PRINT

FACILITY NAME <b>Donald C. Cook Nuclear Plant</b>	NPDES or COC PERMIT NUMBER <b>MI0005827</b>	Outfall Number <b>002</b>
9 WATER TREATMENT ADDITIVES		
Water Treatment Additive	Approval Date	
Sodium Hypochlorite	5/23/00 NPDES Permit approval 9/28/95	
Betz CT-1300 Formerly called Betz CT-2	5/23/00, 2/28/02, 9/13/94, NPDES Permit approval 9/28/95	
Betz CT-4	5/23/00, NPDES Permit approval 9/28/95	
Calgon H-130M	8/16/95, 5/23/00	
Calgon EVAC	8/8/00	
Nalco Macrotrol 9380	8/16/95, 5/23/00, 2/28/02	
Nalco Macrotrol 9210	8/16/95, 5/23/00, 2/28/02	
Nalco TRASAR 23299	5/23/00, 9/17/96	
Fluorescein Dye	9/21/98	
Bentonite Clay	5/23/2000, NPDES Permit approval 9/28/95	
Betz Ferroquest FQ LP 7200 (Formerly Call Betz Depositrol 855D)	11/14/94, 5/23/00, 9/17/96, NPDES Permit approval 9/28/95	
Sodium Tetraborate (Borax)	5/23/00	
SF6 (Sulphur hexafluoride gas)	NPDES Permit approval 9/28/95	
Betz Corrshield NT 4205 (Formerly Powerline 3231)	6/23/99, 9/17/96	
Calgon LCS-60	6/23/99, NPDES Permit approval 9/28/95	
Betz Corrshield NT4201	5/17/02	
Betz Corrshield NT 2403	9/18/02	
Spectrus NX 1105 (Formerly Betz Biotrol 107)	6/23/99, 5/23/00	
Calgon H-300	6/23/99, 5/23/00	
Betz AZ 8103 (Formerly Betz Copper-Trol Cu1	12/18/95, 6/23/99, 5/23/00	
Betz 3610	6/23/99	
Betz MD-4103	3/26/02	
Nalco 22199	9/17/96	

## Section III.B

### Outfall 003



Michigan Department of Environmental Quality- Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
SECTION III - Industrial and Commercial Wastewater

B. Outfall Information

Complete a separate Section III.B - Outfall Information (pages 26-31) for each outfall at the facility. Make copies of this blank section of the application for additional outfalls as necessary.

PLEASE TYPE OR PRINT

FACILITY NAME Donald C Cook Nuclear Plant	NPDES PERMIT NUMBER MI0005827	OUTFALL NUMBER 003
--	----------------------------------	-----------------------

1. OUTFALL INFORMATION (see page 25 for instruction on completion of this page)

A.	Watershed Lower St. Joseph					
B.	Receiving Water Lake Michigan					
C.	County Berrien			Township Lake		
D.	¼, ¼ SW	¼ NW	Section 06	Town 06S	Range 19W	
E.	Latitude 41 58' 30"			Longitude 86 34' 30"		

F. Type of Wastewater Discharged (Check all that apply to this outfall)

- ☐ Contact Cooling      ☐ Sanitary Wastewater      ☐ Groundwater Cleanup      ☒ Storm Water (regulated)  
☒ Noncontact Cooling      ☒ Process Wastewater      ☐ Hydrostatic Pressure Test      ☐ Storm Water (not regulated)  
☒ Storm water subject to effluent guidelines (indicate under which category)      423-Steam Electric  
☐ Other - specify (see "Table 8 - Other Common Types of Wastewater" in appendix)      \_\_\_\_\_

J. What is the maximum Facility Design Flow Rate. 2074 MGD

G. What is the maximum discharge flow authorized for this outfall      Seasonal Dischargers \_\_\_\_\_      MGY Continue with Item H.  
Continuous Dischargers \_\_\_\_\_      MGD Continue with Item I

H. Seasonal Discharge

List the discharge periods (by month) and the volume discharged in the space provided below

From	Through	Discharge Volume	Annual Total
From	Through	Discharge Volume	
From	Through	Discharge Volume	
From	Through	Discharge Volume	

I. Continuous Discharge

How often is there a discharge from this outfall (on the average)?      24 Hours/Day      365 Days/Year

Batch dischargers must provide the following additional information:

Is there effluent flow equalization?      ☐ Yes      ☐ No

Batch Peak Flow Rate: \_\_\_\_\_      Number of batches discharged per day: \_\_\_\_\_

	Minimum	Average	Maximum
Batch Volume (gallons)			
Batch Duration (minutes)			



Michigan Department of Environmental Quality- Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
SECTION III - Industrial and Commercial Wastewater

B. Outfall Information

EASE TYPE OR PRINT

FACILITY NAME Donald C Cook Nuclear Plant	NPDES PERMIT NUMBER MI0005827	OUTFALL NUMBER 003
<p>2. PROCESS STREAMS CONTRIBUTING TO OUTFALL DISCHARGE</p> <p>This information is used to determine the applicable federal regulations for this discharge. The information required to be reported is dependent on the type of facility. Page 7 of the appendix contains an abbreviated list of various industries and the types of information each shall report in this application. For assistance call the Permits Section. All industries shall provide the name of each process and the SIC or the NAICS code for the process. If the wastestream is not regulated under federal categorical standards, the applicant shall report all pollutants which have the reasonable potential to be present in the discharge To submit additional information see page II, item 8.</p>		
<p>PROCESS INFORMATION</p> <p>A. Name of the process contributing to the discharge: <u>00A</u></p> <p>B. SIC or NAICS code: <u>4911</u></p> <p>C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported): Steam Generator Blowdown 1 MGD maximum flow 2247 MWE total plant electrical generation.</p>		
<p>PROCESS INFORMATION</p> <p>A. Name of the process contributing to the discharge: <u>00B</u></p> <p>B. SIC or NAICS code: <u>4911</u></p> <p>C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported): Steam Generator Blowdown 1 MGD maximum flow 2247 MWE total plant electrical generation</p>		
<p>PROCESS INFORMATION</p> <p>A. Name of the process contributing to the discharge: <u>00C</u></p> <p>B. SIC or NAICS code: <u>4911</u></p> <p>C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported): Plant heating boiler blowdown. 0.043 MGD maximum flow. 2247 MWE total plant electrical generation</p>		
<p>PROCESS INFORMATION</p> <p>A. Name of the process contributing to the discharge: <u>00G</u></p> <p>B. SIC or NAICS code: <u>4911</u></p> <p>C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported): Reverse osmosis reject stream 0.366 MGD maximum flow. 2247 MWE total plant electrical generation.</p>		
<p>PROCESS INFORMATION</p> <p>A. Name of the process contributing to the discharge: <u>00H</u></p> <p>B. SIC or NAICS code: <u>4911</u></p> <p>C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported): Miscellaneous equipment drains and processes. Maximum flow is 5.2 MGD. 2247 MWE total plant electrical generation. This Outfall is used for emergency purposes only.</p>		

Michigan Department of Environmental Quality- Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
SECTION III - Industrial and Commercial Wastewater

B. Outfall Information

PLEASE TYPE OR PRINT

FACILITY NAME Donald C. Cook Nuclear Plant	NPDES PERMIT NUMBER MI0005827	OUTFALL NUMBER 003
<b>2. PROCESS STREAMS CONTRIBUTING TO OUTFALL DISCHARGE</b> This information is used to determine the applicable federal regulations for this discharge. The information required to be reported is dependent on the type of facility. Page 7 of the appendix contains an abbreviated list of various industries and the types of information each shall report in this application. For assistance call the Permits Section. All industries shall provide the name of each process and the SIC or the NAICS code for the process. If the wastestream is not regulated under federal categorical standards, the applicant shall report all pollutants which have the reasonable potential to be present in the discharge. To submit additional information see page ii, item 8.		
<b>PROCESS INFORMATION</b> A. Name of the process contributing to the discharge: <u>00A</u> B. SIC or NAICS code: <u>4911</u> C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported) Once-through non-contact cooling, maximum flow is 1500 MGD, 2247 MWE total plant electrical.		
<b>PROCESS INFORMATION</b> A. Name of the process contributing to the discharge: <u>Unit Two Cooling Water</u> B. SIC or NAICS code: <u>4911</u> C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported) Once-through non-contact cooling, maximum flow is 1820 MGD, 2247 MWE total plant electrical.		
<b>PROCESS INFORMATION</b> A. Name of the process contributing to the discharge: <u>Misc minor stormwater drains</u> B. SIC or NAICS code: <u>4911</u> C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported) Roof drains from the screenhouse roof, small roadway gratings above the forebay road.		
<b>PROCESS INFORMATION</b> A. Name of the process contributing to the discharge: <u>Deicing</u> B. SIC or NAICS code: <u>4911</u> C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported) The flow for this outfall is not monitored separately from outfalls 001 and 002.		
<b>PROCESS INFORMATION</b> A. Name of the process contributing to the discharge: _____ B. SIC or NAICS code: _____ C. Describe the process and provide measures of production (see the instructions to determine the appropriate information to be reported)		

Michigan Department of Environmental Quality- Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
SECTION III - Industrial and Commercial Wastewater

B. Outfall Information

**INSTRUCTIONS FOR COMPLETING SECTION III, ITEM B.3.**

In accordance with 40 CFR 122.21, all applicants must report CBOD<sub>5</sub>, Chemical Oxygen Demand, Total Organic Carbon, Total Suspended Solids, Ammonia as N, Temperature (both summer and winter), and pH. The applicant may, however, request that reporting of data for one or more of these required parameters be waived. Such request must be supported by adequate rationale. The request shall be included as an attachment to this application.

Report available discharge data for the parameters listed. Actual data shall be provided for existing discharges and expected or estimated data provided for proposed discharges. Please include an explanation if "Pollution Prevention" is expected to provide reduction of pollutants. See Page 8 of the appendix for a list of specific parameters for which data must be provided for specific types of discharges (e.g., noncontact cooling waters, gasoline groundwater cleanups, etc.). For assistance in determining the appropriate parameters to report, call the Permits Section.

If data are available for other parameters not listed in Section III B.3, the applicant shall report these data in the blank spaces provided or attach the information to this application on 8½" x 11" paper.

Report all data in the units provided and for the sample types specified in the table. If more than one option is available, check the appropriate box. The units are as follows: µg/l = micrograms per liter, mg/l = milligrams per liter, °F = degrees Fahrenheit, °C = degrees Celsius. See page ii number 5 for analytical requirements.

To analyze for pH, temperature, total residual chlorine, oil and grease, and fecal coliform use **Grab Samples** unless other frequency-sample type analyses are available. To analyze for total BOD<sub>5</sub>, total phosphorus, COD, TOC, ammonia nitrogen and total suspended solids use **24-hour composite samples** unless other frequency-sample type analyses are available.

For two or more substantially identical outfalls, permission may be requested from the appropriate district office to sample and analyze only one outfall and submit the results of the analysis for other substantially identical outfalls. If the request is granted by the district office, on a separate sheet attached to the application form, identify which outfall was sampled and describe why the outfalls which were not sampled are substantially identical to the outfall which was sampled. See pages ii and iii for sampling definitions, including "maximum daily concentration", and "maximum monthly concentration".

**REPORTING OF INTAKE DATA**

Applicants are required to report intake water data when they are attempting to demonstrate eligibility for "net" effluent limitations for one or more pollutants. A "net" effluent limitation is determined by subtracting the average level of the pollutant(s) present in the intake waters remaining after treatment which is not removed by the treatment system. NPDES regulations allow net limitations only in certain circumstances (see 40 CFR Part 122.45(g)). To demonstrate eligibility, report the average concentration and/or mass of the results of the analyses on the intake water. If the intake water is treated prior to use, report the intake concentrations and/or mass after treatment. In addition to the analytical results, the following information shall be submitted for each parameter:

- a) A statement that the intake water is drawn from the body of water into which the discharge is made. If the discharge is not to the same body of water from which the water is withdrawn, the facility is not eligible for net limitations.
- b) A statement of the extent to which the level of the pollutant in the intake water is reduced by treatment of the wastewater. Limitations for the net removal of pollutants are adjusted only to the extent that the pollutant is not removed.
- c) When applicable (for example, when the pollutant represents a class of compounds, e.g., BOD<sub>5</sub>, TSS, etc.), a demonstration of the extent to which the pollutants in the intake vary physically, chemically and biologically from the pollutants contained in the discharge. Limitations are adjusted only to the extent that the concentrations of the intake pollutants vary from the discharged pollutants.

**Note:** Applicants for groundwater remediation discharges should also report the intake characteristics of contaminated groundwater

STATE OF MICHIGAN



JOHN ENGLER, Governor  
**DEPARTMENT OF ENVIRONMENTAL QUALITY**

*"Better Service for a Better Environment"*  
HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

INTERNET: [www.deq.state.mi.us](http://www.deq.state.mi.us)  
RUSSELL J. HARDING, Director

REPLY TO

PLAINWELL DISTRICT OFFICE  
1342 SR 89 W STE B  
PLAINWELL MI 49080-1915

January 28, 1999

Mr. John P. Carlson  
Environmental Compliance Manager  
Cook Nuclear Plant  
One Cook Place  
Bridgman, Michigan 49106

Dear Mr. Carlson:

SUBJECT: Application for Renewal of NPDES Permit No. MI0005827

We have reviewed the information provided in your letter of January 25, 1999. In that letter you request that representative outfalls be used to characterize effluent characteristics for similar outfalls. We approve your request as follows:

1. Effluent from Outfall 001 will be considered representative of outfalls 001, 002, and 003.
2. Effluent from Outfall 00B will be considered representative of outfalls 00A and 00B.

Please feel free to contact me if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Gregory A. Danneffel".

Gregory A. Danneffel  
Plainwell District Office  
Surface Water Quality Division  
616-692-6968

cc: Mr. Blair Zordell, Cook Nuclear Plant  
Mr. Dan Dell, Permits Section, SWQD  
Ms. Sylvia Heaton, GLEAS, SWQD

American Electric Power  
Cook Nuclear Plant  
One Cook Place  
Bridgman, MI 49106  
616 465 5901



Mr. Fred Morley  
Surface Water Quality Division  
Michigan Department of Environmental Quality  
1342 SR89 West Suite B  
Plainwell, MI 49080

January 25, 1999

Dear Mr. Morley:

Subject: NPDES Permit No. MI0005827 Application

We are currently preparing the Wastewater Discharge Permit Application to renew our current NPDES operating permit. As noted in Section III - Industrial and Commercial Wastewater, Part B. Outfall Information Item 6, paragraph 5 contains instructions to request permission to use a single sample for similar outfalls for application purposes.

We request that Outfall 001 be used as a representative sample for Outfalls 002 (Unit Two Noncontact Cooling Water) and Outfall 003 (De-icing Mode) for application use only. Outfalls 002 and 003 are substantially identical to Outfall 001. The source of these Outfalls is Lake Michigan; similar waste streams enter each Outfall prior to discharge.

In addition, we are requesting Outfall 00B (Unit Two Steam Generator Blowdown) to be used as a representative sample for Outfall 00A (Unit One Steam Generator Blowdown). Outfall 00A and Outfall 00B are substantially identical discharges, with the exception that Outfall 00A originates from the Unit One Steam Generators, and Outfall 00B originates from the Unit Two Steam Generators.

If you have any questions, please contact me at (616) 465-5901, ext. 1153.

Sincerely,

A handwritten signature in dark ink, appearing to read 'J.P. Carlson', is written over the typed name.

John P. Carlson  
Environmental Compliance Manager

/tln

c: Greg Danneffel - MDEQ Plainwell  
Sylvia Heaton - MDEQ Lansing

Page Two  
Mr. Morley  
January 25, 1999

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this and all attached documents, and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.



D. E. Cooper  
Plant Manager

Michigan Department of Environmental Quality- Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
 SECTION III - Industrial and Commercial Wastewater

B. Outfall Information

PLEASE TYPE OR PRINT

FACILITY NAME Donald C. Cook Nuclear Plant	NPDES PERMIT NUMBER MI0005827	OUTFALL NUMBER 003
---	----------------------------------	-----------------------

3. WASTEWATER CHARACTERISTICS - CONVENTIONAL POLLUTANTS - Instructions for completing this page are on the facing page.  
☒ Check this box if additional information is included as an attachment. To submit additional information see page ii, item 8.

Parameter	Maximum Daily Concentration	Maximum Monthly Concentration	Units	Number of Analyses	Sample Type
Biochemical Oxygen Demand - five day (BOD <sub>5</sub> )	*	*	mg/l	*	<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
COD (Chemical oxygen demand)	*	*	mg/l	*	<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
TOC (Total organic carbon)	*	*	mg/l	*	<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
Ammonia Nitrogen (as N)	*	*	mg/l	*	<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
Total Suspended Solids	*	*	mg/l	*	<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
Total Dissolved Solids	*	*	mg/l	*	<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
Total Phosphorus (as P)	*	*	mg/l	*	<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
Fecal Coliform Bacteria (report geometric means)	maximum-7day *	*	counts/100ml	*	Grab
Total Residual Chlorine	*	*	<input type="checkbox"/> mg/l <input type="checkbox"/> µg/l	*	Grab
Dissolved Oxygen	minimum daily *	<del>Do Not Use</del>	mg/l	*	<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
pH (report maximum and minimum of individual samples)	minimum *	maximum *	standard units	*	<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
Temperature, Summer	*	*	<input type="checkbox"/> °F <input type="checkbox"/> °C	*	<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
Temperature, Winter	*	*	<input type="checkbox"/> °F <input type="checkbox"/> °C	*	<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
Oil & Grease	*	*	mg/l	*	Grab
					<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
					<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
* Water discharged from Outfall 003					<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
is the same as Outfall 001 and 002					<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
Permission has been granted to use the					<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
Screening data from Outfall 001 to					<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
characterize this discharge.					<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
					<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp
					<input type="checkbox"/> Grab <input type="checkbox"/> 24 Hr Comp

Michigan Department of Environmental Quality- Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
**SECTION III - Industrial and Commercial Wastewater**

**B. Outfall Information**

PLEASE TYPE OR PRINT

FACILITY NAME

Donald C. Cook Nuclear Plant

NPDES PERMIT NUMBER

MI0005827

OUTFALL NUMBER

003

**4. PRIMARY INDUSTRY PRIORITY POLLUTANT INFORMATION**

Existing primary industries that discharge process wastewater must submit the results of at least one effluent analysis for selected organic pollutants identified in Table 2 (as determined from Table 1, Testing Requirements for Organic Toxic Pollutants by Industrial Category), and all the pollutants identified in Table 3. Existing primary industries must also provide the results of at least one effluent analysis for any other chemical listed in Table 2 known or believed to be present in facility effluent.

In addition, submit the results of all other effluent analyses performed within the last 5 years for any chemical listed in Tables 2 and 3

New primary industries that propose to discharge process wastewater must provide an estimated effluent concentration for any chemical listed in Tables 2 and 3 expected to be present in facility effluent.

**5. DIOXIN AND FURAN CONGENER INFORMATION**

Existing industries that use or manufacture 2,3,5-trichlorophenoxy acetic acid (2,4,5-T); 2- (2,3,5-trichlorophenoxy) propanoic acid, (Silvex, 2,3,5-TP), 2-(2,4,5-trichlorophenoxy) ethyl 2,2-dichloropropionate (Erbon), 0,0-dimethyl 0-(2,4,5-trichlorophenyl) phosphorothionate (Ronnell); 2,4,5-trichlorophenol (TCP) or hexachlorophrene (HCP), or knows or has reason to believe that 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) is present in facility effluent, must submit the results of at least one effluent analysis for the dioxin and furan congeners listed in Table 6. All effluent analyses for dioxin and furan congeners must be conducted using EPA Method 1613

In addition, submit the results of all other effluent analyses performed within the last 5 years for any dioxin and furan congener listed in Table 6

New industries that expect to use or manufacture 2,3,5-trichlorophenoxy acetic acid (2,4,5-T), 2- (2,3,5-trichlorophenoxy) propanoic acid (Silvex, 2,3,5-TP), 2-(2,4,5-trichlorophenoxy) ethyl 2,2-dichloropropionate (Erbon), 0,0-dimethyl 0-(2,4,5-trichlorophenyl) phosphorothionate (Ronnell), 2,4,5-trichlorophenol (TCP) or hexachlorophrene (HCP), or knows or has reason to believe that 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) is present in facility effluent must provide estimated effluent concentrations for the dioxin and furan congeners listed in Table 6.

**6. OTHER INDUSTRY PRIORITY POLLUTANT INFORMATION**

Existing secondary industries, or existing primary industries that discharge non-process wastewater, must submit the results of at least one effluent analysis for any chemical listed in Tables 2 and 3 known or believed to be present in facility effluent

In addition, submit the results of all other effluent analyses performed within the last 5 years for any chemical listed in Tables 2 and 3

New secondary industries, or new primary industries that propose to discharge non-process wastewater, must provide an estimated effluent concentration for any chemical listed in Tables 2 and 3 expected to be present in facility effluent

**7. ADDITIONAL TOXIC AND OTHER POLLUTANT INFORMATION**

All existing industries, regardless of discharge type, must provide the results of at least one analyses for any chemical listed in Table 4 known or believed to be present in facility effluent, and a measured or estimated effluent concentration for any chemical listed in Table 5 known or believed to be present in facility effluent. In addition, submit the results of any effluent analysis performed within the last 5 years for any chemical listed in Tables 4 and 5

New industries, regardless of discharge type, must provide an estimated effluent concentration for any chemical listed in Tables 4 and 5 expected to be in facility effluent

**8. INJURIOUS CHEMICALS NOT PREVIOUSLY REPORTED**

New or existing industries, regardless of discharge type, must provide a measured or estimated effluent concentration for any toxic or otherwise injurious chemicals known or believed to be present in facility effluent that have not been previously identified in this application. Quantitative effluent data that are less than 5 years old for these chemicals must be reported.

**NOTE:** All effluent data submitted in response to questions 4, 5, 6, 7, and 8 above should be recorded on page 31. To submit additional information see page ii, item 8.. If the effluent concentrations are estimated, place an E in the "Analytical Method" column. The following fields must be completed for each data row: Parameter, CAS No., Concentration(s), Sample Type, Analytical Method, Quantification Level and Detection Level. See page ii, number 5 for analytical test requirements.



Michigan Department of Environmental Quality- Water Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
 SECTION III - Industrial and Commercial Wastewater

B. Outfall Information

PLEASE TYPE OR PRINT

FACILITY NAME Donald C. Cook Nuclear Plant						NPDES PERMIT NUMBER MI0005827				OUTFALL NUMBER 003						
SAMPLE DATE →																
PARAMETER	CAS No.	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Conc. (ug/l)	Sample Type	Analytical	QL	DL

Michigan Department of Environmental Quality- Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**  
SECTION III - Industrial and Commercial Wastewater  
B. Outfall Information

PLEASE TYPE OR PRINT

FACILITY NAME	NPDES PERMIT NUMBER	OUTFALL NUMBER
Donald C Cook Nuclear Plant	MI0005827	003

9 WATER TREATMENT ADDITIVES

Water treatment additives include any material that is added to water used at the facility or to a wastewater generated by the facility to condition or treat the water.

Approvals of water treatment additives are authorized by the DEQ under separate correspondence. The issuance of an NPDES permit does not constitute approval of the water treatment additives that are included in this application

A. Are there water treatment additives in the discharge from this facility?

- ☒ No, proceed to item 4.  
☐ Yes

B. Have these water treatment additives been previously approved?

- ☐ No, continue with C below.  
☐ Yes Submit a list of the previously approved water treatment additives and the date they were approved. The information listed in C. 1-8 must be updated if it has changed since the previous approval.

C. Submit a list of water treatment additives that are or may be discharged from the facility Applicants must submit the information listed below for each additive

1. The water treatment additive Material Safety Data Sheet.
2. The proposed water treatment additive discharge concentration
3. The discharge frequency (i.e., number of hours per day, week, etc.).
4. The outfall the water treatment additive is to be discharged from.
5. The type of removal treatment, if any, that the water treatment additive receives prior to discharge.
6. The water treatment additive function (i.e., microbicide, flocculant, etc.)
7. A 48-hour LC50 or EC50 for a North American freshwater planktonic crustacean (either *Ceriodaphnia* sp, *Daphnia* sp, or *Simocephalus* sp).
8. The results of a toxicity test for one other North American freshwater aquatic species (other than a planktonic crustacean) that meets a minimum requirement of Rule 323.1057(2)(a) of the Water Quality Standards. Examples of tests that would meet this requirement include a 96-hour LC50 for a rainbow trout, bluegill, or fathead minnow.

The required toxicity information (described in items 7 and 8 above) is currently available in the SWQD files for the water treatment additives listed on the DEQ's Internet page <http://www.deq.state.mi.us/swq/gleas/docs/wta/WTAlist.doc>. If you intend to use one of the water treatment additives on this list, only the information in items 1 through 6 above needs to be submitted to the SWQD

Note: The availability of toxicity information for a water treatment additive does not constitute approval to discharge the water treatment additive.

10. WHOLE EFFLUENT TOXICITY TESTS

Have any acute or chronic WET tests been conducted on any discharges or receiving water in relation to facility discharges within the last three years? If yes, identify the tests and summarize the results below unless the test has been submitted to the department in the last 5 years

Michigan Department of Environmental Quality-Surface Water Quality Division  
**WASTEWATER DISCHARGE PERMIT APPLICATION**

**SECTION III - Industrial and Commercial Wastewater**

**B. Outfall Information**

PLEASE TYPE OR PRINT

<b>FACILITY NAME</b> Donald C. Cook Nuclear Plant	<b>NPDES or COC PERMIT NUMBER</b> MI0005827	<b>Outfall Number</b> 003
<b>9. WATER TREATMENT ADDITIVES</b>		
<b>Water Treatment Additive</b>	<b>Approval Date</b>	
Sodium Hypochlorite	5/23/00 NPDES Permit approval 9/28/95	
Betz CT-1300 Formerly called Betz CT-2	5/23/00, 2/28/02, 9/13/94, NPDES Permit approval 9/28/95	
Betz CT-4	5/23/00, NPDES Permit approval 9/28/95	
Calgon H-130M	8/16/95, 5/23/00	
Calgon EVAC	8/8/00	
Nalco Macrotrol 9380	8/16/95, 5/23/00, 2/28/02	
Nalco Macrotrol 9210	8/16/95, 5/23/00, 2/28/02	
Nalco TRASAR 23299	5/23/00, 9/17/96	
Fluorescein Dye	9/21/98	
Bentonite Clay	5/23/2000, NPDES Permit approval 9/28/95	
Betz Ferroquest FQ LP 7200 (Formerly Call Betz Depositrol 855D)	11/14/94, 5/23/00, 9/17/96, NPDES Permit approval 9/28/95	
Sodium Tetraborate (Borax)	5/23/00	
SF6 (Sulphur hexafluoride gas)	NPDES Permit approval 9/28/95	
Betz Corrrshield NT 4205 (Formerly Powerline 3231)	6/23/99, 9/17/96	
Calgon LCS-60	6/23/99, NPDES Permit approval 9/28/95	
Betz Corrrshield NT4201	5/17/02	
Betz Corrrshield NT 2403	9/18/02	
Spectrus NX 1105 (Formerly Betz Biotrol 107)	6/23/99, 5/23/00	
Calgon H-300	6/23/99, 5/23/00	
Betz AZ 8103 (Formerly Betz Copper-Trol Cu1	12/18/95, 6/23/99, 5/23/00	
Betz 3610	6/23/99	
Betz MD-4103	3/26/02	
Nalco 22199	9/17/96	