

1901 Chouteau Avenue  
Post Office Box 149  
St. Louis, Missouri 63166  
314-621-3222



October 26, 1995

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Mail Station P1-137  
Washington, DC 20555

Gentlemen:

ULNRC-3283

**DOCKET NUMBER 50-483**  
**CALLAWAY PLANT**  
**NPDES PERMIT RENEWAL APPLICATION**

Please find enclosed the NPDES Permit Renewal Application for the Callaway Plant. This application is submitted in accordance with Callaway Plant Operating License NPF-30, Appendix B, Section 3.2.

Very truly yours,

A handwritten signature in cursive script, appearing to read "A. C. Passwater".

A. C. Passwater  
Manager-Licensing and Fuels

BFH/plr  
Attachment

020017

9511030072 951026  
PDR ADDCK 05000483  
P PDR

*Drawings located in Central files*

0001/1



September 14, 1995

Mr. Robert Hentges  
Regional Administrator  
Jefferson City Regional Office  
Missouri Department of Natural Resources:  
1511 Christy Dr.  
Jefferson City, MO 65102

Dear Mr. Hentges:

Enclosed is the NPDES renewal application for the Union Electric Callaway Power Plant (MO-0098001). Payment is not enclosed since the permit fees are now paid on an annual basis.

Please note that two additional enclosures are provided in order to assist the permit writer and clarify the fairly complex flow diagrams and drawings. An extra copy of Figure 1, Callaway NPDES Flow Diagram, in which all process waste streams and their corresponding outfalls have been color coded, is included. Also included, are block diagrams depicting flow components of each storm water runoff settling pond. We hope both prove useful.

If there are any questions regarding this application, please call me at 314-554-3652.

Sincerely,

*Michael F. Bollinger*

Michael F. Bollinger  
Supervising Environmental Scientist  
Environmental Services Department

MFB/cdt  
Enclosure

cc: Mr. Daniel Schuette  
Chief of Permits Section  
Division of Environmental Quality  
Missouri Department of Natural Resources

bcc: D. F. Schnell - w/o attachments  
P. A. Agathen/T. E. Siedhoff - w/o attachments  
R. D. Miller (2 copies)  
C. A. Riggs  
N. G. Slaten  
G. P. Gary  
W. B. Bobnar  
P. M. Bell  
L. A. Meyer  
File: P-3.2.11.1

# CALLAWAY NPDES PERMIT REAPPLICATION

## CONTENTS

### CONVENTIONAL SECTION

1. Form A
2. Drawing NPDES-004, NPDES Outfalls Receiving Streams Map
3. Form C
4. Figure 1, Flow Diagram and Water Balance
5. Form D
6. Attachment A, Description of Outfalls
7. Attachment B, Return of River Water
8. Attachment C, Description of Intermittent Flows
9. Attachment D, Chemical Usage
10. Attachment E, NPDES Sampling and Analysis
11. Attachment F, Section 311 and CERCLA Exemptions
12. Attachment G, General Comments on Standards Setting
13. Attachment H, Section 316(b) Demonstration Status
14. Attachment I, Secondary Liquid Waste (Cuno) Filters
15. Attachment J, Monitoring Requests
16. Attachment K, Land Application of STP Sludge
17. Attachment L, Environmental Projects
18. Attachment M, Macroinvertebrate Control
19. Attachment N, Material Safety Data Sheets

### STORM WATER SECTION

1. Introduction
2. EPA Form 2F
3. Attachment SW-A, Significant Materials
4. Attachment SW-B, Outfall Descriptions and Control Measures
5. Attachment SW-C, Requests for Non-Stormwater Discharge
6. Attachment SW-D, Significant Leaks or Spills
7. Attachment SW-E, Storm Water Sampling
8. Attachment SW-F, Monitoring Requests
9. Drawing NPDES-001, NPDES Storm Water Information Outfalls 010-015
10. Drawing NPDES 002, Storm Water Outfalls 010-015 Topographical Map & Drainage Areas
11. Drawing NPDES-003, NPDES Storm Water Information Outfalls 010 - 015 Refuel 7



DIVISION OF ENVIRONMENTAL QUALITY  
 WATER POLLUTION CONTROL PROGRAM  
 P O BOX 176, JEFFERSON CITY, MO 65102

FORM A — APPLICATION FOR CONSTRUCTION OR  
 OPERATING PERMIT UNDER MISSOURI CLEAN WATER LAW

| FOR AGENCY USE ONLY |               |
|---------------------|---------------|
| APPLICATION NUMBER  |               |
| DATE RECEIVED       | FEE SUBMITTED |

**NOTE** PLEASE READ THE ACCOMPANYING INSTRUCTIONS BEFORE COMPLETING THIS FORM.

1.00 This application is for:  
 a construction permit  
 an operating permit for a new or unpermitted facility  
 an operating permit renewal; permit # MO-0098001  
 a site specific storm water permit  
 (See instructions for appropriate fee to be submitted with application.)

2.00 FACILITY

|                              |                |                                  |              |
|------------------------------|----------------|----------------------------------|--------------|
| NAME<br>Callaway Power Plant |                | TELEPHONE NUMBER<br>314/676-8231 |              |
| ADDRESS<br>P.O. Box 620      | CITY<br>Fulton | STATE<br>MO                      | ZIP<br>65251 |

2.10 Is this a new facility constructed under a Missouri Construction Permit?  YES  NO  
 If yes, please provide Missouri Construction Permit Number: \_\_\_\_\_

3.00 OWNER

|                                 |                   |                                  |              |
|---------------------------------|-------------------|----------------------------------|--------------|
| NAME<br>Union Electric Company  |                   | TELEPHONE NUMBER<br>314/621-3222 |              |
| ADDRESS<br>1901 Chouteau Avenue | CITY<br>St. Louis | STATE<br>MO                      | ZIP<br>63103 |

4.00 OPERATING AUTHORITY: the legal name and address of the operating authority (person or company retained to oversee day-to-day business activities) if different from the owner. (If same, write same.)

|              |      |                  |     |
|--------------|------|------------------|-----|
| NAME<br>SAME |      | TELEPHONE NUMBER |     |
| ADDRESS      | CITY | STATE            | ZIP |

5.00 CONTINUING AUTHORITY

|              |      |                  |     |
|--------------|------|------------------|-----|
| NAME<br>SAME |      | TELEPHONE NUMBER |     |
| ADDRESS      | CITY | STATE            | ZIP |

6.00 FACILITY CONTACT

|   |  |                                  |  |
|---|--|----------------------------------|--|
| NAME<br>Donald P. Schnell               |  | TELEPHONE NUMBER<br>314/554-2650 |  |
| TITLE<br>Senior Vice President, Nuclear |  |                                  |  |

7.00 ADDITIONAL FACILITY INFORMATION

7.10 Legal Description of Outfalls. (Attach additional sheets if necessary) **SEE ATTACHED SHEET**

|     |           |           |           |         |         |              |
|-----|-----------|-----------|-----------|---------|---------|--------------|
| 001 | _____ 1/4 | _____ 1/4 | Sec _____ | T _____ | R _____ | _____ County |
| 002 | _____ 1/4 | _____ 1/4 | Sec _____ | T _____ | R _____ | _____ County |
| 003 | _____ 1/4 | _____ 1/4 | Sec _____ | T _____ | R _____ | _____ County |
| 004 | _____ 1/4 | _____ 1/4 | Sec _____ | T _____ | R _____ | _____ County |

| 7.10 Legal Description of Outfalls |      |      |        |       |      |                 |
|------------------------------------|------|------|--------|-------|------|-----------------|
| 001                                | NE ¼ | NE ¼ | Sec 14 | T 46N | R 8W | Callaway County |
| 002                                | NW ¼ | NW ¼ | Sec 13 | T 46N | R 8W | Callaway County |
| 003                                | SW ¼ | SW ¼ | Sec 13 | T 46N | R 8W | Callaway County |
| 007                                | SW ¼ | SW ¼ | Sec 13 | T 46N | R 8W | Callaway County |
| 009                                | NW ¼ | NW ¼ | Sec 5  | T 45N | R 7W | Callaway County |
| 010                                | SW ¼ | SW ¼ | Sec 12 | T 46N | R 8W | Callaway County |
| 011                                | NW ¼ | SE ¼ | Sec 12 | T 46N | R 8W | Callaway County |
| 012                                | NE ¼ | SE ¼ | Sec 14 | T 46N | R 8W | Callaway County |
| 013                                | NE ¼ | SE ¼ | Sec 14 | T 46N | R 8W | Callaway County |
| 014                                | NW ¼ | SE ¼ | Sec 11 | T 46N | R 8W | Callaway County |
| 015                                | SE ¼ | NE ¼ | Sec 11 | T 46N | R 8W | Callaway County |
| 016                                | NW ¼ | NW ¼ | Sec 13 | T 46N | R 8W | Callaway County |
| 017                                | SE ¼ | NE ¼ | Sec 14 | T 46N | R 8W | Callaway County |

NOTE: The location of Outfalls 001, 002, and 016 is described at the connection to the discharge line.

FORM C - APPLICATION FOR DISCHARGE PERMIT

MANUFACTURING, COMMERCIAL, MINING, AND SILVICULTURE OPERATIONS

DO NOT COMPLETE THIS FORM BEFORE READING THE ACCOMPANYING INSTRUCTIONS

MISSOURI DEPARTMENT OF NATURAL RESOURCES - DIVISION OF ENVIRONMENTAL QUALITY  
 P. O. Box 176  
 Jefferson City, M O 65102

- 1.00 NAME OF FACILITY Callaway Power Plant
- 1.10 This facility is now in operation under Missouri Operating Permit Number MO-0098001
- 1.20 This is a new facility and was constructed under Missouri Construction Permit Number \_\_\_\_\_. (Complete only if this facility does not have an operating permit.)
- 2.00 List the Standard Industrial Classification (SIC) codes applicable to your facility (4 digit code).
- a. First 4911 Electric Services b. Second \_\_\_\_\_
- c. Third \_\_\_\_\_ d. Fourth \_\_\_\_\_
- 2.10 For each outfall give the legal description

| Legal Description of Outfalls |      |      |        |       |      |                 |
|-------------------------------|------|------|--------|-------|------|-----------------|
| 001                           | NE ¼ | NE ¼ | Sec 14 | T 46N | R 8W | Callaway County |
| 002                           | NW ¼ | NW ¼ | Sec 13 | T 46N | R 8W | Callaway County |
| 003                           | SW ¼ | SW ¼ | Sec 13 | T 46N | R 8W | Callaway County |
| 007                           | SW ¼ | SW ¼ | Sec 13 | T 46N | R 8W | Callaway County |
| 9                             | NW ¼ | NW ¼ | Sec 5  | T 45N | R 7W | Callaway County |
| 010                           | SW ¼ | SW ¼ | Sec 12 | T 46N | R 8W | Callaway County |
| 011                           | NW ¼ | SE ¼ | Sec 12 | T 46N | R 8W | Callaway County |
| 012                           | NE ¼ | SE ¼ | Sec 14 | T 46N | R 8W | Callaway County |
| 013                           | NE ¼ | SE ¼ | Sec 14 | T 46N | R 8W | Callaway County |
| 014                           | NW ¼ | SE ¼ | Sec 11 | T 46N | R 8W | Callaway County |
| 015                           | SE ¼ | NE ¼ | Sec 11 | T 46N | R 8W | Callaway County |
| 016                           | NW ¼ | NW ¼ | Sec 13 | T 46N | R 8W | Callaway County |
| 017                           | SE ¼ | NE ¼ | Sec 14 | T46N  | R8W  | Callaway County |

NOTE: The location of Outfalls 001, 002, and 016 is described at the connection to the discharge line.

2.20 For each outfall list the name of the receiving water

| Outfall Number               | Receiving Water                   |
|------------------------------|-----------------------------------|
| 001, 002, 003, 007, 009, 016 | Missouri River                    |
| 010, 011, 012, 013, 014, 015 | Tributaries to the Missouri River |

2.30 Briefly describe the nature of your business: Steam Electric Power Plant (Nuclear)

- A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, public sewers and outfalls. If a water balance cannot be determined (e.g., for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.
- B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

| 1. Outfall Number   | 2. Operation(s) contributing flow |  | 3. Treatment   |                            |
|---|-----------------------------------|--|----------------|----------------------------|
|   | a. Operation                      | b. Average flow (include units) (maximum flow) (MGD) | a. Description | b. List codes from Table A |
| 001   | Radwaste Treatment System         | .082 (.298)  | Discharge*     | 4-A                        |
|   | Subsystems:                       |  |                |                            |
|   | Boron Recycle                     | .0025  |                |                            |
|   | Liquid Radwaste:                  | .009   |                |                            |
|   | • Train A                         | .003   |                |                            |
|   | • Train B                         | .006   |                |                            |
|   | Laundry/Hot Shower                | .0005  |                |                            |
|   | Secondary Liquid Waste            | .070   |                |                            |
|   | • Condensate Regen.               | .050   |                |                            |
|   | • Floor Drains                    | .020   |                |                            |
|   | Steam Generator Blowdown          | 0**  |                |                            |
| <p>* Treatment - Other wastewater treatment systems are used as required to treat this wastestream for recycle or discharge in compliance with NRC requirements and may be used to treat this discharge to meet NPDES permit limitations.</p> <p>** Flow normally recycled</p> <p>NOTE: Solid waste from the radwaste treatment system is disposed of in accordance with NRC regulations.</p> |                                   |  |                |                            |
| 002   | Cooling Tower Blowdown            | 4.84 (14.40)   | Discharge      | 4-A                        |



- A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, public sewers and outfalls. If a water balance cannot be determined (e.g., for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.
- B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

| 1. Outfall Number   | 2. Operation(s) contributing flow  |   | 3. Treatment  |                            |
|---|--|---|---|----------------------------|
|   | a. Operation   | b. Average flow (include units) (maximum flow) (MGD)                          | a. Description  | b. List codes from Table A |
| 003   | Water Treatment Plant Wastes<br>Subsystems:<br>Clarifier Blowdown<br>Carbon Filter Backwash<br>Oily Waste System<br>Demineralizer Systems<br>Cation Regeneration<br>Anion Regeneration<br>Mixed Bed Regeneration<br>Building Sumps | .421 (1.645)*<br><br>.330<br>.030<br>.001<br><br>.018<br>.018<br>.018<br>.006 | Sedimentation<br>Neutralization<br>Discharge<br>Recycle | 1-U<br>2-K<br>4-A<br>4-C   |
| * These flows represent wastewater discharged to the treatment lagoon. Actual outfall discharge may vary from 0, with total recycle to the maximum listed above, with direct discharge.   |  |   |   |                            |
| 007   | Sanitary Treatment Plant   | .027 (.040)   | Sedimentation<br>Activated Sludge<br>Discharge          | 1-U<br>3-A<br>4-A          |
| NOTE: Sanitary treatment sludge is accumulated onsite in an aerated holding basin, then normally transferred for disposal to a publically owned treatment works. The Storm Water flow component to the wetland is not included in these values. |  |   |   |                            |
| 009   | Intake Electric Heaters  | 0 (.006)  | Neutralization<br>Discharge                             | 2-K<br>4-A                 |

- A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, public sewers and outfalls. If a water balance cannot be determined (e.g., for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.
- B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

| 1. Outfall Number  | 2. Operation(s) contributing flow |  | 3. Treatment            |                            |
|--|-----------------------------------|--|-------------------------|----------------------------|
|  | a. Operation                      | b. Average flow (include units) (maximum flow) (MGD) | a. Description          | b. List codes from Table A |
| 010  | Storm Water Runoff                | .048 (7.14)*   | Sedimentation Discharge | 1-U<br>4-A                 |
| 011  | Storm Water Runoff                | .46 (12.01)  | Sedimentation Discharge | 1-U<br>4-A                 |
| 012  | Storm Water Runoff                | .036 (7.79)  | Sedimentation Discharge | 1-U<br>4-A                 |
| 013  | Storm Water Runoff                | .035 (1.25)  | Sedimentation Discharge | 1-U<br>4-A                 |
| 014  | Storm Water Runoff                | .155 (8.93)  | Sedimentation Discharge | 1-U<br>4-A                 |
| 015  | Storm Water Runoff                | .06 (4.34)   | Sedimentation Discharge | 1-U<br>4-A                 |
| * Maximum flow for Storm Water Runoff Outfalls are based on a 10-year 24-hour storm event (5.52 inches). Analytical data for the six storm water outfalls is listed on the attached EPA Form 2F. |                                   |  |                         |                            |
| 016  | Cooling Tower Bypass              | 3.32 (14.40)   | Discharge               | 4-A                        |
| 017  | Ultimate Heat Sink                | 0 (0)  | No Discharge            | NA                         |

2.40 continued

C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items A or B intermittent or seasonal?  
 YES (complete the following table)     NO (go to Section 2.50)

| 1. OUTFALL NUMBER                                   | 2. OPERATION(S) CONTRIBUTING FLOW | 3. FREQUENCY                       |                                      | 4. FLOW               |                  |                                 |                    | c. DURATION (in days) |
|---|-----------------------------------|------------------------------------|--------------------------------------|-----------------------|------------------|---------------------------------|--------------------|-----------------------|
|   |                                   | a. DAYS PER WEEK (specify average) | b. MONTHS PER YEAR (specify average) | a. FLOW RATE (in MGD) |                  | b. TOTAL VOLUME (specify units) |                    |                       |
|   |                                   |                                    |                                      | 1. LONG TERM AVERAGE  | 2. MAXIMUM DAILY | 4. LONG TERM DAILY              | 3. MAXIMUM AVERAGE |                       |
| See Attachment C, Description of Intermittent Flows |                                   |                                    |                                      |                       |                  |                                 |                    |                       |

2.50 MAXIMUM PRODUCTION

A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?  
 YES (complete B)     NO (go to Section 2.60)

B. Are the limitations in the applicable effluent guideline expressed in terms of production (or other measure of operation)?  
 YES (complete C)     NO (go to Section 2.60)

C. If you answered YES to B, list the quantity which represents an actual measurement of your maximum level of production, expressed in the terms and units used in the applicable effluent guideline and indicate the affected outfalls.

| 1. MAXIMUM QUANTITY |                     |   | 2. AFFECTED OUTFALLS (list outfall numbers) |
|---------------------|---------------------|---|---|
| a. QUANTITY PER DAY | b. UNITS OF MEASURE | c. OPERATION, PRODUCT, MATERIAL, ETC. (specify) |   |
|                     |                     |   |   |

2.60 IMPROVEMENTS

A. Are you now required by any Federal, State or local authority to meet any implementation schedule for the construction, upgrading or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.     YES (complete the following table)     NO (go to 3.00)

| 1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC. | 2. AFFECTED OUTFALLS |                        | 3. BRIEF DESCRIPTION OF PROJECT | 4. FINAL COMPLIANCE DATE |              |
|---|----------------------|------------------------|---------------------------------|--------------------------|--------------|
|   | a. NUMBER            | b. SOURCE OF DISCHARGE |                                 | a. REQUIRED              | b. PROJECTED |
|   |                      |                        |                                 |                          |              |

B. OPTIONAL - You may attach additional sheets describing any additional water pollution control programs (or other environmental projects which may affect your discharges) you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction.  
 MARK "X" IF DESCRIPTION OF ADDITIONAL CONTROL PROGRAMS IS ATTACHED.

3.00 INTAKE AND EFFLUENT CHARACTERISTICS

A & B. See instructions before proceeding - Complete one table for each outfall - Annotate the outfall number in the space provided. NOTE: Table 1 is included on separate sheets numbered 6 through 7.

C. Use the space below to list any of the pollutants listed in Table B of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

| 1. Pollutant         | 2. Source   | 1. Pollutant | 2. Source |
|----------------------|---|--------------|-----------|
| Asbestos             | Asbestos cement board is used for cooling tower fill. Tower fill deterioration is minimized by controlling cooling tower chemistry.   |              |           |
|                      |   |              |           |
| Monoethylamine       | Used as a reagent in plant instrumentation. It would be released to Outfall 001.  |              |           |
|                      |   |              |           |
| Strontium, Zirconium | Several isotopes of Strontium and Zirconium are produced in the reactor by fission and activation processes. Calculations indicate that trace quantities of these isotopes (approximately 1E-10 mg/day) may be released from Outfall 001. |              |           |
|                      |   |              |           |
|                      |   |              |           |
|                      |   |              |           |
|                      |   |              |           |
|                      |   |              |           |
|                      |   |              |           |
|                      |   |              |           |
|                      |   |              |           |
|                      |   |              |           |
|                      |   |              |           |
|                      |   |              |           |
|                      |   |              |           |
|                      |   |              |           |
|                      |   |              |           |
|                      |   |              |           |
|                      |   |              |           |
|                      |   |              |           |
|                      |   |              |           |

3.10 BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

YES (identify the test(s) and describe their purposes below)     NO (go to 3.20)

Annual WET tests were performed as required by our current permit. All results have been previously reported and were satisfactory.

3.20 CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported performed by a contract laboratory or consulting firm?

YES (list the name, address, and telephone number of and pollutants analyzed, by each such laboratory or firm below)     NO (go to 3.30)

| A. Name                                 | B. Address   | C. Telephone | D. Pollutants Analyzed                              |
|---|--|--------------|---|
| Maxim Technologies, Inc.                | 1908 Innerbelt Business Center Dr.<br>St. Louis, MO 63114-5700 | 314/426-0880 | See Attachment E,<br>NPDES Sampling and<br>Analysis |
| Teledyne Isotopes Midwest<br>Laboratory | 700 Landwehr Rd.<br>Northbrook, IL 60062-2310                  | 708/564-0700 |   |

3.30 CERTIFICATION

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 the 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.

|   |   |                                     |
|---|---|-------------------------------------|
| A. Name & Official Title<br><i>Donald F. Schnell</i><br>Donald F. Schnell, Senior Vice President, Nuclear | B. Phone Number (area code & No.)<br>314/554-2650 | D. Date Signed<br><i>14 Sept 95</i> |
| C. Signature (see instructions)   |   |                                     |

TABLE 3. You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each pollutant. See instructions for additional details.

| 1. POLLUTANT                       | 2. EFFLUENT                           |             |  |             | 3. UNITS (see 4.1.2.1.2.2.2)              |                    |                  | 4. INTAKE (see 4.1.2.1.2.2.2) |                            |          |                    |
|------------------------------------|---------------------------------------|-------------|--|-------------|---|--------------------|------------------|-------------------------------|----------------------------|----------|--------------------|
|                                    | a. MAXIMUM DAILY VALUE (if available) |             | b. MAXIMUM 30 DAY VALUE (if available) |             | c. LONG TERM AVERAGE VALUE (if available) | d. NO. OF ANALYSIS | e. CONCENTRATION | f. MASS                       | a. LONG TERM AVERAGE VALUE |          | b. NO. OF ANALYSIS |
|                                    | (1) CONCENTRATION                     | (2) MASS    | (1) CONCENTRATION                      | (2) MASS    |   |                    |                  |                               | (1) CONCENTRATION          | (2) MASS |                    |
| a. Biochemical Oxygen Demand (BOD) | 1.6                                   | 1.2         |  |             |   | 1                  | mg/l             | lb/d                          |                            |          |                    |
| b. Chemical Oxygen Demand (COD)    | 810                                   | 622         |  |             |   | 1                  | mg/l             | lb/d                          |                            |          |                    |
| c. Total Organic Carbon (TOC)      | 281                                   | 223         |  |             |   | 1                  | mg/l             | lb/d                          |                            |          |                    |
| d. Total Suspended Solids (TSS)    | 21.5                                  | 19.6        | 12.3                                   | 9.0         | 9.2                                       | 1/10/209           | mg/l             | lb/d                          |                            |          |                    |
| e. Ammonia Nitrogen                | 39.7                                  | 30.1        |  |             | 19.6                                      | 1/22               | mg/l             | lb/d                          |                            |          |                    |
| f. Flow                            | VALUE 092                             |             | VALUE 088                              |             | VALUE 082                                 | 1/20/269           | NA               | MGD                           | VALUE                      |          |                    |
| g. Temperature (degrees)           | VALUE 22.7                            |             | VALUE                                  |             | VALUE                                     | 1                  | +C               |                               | VALUE                      |          |                    |
| h. Temperature (fahrenheit)        | VALUE NA                              |             | VALUE                                  |             | VALUE                                     | 1                  | +C               |                               | VALUE                      |          |                    |
| i. pH                              | MINIMUM 7.01                          | MAXIMUM 7.6 | MINIMUM 6.0                            | MAXIMUM 7.6 |   | 1/70               | STANDARD UNITS   |                               |                            |          |                    |

TABLE 4. You must provide the results of at least one analysis for that pollutant. Complete one table for each pollutant. See instructions for additional details and requirements.

| 1. POLLUTANT AND CAS NO. (if available) | 2. MARK "X"         |                    | 3. EFFLUENT            |  |   | 4. UNITS           |                   |          | 5. INTAKE (see 4.1.2.1.2.2.2) |                    |
|---|---------------------|--------------------|------------------------|--|---|--------------------|-------------------|----------|-------------------------------|--------------------|
|   | a. REQUIRED PRESENT | b. REQUIRED ABSENT | a. MAXIMUM DAILY VALUE | b. MAXIMUM 30 DAY VALUE (if available) | c. LONG TERM AVERAGE VALUE (if available) | d. NO. OF ANALYSIS | e. CONCENTRATION  | f. MASS  | a. LONG TERM AVERAGE VALUE    | b. NO. OF ANALYSIS |
|   |                     |                    | (1) CONCENTRATION      | (2) MASS                               | (1) CONCENTRATION                         | (2) MASS           | (1) CONCENTRATION | (2) MASS | (1) CONCENTRATION             | (2) MASS           |
| a. Bromide (14513-67-9)                 | X                   |                    | <1.00                  | <0.748                                 |   | 1                  | mg/l              | lb/d     |                               |                    |
| b. Chlorine, Total Residual             | X                   |                    | <0.02                  | <0.02                                  |   | 1                  | mg/l              | lb/d     |                               |                    |
| c. Coliform                             |                     | X                  |                        |  |   |                    |                   |          |                               |                    |
| d. Total Coliform                       |                     | X                  |                        |  |   |                    |                   |          |                               |                    |
| e. Fluoride (14554-48-8)                |                     | X                  |                        |  |   |                    |                   |          |                               |                    |
| f. Nitrate-Nitrite (14504-34-8)         | X                   |                    | 1.29                   | 0.990                                  |   | 1                  | mg/l              | lb/d     |                               |                    |

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2-a for any pollutant, you must provide the results of at least one analysis for that pollutant. Complete column 2-b for the pollutant for which you have no reason to believe it is present. For additional details and requirements, see the instructions on page 1.

| 1. POLLUTANT AND CAS NO. (if known)           | 2. MARK "X"         |                    | 3. PRESENT             |          |                         |          | 4. UNITS         |                    | 5. INITIAL REPORT          |          |  |
|---|---------------------|--------------------|------------------------|----------|-------------------------|----------|------------------|--------------------|----------------------------|----------|--|
|   | a. BELIEVED PRESENT | b. BELIEVED ABSENT | a. MAXIMUM DAILY VALUE |          | b. AVERAGE 30 DAY VALUE |          | c. CONCENTRATION | d. NO. OF ANALYSIS | a. LONG TERM AVERAGE VALUE |          |  |
|   |                     |                    | (1) CONCENTRATION      | (2) MASS | (1) CONCENTRATION       | (2) MASS |                  |                    | (1) CONCENTRATION          | (2) MASS |  |
| g. Nitrogen, Total Organic (as N)             | X                   |                    | 156                    |          | 120                     |          |                  | mg/l               | 1                          | Boil     |  |
| h. Oil and Grease                             | X                   |                    | 3.9                    |          | 3.0                     |          |                  | mg/l               | 1                          | Boil     |  |
| i. Phosphorus (as P) Total (7723-14-0)        | X                   |                    | 7                      |          | 5                       |          |                  | mg/l               | 1                          | Boil     |  |
| j. Radioactivity                              |                     |                    |                        |          |                         |          |                  |                    |                            |          |  |
| (1) Alpha, Total                              | X                   |                    | 120                    |          | 61 B                    |          |                  | pCi/l              | 1                          | uCi/l    |  |
| (2) Beta, Total                               | X                   |                    | 230                    |          | 254                     |          |                  | pCi/l              | 1                          | uCi/l    |  |
| (3) Radium, Total                             | X                   |                    |                        |          |                         |          |                  |                    |                            |          |  |
| (4) Radium-226, Total                         | X                   |                    |                        |          |                         |          |                  |                    |                            |          |  |
| k. Sulfate (as SO <sub>4</sub> ) (14808-79-8) | X                   |                    | 278                    |          | 213                     |          |                  | mg/l               | 1                          | Boil     |  |
| l. Sulfide (as S)                             | X                   |                    | < 1.00                 |          | < 0.768                 |          |                  | mg/l               | 1                          | Boil     |  |
| m. Sulfite (as SO <sub>3</sub> ) (14265-45-3) | X                   |                    | < 0.025                |          | < 0.019                 |          |                  | mg/l               | 1                          | Boil     |  |
| n. Surfactants                                | X                   |                    | < 1.00                 |          | < 0.768                 |          |                  | mg/l               | 1                          | Boil     |  |
| o. Aluminum, Total (7429-90-3)                | X                   |                    | < 0.2                  |          | < 0.2                   |          |                  | mg/l               | 1                          | Boil     |  |
| p. Barium, Total (7440-39-3)                  | X                   |                    | < 5                    |          | < 4                     |          |                  | mg/l               | 1                          | Boil     |  |
| q. Boron, Total (7440-42-8)                   | X                   |                    | < 0.05                 |          | < 0.04                  |          |                  | mg/l               | 1                          | Boil     |  |
| r. Cobalt, Total (7440-48-4)                  | X                   |                    | 1.39                   |          | 1.07                    |          |                  | mg/l               | 1                          | Boil     |  |
| s. Iron, Total (7439-89-6)                    | X                   |                    | 10.57                  |          | 8.115                   |          |                  | mg/l               | 1                          | Boil     |  |
| t. Magnesium, Total (7439-95-4)               | X                   |                    | 0.214                  |          | 0.164                   |          |                  | mg/l               | 1                          | Boil     |  |
| u. Manganese, Total (7439-96-3)               | X                   |                    | 0.0709                 |          | 0.0544                  |          |                  | mg/l               | 1                          | Boil     |  |
| v. Tin, Total (7440-31-5)                     | X                   |                    | < 0.143                |          | < 0.110                 |          |                  | mg/l               | 1                          | Boil     |  |
| w. Titanium, Total (7440-32-8)                | X                   |                    | 1.4                    |          | 1.1                     |          |                  | mg/l               | 1                          | Boil     |  |

\* Iron concentration of this outfall can be up to 1000 mg/l depending on processing method.

Form C  
TABLE 1 for 300 Item A & B

| 1. POLLUTANT                            | 2. EFFLUENT            |              |                         |          | 3. LIMITS (ppm or %)    |          | 4. INSTANT (ppm or %)      |                 | 5. MONTH ANALYSIS |          |
|---|------------------------|--------------|-------------------------|----------|-------------------------|----------|----------------------------|-----------------|-------------------|----------|
|   | a. MAXIMUM DAILY VALUE |              | b. MAXIMUM 30 DAY VALUE |          | c. LONG TERM AVG. VALUE |          | d. LONG TERM AVERAGE VALUE |                 | e. MONTH ANALYSIS |          |
|   | (1) CONCENTRATION      | (2) MASS     | (1) CONCENTRATION       | (2) MASS | (1) CONCENTRATION       | (2) MASS | (1) CONCENTRATION          | (2) MASS        | (1) CONCENTRATION | (2) MASS |
| a. Biological Oxygen Demand (BOD) (5°C) | 1.18                   | 31.0         |                         |          |                         |          | 1                          |                 |                   |          |
| b. Chemical Oxygen Demand (COD)         | 40                     | 1100         |                         |          |                         |          | 1                          |                 |                   |          |
| c. Total Organic Carbon (TOC)           | 18.9                   | 531          |                         |          |                         |          | 1                          |                 |                   |          |
| d. Total Suspended Solids (TSS)         | 36                     | 960          | 78.4                    | 4060     | 54.6                    | 2190     | 175/33                     |                 |                   |          |
| e. Ammonia (as N)                       | <0.03                  | <0.80        |                         |          |                         |          | 1                          |                 |                   |          |
| f. Flow                                 | VALUE 3.2              |              | VALUE 8.7               |          | VALUE 4.8               |          | 8.11760                    | NA              | ACGD              | VALUE    |
| g. Temperature (surface)                | VALUE 18.75            |              | VALUE 28.6              |          | VALUE 23.8              |          | 8.11777                    | °C              | VALUE             |          |
| h. Temperature (bottom)                 | VALUE NA               |              | VALUE 34.5              |          | VALUE 32.0              |          | 7.0184                     | °C              | VALUE             |          |
| i. pH                                   | MINIMUM 8.47           | MAXIMUM 8.53 | MINIMUM                 | MAXIMUM  |                         |          | 8                          | STANDARD LIMITS |                   |          |

| 1. POLLUTANT AND CAS NO.   | 2. MGR. "X"         |                    | 3. EFFLUENT            |          |                         |          | 4. LIMITS               |          | 5. INSTANT (ppm or %)      |          | 6. MONTH ANALYSIS |          |
|----------------------------|---------------------|--------------------|------------------------|----------|-------------------------|----------|-------------------------|----------|----------------------------|----------|-------------------|----------|
|                            | a. BELIEVED PRESENT | b. BELIEVED ABSENT | a. MAXIMUM DAILY VALUE |          | b. MAXIMUM 30 DAY VALUE |          | c. LONG TERM AVG. VALUE |          | d. LONG TERM AVERAGE VALUE |          | e. MONTH ANALYSIS |          |
|                            |                     |                    | (1) CONCENTRATION      | (2) MASS | (1) CONCENTRATION       | (2) MASS | (1) CONCENTRATION       | (2) MASS | (1) CONCENTRATION          | (2) MASS | (1) CONCENTRATION | (2) MASS |
| a. Bromide (44375-47-5)    | X                   |                    | 7.16                   | 191      |                         |          |                         |          |                            |          |                   |          |
| b. Chlorine Total Residual | X                   |                    | 0.06                   | 1.6      |                         |          |                         |          |                            |          |                   |          |
| c. Color                   |                     | X                  |                        |          |                         |          |                         |          |                            |          |                   |          |
| d. Total Coliform          |                     | X                  |                        |          |                         |          |                         |          |                            |          |                   |          |
| e. Fluoride (14794-48-8)   |                     | X                  |                        |          |                         |          |                         |          |                            |          |                   |          |
| f. Nitrate Nitrogen (as N) | X                   |                    | 5.65                   | 151      |                         |          |                         |          |                            |          |                   |          |

PART B. Mark "X" in columns 2 a for each pollutant you know or have reason to believe is present. Mark "X" in column 2 b for each pollutant you believe to be absent. If you mark column 2 a for any pollutant, you must provide the results of at least one analysis for that pollutant. Complete one table for each outlet. See the instruction for additional details and requirements.



TABLE 2a. Analyze for each pollutant per known or have reason to believe is present. Mark "X" in column 2b for each pollutant you believe to be absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. Complete instructions are on the next page.

| 1. POLLUTANT AND CAS NO.               | 2. MARK "X"         |                    | 3. EFFLUENT            |          |                        |          | 4. UNITS           |                   |          | 5. START DATE               |          |
|--|---------------------|--------------------|------------------------|----------|------------------------|----------|--------------------|-------------------|----------|-----------------------------|----------|
|  | a. BELIEVED PRESENT | b. BELIEVED ABSENT | 8. MAXIMUM DAILY VALUE |          | 9. EFFG TERM AVG VALUE |          | 10. NO OF ANALYSES | 11. CONCENTRATION | 12. MASS | 13. LONG TERM AVERAGE VALUE |          |
|  |                     |                    | (1) CONCENTRATION      | (2) MASS | (1) CONCENTRATION      | (2) MASS |                    |                   |          | (1) CONCENTRATION           | (2) MASS |
| g. Nitrogen, Total Organic (as N)      | X                   |                    | 1.10                   | 34.7     |                        |          | 1                  | mg/l              | lb/d     |                             |          |
| h. Oil and Grease                      | X                   |                    | 1.8                    | 4.3      |                        |          | 4                  | mg/l              | lb/d     |                             |          |
| i. Phosphorus (as P) Total (2723) 14.0 | X                   |                    | 0.63                   | 1.7      |                        |          | 1                  | mg/l              | lb/d     |                             |          |
| j. Radioactivity                       |                     |                    |                        |          |                        |          |                    |                   |          |                             |          |
| (1) Alpha, Total                       |                     | X                  |                        |          |                        |          |                    |                   |          |                             |          |
| (2) Beta, Total                        |                     | X                  |                        |          |                        |          |                    |                   |          |                             |          |
| (3) Gamma, Total                       |                     | X                  |                        |          |                        |          |                    |                   |          |                             |          |
| (4) Radio N-226, Total                 |                     | X                  |                        |          |                        |          |                    |                   |          |                             |          |
| k. Sulfate (as SO4) (14808) 79.81      | X                   |                    | 485                    | 23600    |                        |          | 1                  | mg/l              | lb/d     |                             |          |
| l. Sulfide (as S)                      |                     | X                  |                        |          |                        |          |                    |                   |          |                             |          |
| m. Sulfite (as SO3) (14285) 45.31      |                     | X                  |                        |          |                        |          |                    |                   |          |                             |          |
| n. Sulfuric acid                       |                     | X                  | <0.035                 | <0.648   |                        |          | 1                  | mg/l              | lb/d     |                             |          |
| o. Aluminum, Total (2429) 90.51        | X                   |                    | 3                      | 80       |                        |          | 1                  | mg/l              | lb/d     |                             |          |
| p. Barium, Total (2440) 39.31          | X                   |                    | 1                      | 30       |                        |          | 1                  | mg/l              | lb/d     |                             |          |
| q. Bismuth, Total (2440) 42.81         | X                   |                    | <5                     | <134     |                        |          | 1                  | mg/l              | lb/d     |                             |          |
| r. Cobalt, Total (2440) 48.41          |                     | X                  |                        |          |                        |          |                    |                   |          |                             |          |
| s. Iron, Total (2439) 89.61            | X                   |                    | 1.17                   | 31.2     |                        |          | 1                  | mg/l              | lb/d     |                             |          |
| t. Magnesium, Total (2439) 93.41       | X                   |                    | 79.1                   | 2110     |                        |          | 1                  | mg/l              | lb/d     |                             |          |
| u. Nickel, Total (2439) 98.71          | X                   |                    | <0.018                 | <0.481   |                        |          | 1                  | mg/l              | lb/d     |                             |          |
| v. Selenium, Total (2439) 96.51        | X                   |                    | 0.129                  | 3.45     |                        |          | 1                  | mg/l              | lb/d     |                             |          |
| w. Vanadium, Total (2440) 51.51        | X                   |                    | <0.143                 | <3.82    |                        |          | 1                  | mg/l              | lb/d     |                             |          |
| x. Fluorine, Total (2440) 32.61        |                     | X                  |                        |          |                        |          |                    |                   |          |                             |          |

TABLE 1 for 3.00 Item A, B, & C

INTAKE AND EFFLUENT CHARACTERISTICS (Continued from page 1 of Form C)

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each intake. See instructions for additional details.

| 1. POLLUTANT                            | 2. EFFLUENT            |           |                         |           | 3. LIMITS (ppm or %) | 4. NO. OF ANALYSIS | 5. LONG TERM AVERAGE VALUE |         | 6. INSTANT MAXIMUM |           | 7. NO. OF ANALYSIS |                            |                   |           |
|---|------------------------|-----------|-------------------------|-----------|----------------------|--------------------|----------------------------|---------|--------------------|-----------|--------------------|----------------------------|-------------------|-----------|
|   | A. MAXIMUM DAILY VALUE |           | B. MAXIMUM 30 DAY VALUE |           |                      |                    | A. CONCEN- TRATION         | B. MASS | (I) CONCENTRATION  | (II) MASS |                    | A. LONG TERM AVERAGE VALUE | (I) CONCENTRATION | (II) MASS |
|   | (I) CONCENTRATION      | (II) MASS | (I) CONCENTRATION       | (II) MASS |                      |                    |                            |         |                    |           |                    |                            |                   |           |
| a. Biochemical Oxygen Demand (BOD) (5D) | 3.3                    | 12        |                         |           | mg/l                 | 1                  |                            |         | lb/d               | 2.6       | 9.1                | 1                          |                   |           |
| b. Chemical Oxygen Demand (COD)         | 15                     | 53        |                         |           | mg/l                 | 1                  |                            |         | lb/d               | 5.00      | 17.6               | 1                          |                   |           |
| c. Total Organic Carbon (TOC)           | 9.991                  | 35.10     |                         |           | mg/l                 | 1                  |                            |         | lb/d               | 4.5       | 16                 | 1                          |                   |           |
| d. Total Suspended Solids (TSS)         | 31                     | 109       |                         |           | mg/l                 | 1                  |                            |         | lb/d               | 22        | 77                 | 1                          |                   |           |
| e. Ammonia (as N)                       | 0.115                  | 1.11      |                         |           | mg/l                 | 1                  |                            |         | lb/d               | 0.101     | 0.355              | 1                          |                   |           |
| f. Flow                                 | VALUE                  | NA        | VALUE                   | NA        | NA                   |                    | VALUE                      | 0.421   | MGD                | VALUE     |                    |                            |                   |           |
| g. Temperature (surface)                | VALUE                  | NA        | VALUE                   |           | °C                   |                    | VALUE                      |         | °C                 | VALUE     |                    |                            |                   |           |
| h. Temperature (bottom)                 | VALUE                  | 34.5      | VALUE                   |           | °C                   |                    | VALUE                      |         | °C                 | VALUE     |                    |                            |                   |           |
| i. pH                                   | MINIMUM                | 7.98      | MAXIMUM                 |           | STANDARD LIMITS      |                    |                            |         |                    |           |                    |                            |                   |           |

PART B - Mark "X" in columns 2a for each pollutant you know or have reason to believe is present. Mark "X" in column 2b for each pollutant you believe to be absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. Complete one table for each intake. See the instructions for additional details and requirements.

| 1. POLLUTANT AND CAUSE (if available) | 2. MARK "X"         |                    | 3. EFFLUENT            |           |                         |           | 4. LIMITS                  |                    |                  |         | 5. INSTANT MAXIMUM      |                   |           |                  | 6. NO. OF ANALYSIS |                   |           |
|---------------------------------------|---------------------|--------------------|------------------------|-----------|-------------------------|-----------|----------------------------|--------------------|------------------|---------|-------------------------|-------------------|-----------|------------------|--------------------|-------------------|-----------|
|                                       | a. RETURNED PRESENT | b. RETURNED ABSENT | A. MAXIMUM DAILY VALUE |           | B. MAXIMUM 30 DAY VALUE |           | C. LONG TERM AVERAGE VALUE | D. NO. OF ANALYSIS | A. CONCENTRATION | B. MASS | LONG TERM AVERAGE VALUE | (I) CONCENTRATION | (II) MASS | A. CONCENTRATION |                    | (I) CONCENTRATION | (II) MASS |
|                                       |                     |                    | (I) CONCENTRATION      | (II) MASS | (I) CONCENTRATION       | (II) MASS |                            |                    |                  |         |                         |                   |           |                  |                    |                   |           |
| a. Bromide (249558.7)                 | X                   |                    | 0.298                  | 1.01      |                         |           |                            | 1                  |                  | lb/d    |                         |                   |           |                  |                    |                   |           |
| b. Chlorine, Total Residual           | X                   |                    | 0.20                   | 0.70      |                         |           |                            | 2                  |                  | lb/d    |                         |                   |           |                  |                    |                   |           |
| c. Colloids                           |                     | X                  |                        |           |                         |           |                            |                    |                  |         |                         |                   |           |                  |                    |                   |           |
| d. Fecal Coliform                     | X                   |                    |                        |           |                         |           |                            |                    |                  |         |                         |                   |           |                  |                    |                   |           |
| e. Fluoride (116984.48)               |                     | X                  |                        |           |                         |           |                            |                    |                  |         |                         |                   |           |                  |                    |                   |           |
| f. Nitrate-Nitrite (as N)             | X                   |                    | 1.022                  | 3.591     |                         |           |                            | 1                  |                  | lb/d    | 1.09                    | 10.9              |           |                  |                    | 1                 |           |

Form 2 is for each pollutant you know or have reason to believe is present. Check "X" in column 2 if for any pollutant, you must provide the results of at least one analysis for that pollutant. Complete columns 3 through 8 for additional details and requirements.

| 1. PESTICIDE AND CAS NO. (if available) | 2. HAZARD "X"       |                    | 3. RETURN              |           |   |           | 4. LIMITS         |         | 5. INITIAL REPORT          |           | 6. OTHER ANALYSIS |  |
|---|---------------------|--------------------|------------------------|-----------|---|-----------|-------------------|---------|----------------------------|-----------|-------------------|--|
|   | A. BELIEVED PRESENT | B. BELIEVED ABSENT | A. MAXIMUM DAILY VALUE |           | C. LONG TERM AVERAGE VALUE (if available) |           | D. NO OH ANALYSIS | E. MASS | F. LONG TERM AVERAGE VALUE |           |                   |  |
|   |                     |                    | (1) CONCENTRATION      | (2) BASIS | (1) CONCENTRATION                         | (2) BASIS |                   |         | (1) CONCENTRATION          | (2) BASIS |                   |  |
| g. Nitrogen, Total Organic (in lb)      | X                   | X                  |                        |           |   |           |                   |         |                            |           |                   |  |
| h. Oil and Grease                       | X                   | X                  | 0.42                   | 1.5       |   |           |                   |         |                            |           |                   |  |
| i. Phosphorus, in P Total (7233-14-0)   | X                   | X                  | 0.72                   | 2.5       |   |           |                   |         |                            |           |                   |  |
| j. Radioactivity                        |                     |                    |                        |           |   |           |                   |         |                            |           |                   |  |
| (1) Alpha, Total                        |                     | X                  |                        |           |   |           |                   |         |                            |           |                   |  |
| (2) Beta, Total                         |                     | X                  |                        |           |   |           |                   |         |                            |           |                   |  |
| (3) Radon, Total                        |                     | X                  |                        |           |   |           |                   |         |                            |           |                   |  |
| (4) Radon 226, Total                    |                     | X                  |                        |           |   |           |                   |         |                            |           |                   |  |
| k. Sulfate (as SO4) (14808-29-8)        | X                   | X                  | 483                    | 1697      |   |           |                   |         |                            |           |                   |  |
| l. Sulfide (as S)                       |                     | X                  |                        |           |   |           |                   |         |                            |           |                   |  |
| m. Sulfite (as SO3) (14265-45-3)        |                     | X                  |                        |           |   |           |                   |         |                            |           |                   |  |
| n. Sulfuric Acid                        | X                   | X                  | <0.035                 | <0.088    |   |           |                   |         |                            |           |                   |  |
| o. Aluminum, Total (7429-90-3)          | X                   | X                  | 6                      | 2         |   |           |                   |         |                            |           |                   |  |
| p. Barium, Total (7440-39-3)            | X                   | X                  | <0.2                   | <0.7      |   |           |                   |         |                            |           |                   |  |
| q. Boron, Total (7440-47-8)             | X                   | X                  | <5                     | <18       |   |           |                   |         |                            |           |                   |  |
| r. Cobalt, Total (7440-48-4)            |                     | X                  |                        |           |   |           |                   |         |                            |           |                   |  |
| s. Iron, Total (7439-87-6)              | X                   | X                  | 1.3                    | 4.6       |   |           |                   |         |                            |           |                   |  |
| t. Magnesium, Total (7439-93-4)         | X                   | X                  | 27.1                   | 95.2      |   |           |                   |         |                            |           |                   |  |
| u. Molybdenum, Total (7439-98-7)        | X                   | X                  | <0.018                 | <0.063    |   |           |                   |         |                            |           |                   |  |
| v. Manganese, Total (7439-96-5)         | X                   | X                  | 1.81                   | 6.43      |   |           |                   |         |                            |           |                   |  |
| w. Tin, Total (7440-31-3)               | X                   | X                  | <0.055                 | <0.193    |   |           |                   |         |                            |           |                   |  |
| x. Vanadium, Total (7440-32-8)          |                     | X                  |                        |           |   |           |                   |         |                            |           |                   |  |

INSTAKE AND EFFLUENT CHARACTERISTICS (continued from page 1 of Form C)

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each pollutant. See instructions for additional details.

| 1. POLLUTANT                                    | 2. EFFLUENT            |          |                         |          | 3. UNITS (specify if other) |          |                    |          | 4. INTAKE (specify if other) |          |                    |          |
|---|------------------------|----------|-------------------------|----------|-----------------------------|----------|--------------------|----------|------------------------------|----------|--------------------|----------|
|   | a. MAXIMUM DAILY VALUE |          | b. MAXIMUM 30 DAY VALUE |          | c. LONG TERM AVG. VALUE     |          | d. NO. OF ANALYSIS |          | a. LONG TERM AVERAGE VALUE   |          | b. NO. OF ANALYSIS |          |
|   | (1) CONCENTRATION      | (2) MASS | (1) CONCENTRATION       | (2) MASS | (1) CONCENTRATION           | (2) MASS | (1) CONCENTRATION  | (2) MASS | (1) CONCENTRATION            | (2) MASS | (1) CONCENTRATION  | (2) MASS |
| a. Biological Oxygen Demand (BOD <sub>5</sub> ) | 12.4                   | 2.16     | 11.0                    | 2.0      | 6.0                         | 1.4      | 1/1/72             | 1        | mg/l                         | lb/d     |                    |          |
| b. Chemical Oxygen Demand (COD)                 | 10                     | 1.9      |                         |          |                             |          | 1                  | 1        | mg/l                         | lb/d     |                    |          |
| c. Total Organic Carbon (TOC)                   | 14.5                   | 2.78     |                         |          |                             |          | 1                  | 1        | mg/l                         | lb/d     |                    |          |
| d. Total Suspended Solids (TSS)                 | 10                     | 1.9      | 22                      | 6.6      | 9.2                         | 2.2      | 10/1/75            | 1        | mg/l                         | lb/d     |                    |          |
| e. Ammonia as N                                 | 3.00                   | 0.184    |                         |          |                             |          | 1                  | 1        | mg/l                         | lb/d     |                    |          |
| f. Flow   | VALUE                  | 0.21     | VALUE                   | 0.16     | VALUE                       | 0.27     | 8/5/72             | 1        | NA                           | MGD      |                    |          |
| g. Temperature (surface)                        | VALUE                  | 5.8      | VALUE                   |          | VALUE                       |          | 1                  | 1        | °C                           |          |                    |          |
| h. Temperature (bottom)                         | VALUE                  | NA       | VALUE                   |          | VALUE                       |          | 1                  | 1        | °C                           |          |                    |          |
| i. pH   | MINIMUM                | 7.3      | MINIMUM                 | 7.0      | MINIMUM                     |          | 1                  | 1        | STANDARD UNITS               |          |                    |          |
|   | MAXIMUM                | 7.8      | MAXIMUM                 | 7.9      | MAXIMUM                     |          | 1                  | 1        |                              |          |                    |          |

PART B - Mark "X" in column 2a for each pollutant you know or have reason to believe is present. Mark "X" in column 2b for each pollutant you believe to be absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. Complete one table for each pollutant. See instructions for additional details and requirements.

| 1. POLLUTANT AND CAS NO. (specify if other) | 2. MARK "X"         |                    | 3. EFFLUENT            |          |                         |          | 4. UNITS                   |          |                    |          |                              |          |
|---|---------------------|--------------------|------------------------|----------|-------------------------|----------|----------------------------|----------|--------------------|----------|------------------------------|----------|
|   | a. RECEIVED PRESENT | b. BELIEVED ABSENT | a. MAXIMUM DAILY VALUE |          | b. MAXIMUM 30 DAY VALUE |          | c. LONG TERM AVERAGE VALUE |          | d. NO. OF ANALYSIS |          | e. INTAKE (specify if other) |          |
|   |                     |                    | (1) CONCENTRATION      | (2) MASS | (1) CONCENTRATION       | (2) MASS | (1) CONCENTRATION          | (2) MASS | (1) CONCENTRATION  | (2) MASS | (1) CONCENTRATION            | (2) MASS |
| a. Residual Chlorine (CAS 7782-50-5)        | X                   |                    |                        |          |                         |          |                            |          |                    |          |                              |          |
| b. Chlorine Total Residual                  | X                   |                    |                        |          |                         |          |                            |          |                    |          |                              |          |
| c. Color                                    | X                   |                    |                        |          |                         |          |                            |          |                    |          |                              |          |
| d. Total Coliform                           | X                   |                    | 21000                  |          |                         |          | 1                          | 1        | #/100 ml           |          |                              |          |
| e. Fluoride (14798-44-8)                    | X                   |                    |                        |          |                         |          |                            |          |                    |          |                              |          |
| f. Nitrate Nitrite (as N)                   | X                   |                    | 25,100                 | 4,855    |                         |          | 1                          | 1        | mg/l               | lb/d     |                              |          |

Table 2 a for each pollutant you know or have reason to believe is present. Mark "x" in column 2 b for each pollutant you believe to be above. If you mark column 2 a for any pollutant, you must provide the results of at least one analysis for that pollutant. Complete the analysis for each pollutant you mark "x" in column 2 b for each pollutant you believe to be above. Mark "x" in column 2 b for each pollutant you believe to be above. If you mark column 2 a for any pollutant, you must provide the results of at least one analysis for that pollutant. Complete the analysis for each pollutant you mark "x" in column 2 b for each pollutant you believe to be above.

| 1. POLLUTANT AND CAS NO. (if available) | 2. SOURCE "X"       |                     | 3. EFFLUENT            |          |  |          | 4. LIMITS                             |                  |         | 5. INHALE EXPOSURE         |          |
|---|---------------------|---------------------|------------------------|----------|--|----------|---------------------------------------|------------------|---------|----------------------------|----------|
|   | a. BELIEVED PRESENT | b. RECEIVED ADJUNCT | 4. MAXIMUM DAILY VALUE |          | b. MAXIMUM 30 DAY VALUE (if available) |          | c. EDHC TERM AVG VALUE (if available) | 3. CONCENTRATION | B. MASS | 4. EDHC TERM AVERAGE VALUE |          |
|   |                     |                     | (1) CONCENTRATION      | (2) MASS | (1) CONCENTRATION                      | (2) MASS |                                       |                  |         | (1) CONCENTRATION          | (2) MASS |
| B. Nitrogen, Total Organic (N-0)        | X                   |                     | 0.41                   | 0.08     |  |          | mg/l                                  | lb/d             |         |                            |          |
| B. Oil and Grease                       | X                   |                     | 1.2                    | 0.33     |  |          | mg/l                                  | lb/d             |         |                            |          |
| J. Phosphorus (as P) Total (P-03-14-0)  | X                   |                     | 35.0                   | 6.22     |  |          | mg/l                                  | lb/d             |         |                            |          |
| J. Radioactivity                        |                     |                     |                        |          |  |          |                                       |                  |         |                            |          |
| (1) Alpha, Total                        | X                   |                     | <1.6                   | <0.54    |  |          | pCi/l                                 | uCi/d            |         |                            |          |
| (2) Beta, Total                         | X                   |                     | 17.3                   | 3.88     |  |          | pCi/l                                 | uCi/d            |         |                            |          |
| (3) Radium, Total                       | X                   |                     |                        |          |  |          |                                       |                  |         |                            |          |
| (4) Radium 226, Total                   | X                   |                     |                        |          |  |          |                                       |                  |         |                            |          |
| K. Sulfate (as SO4) (S-04-08-75)        | X                   |                     | 147                    | 27.3     |  |          | mg/l                                  | lb/d             |         |                            |          |
| L. Sulfide (as S)                       | X                   |                     |                        |          |  |          |                                       |                  |         |                            |          |
| M. Sulfite (as SO3) (S-03-15-12)        | X                   |                     |                        |          |  |          |                                       |                  |         |                            |          |
| N. Sulfate                              | X                   |                     | 26.2                   | 5.03     |  |          | mg/l                                  | lb/d             |         |                            |          |
| O. Aluminum, Total (Al-09-95-3)         | X                   |                     | <1                     | <0.2     |  |          | mg/l                                  | lb/d             |         |                            |          |
| P. Barium, Total (Ba-10-19-3)           | X                   |                     | <0.7                   | <0.04    |  |          | mg/l                                  | lb/d             |         |                            |          |
| Q. Boron, Total (B-10-42-8)             | X                   |                     | <5                     | <1       |  |          | mg/l                                  | lb/d             |         |                            |          |
| R. Cobalt, Total (Co-10-48-4)           | X                   |                     |                        |          |  |          |                                       |                  |         |                            |          |
| S. Iron, Total (Fe-10-83-5)             | X                   |                     | 0.08                   | 0.03     |  |          | mg/l                                  | lb/d             |         |                            |          |
| T. Magnesium, Total (Mg-10-85-4)        | X                   |                     | 39.1                   | 7.50     |  |          | mg/l                                  | lb/d             |         |                            |          |
| U. Nickel, Ni(m), Total (Ni-10-98-7)    | X                   |                     |                        |          |  |          |                                       |                  |         |                            |          |
| V. Nitrogen, Total (N-10-95-3)          | X                   |                     | 0.0086                 | 0.0017   |  |          | mg/l                                  | lb/d             |         |                            |          |
| W. Tin, Total (Sn-10-11-5)              | X                   |                     | <0.143                 | <0.0274  |  |          | mg/l                                  | lb/d             |         |                            |          |
| X. Titanium, Total (Ti-10-12-6)         | X                   |                     |                        |          |  |          |                                       |                  |         |                            |          |

**PART A - EFFLUENT CHARACTERISTICS**

1. You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

| 1. POLLUTANT                       | 2. EFFLUENT            |          |                         |          | 4. NO. OF ANALYSES | 3. UNITS (units of mass) |         | 4. IN-TAKE APPROX.         |          | 5. NOTES ANALYST |
|------------------------------------|------------------------|----------|-------------------------|----------|--------------------|--------------------------|---------|----------------------------|----------|------------------|
|                                    | a. MAXIMUM DAILY VALUE |          | b. MAXIMUM 30 DAY VALUE |          |                    | a. CONCENTRATION         | b. MASS | 4. LONG TERM AVERAGE VALUE |          |                  |
|                                    | (1) CONCENTRATION      | (2) MASS | (1) CONCENTRATION       | (2) MASS |                    |                          |         | (1) CONCENTRATION          | (2) MASS |                  |
| a. Biochemical Oxygen Demand (BOD) | 1.34                   | 45.0     |                         |          | 1                  | lb/d                     |         |                            |          |                  |
| b. Chemical Oxygen Demand (COD)    | 9.0                    | 240      |                         |          | 1                  | lb/d                     |         |                            |          |                  |
| c. Total Organic Carbon (TOC)      | 3.4                    | 140      |                         |          | 1                  | lb/d                     |         |                            |          |                  |
| d. Total Suspended Solids (TSS)    | 15                     | 540      | 15                      | 580      | 17/12              | lb/d                     | 10      | 280                        |          |                  |
| e. Ammonia (as N)                  | 0.151                  | 8.41     |                         |          | 1                  | lb/d                     |         |                            |          |                  |
| f. Flow                            | VALUE                  | 3.5      | VALUE                   | 7.0      | 1                  | MGD                      | VALUE   | 3.3                        | VALUE    |                  |
| g. Temperature (winter)            | VALUE                  | *        | VALUE                   |          | 1                  | °C                       | VALUE   |                            | VALUE    |                  |
| h. Temperature (summer)            | VALUE                  | NA       | VALUE                   |          | 1                  | °C                       | VALUE   |                            | VALUE    |                  |
| i. pH                              | MINIMUM                | 8.04     | MAXIMUM                 | 8.10     | 1                  | STANDARD UNITS           |         |                            |          |                  |

2. Mark "X" in column 2a for each pollutant you know or have reason to believe is present. Mark "X" in column 2b for each pollutant you believe to be absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. Complete one table for each outfall. See the instructions for additional details and requirements.

| 3. POLLUTANT AND CAS NO. (if available) | 2. MARK "X"         |                    | 3. EFFLUENT            |          |                         |          | 4. UNITS                   |                    | 5. IN-TAKE APPROX. |         | 6. NOTES ANALYST |
|---|---------------------|--------------------|------------------------|----------|-------------------------|----------|----------------------------|--------------------|--------------------|---------|------------------|
|   | a. BEHAVIOR PRESENT | b. BEHAVIOR ABSENT | a. MAXIMUM DAILY VALUE |          | b. MAXIMUM 30 DAY VALUE |          | c. LONG TERM AVERAGE VALUE | d. NO. OF ANALYSES | a. CONCENTRATION   | b. MASS |                  |
|   |                     |                    | (1) CONCENTRATION      | (2) MASS | (1) CONCENTRATION       | (2) MASS |                            |                    |                    |         |                  |
| a. Bromide (134059-87-9)                | X                   |                    | 0.455                  | 13.3     |                         |          |                            |                    |                    |         |                  |
| b. Chlorine, Total Residual             | X                   |                    | 0.02                   | 0.6      |                         |          |                            |                    |                    |         |                  |
| c. Color                                | X                   |                    |                        |          |                         |          |                            |                    |                    |         |                  |
| d. Fecal Coliform                       | X                   |                    |                        |          |                         |          |                            |                    |                    |         |                  |
| e. Fluoride (15204-49-8)                | X                   |                    |                        |          |                         |          |                            |                    |                    |         |                  |
| f. Nitrate, Nitrite (as N)              | X                   |                    | 8.6                    | 250      |                         |          |                            |                    |                    |         |                  |

TABLE 2. a. For each pollutant you know or have reason to believe is present. Mark "X" in column 7b for each pollutant you believe to be absent. If you mark column 2 a for any pollutant, you must provide the results of at least one analysis for that pollutant. Complete the results for the pollutants for additional details and requirements.

| 1. POLLUTANT AND CAS NO. (if known)     | 2. MARK "X"         |                    | 3. EFFLUENT            |          |                         |          | 4. LIMITS                 |          |                    | 5. INTERIM ANALYSIS |         | 6. SOURCE ANNUAL |                            |          |
|---|---------------------|--------------------|------------------------|----------|-------------------------|----------|---------------------------|----------|--------------------|---------------------|---------|------------------|----------------------------|----------|
|   | a. BELIEVED PRESENT | b. BELIEVED ABSENT | a. MAXIMUM DAILY VALUE |          | b. MAXIMUM 30 DAY VALUE |          | c. 10% TERM AVERAGE VALUE |          | d. NO. OF ANALYSES | e. CONCENTRATION    | f. MASS |                  | g. LONG TERM AVERAGE VALUE |          |
|   |                     |                    | (1) CONCENTRATION      | (2) MASS | (1) CONCENTRATION       | (2) MASS | (1) CONCENTRATION         | (2) MASS |                    |                     |         |                  | (1) CONCENTRATION          | (2) MASS |
| g. Nitrogen, Total Organic (as N)       | X                   |                    | 0.458                  | 13.4     |                         |          |                           |          | 1                  | mg/l                | lb/d    |                  |                            |          |
| h. Oil and Grease                       | X                   |                    | 1.8                    | 53       |                         |          |                           |          | 1                  | mg/l                | lb/d    |                  |                            |          |
| i. Phosphorus (as P), Total (P723-14-0) | X                   |                    | 0.40                   | 18       |                         |          |                           |          | 1                  | mg/l                | lb/d    |                  |                            |          |
| j. Radioactivity                        |                     |                    |                        |          |                         |          |                           |          |                    |                     |         |                  |                            |          |
| (1) Alpha, Total                        | X                   |                    | 86                     | 1100     |                         |          |                           |          | 1                  | pCi/l               | uCi/d   |                  |                            |          |
| (2) Beta, Total                         | X                   |                    | 139                    | 1840     |                         |          |                           |          | 1                  | pCi/l               | uCi/d   |                  |                            |          |
| (3) Radium, Total                       | X                   |                    |                        |          |                         |          |                           |          |                    |                     |         |                  |                            |          |
| (4) Radium 226, Total                   | X                   |                    |                        |          |                         |          |                           |          |                    |                     |         |                  |                            |          |
| k. Sulfate (as SO4) (14808-79-8)        | X                   |                    | 208                    | 8080     |                         |          |                           |          | 1                  | mg/l                | lb/d    |                  |                            |          |
| l. Sulfide (as S)                       | X                   |                    |                        |          |                         |          |                           |          |                    |                     |         |                  |                            |          |
| m. Sulfite (as SO3) (14863-45-3)        | X                   |                    |                        |          |                         |          |                           |          |                    |                     |         |                  |                            |          |
| n. Surfactants                          | X                   |                    | 0.03                   | 0.88     |                         |          |                           |          | 1                  | mg/l                | lb/d    |                  |                            |          |
| o. Aluminum, Total (7429-90-3)          | X                   |                    | <1.0                   | <79      |                         |          |                           |          | 1                  | mg/l                | lb/d    |                  |                            |          |
| p. Barium, Total (7440-39-3)            | X                   |                    | <0.2                   | <6       |                         |          |                           |          | 1                  | mg/l                | lb/d    |                  |                            |          |
| q. Bismuth, Total (7440-42-8)           | X                   |                    | <5                     | <146     |                         |          |                           |          | 1                  | mg/l                | lb/d    |                  |                            |          |
| r. Cobalt, Total (7440-48-4)            | X                   |                    |                        |          |                         |          |                           |          |                    |                     |         |                  |                            |          |
| s. Iron, Total (7439-89-6)              | X                   |                    | 0.24                   | 8.4      |                         |          |                           |          | 1                  | mg/l                | lb/d    |                  |                            |          |
| t. Magnesium, Total (7439-95-4)         | X                   |                    | 25                     | 730      |                         |          |                           |          | 1                  | mg/l                | lb/d    |                  |                            |          |
| u. Nickel (as Ni), Total (7439-98-7)    | X                   |                    | <0.018                 | <0.576   |                         |          |                           |          | 1                  | mg/l                | lb/d    |                  |                            |          |
| v. Silver, Total (7439-96-3)            | X                   |                    | 0.035                  | 1.02     |                         |          |                           |          | 1                  | mg/l                | lb/d    |                  |                            |          |
| w. Tin, Total (7440-31-5)               | X                   |                    | <0.143                 | <4.18    |                         |          |                           |          | 1                  | mg/l                | lb/d    |                  |                            |          |
| x. Vanadium, Total (7440-32-6)          | X                   |                    |                        |          |                         |          |                           |          |                    |                     |         |                  |                            |          |

FORM D - APPLICATION FOR DISCHARGE PERMIT - PRIMARY INDUSTRIES

DO NOT ATTEMPT TO COMPLETE THIS FORM BEFORE READING THE ACCOMPANYING INSTRUCTIONS

MISSOURI DEPARTMENT OF NATURAL RESOURCES - DIVISION OF ENVIRONMENTAL QUALITY  
P. O. Box 176  
Jefferson City, Missouri 65102

1.00 NAME OF FACILITY Callaway Power Plant

1.10 This facility is now in operation under Missouri Operating Permit Number MO-0098001

1.20 This is a new facility and was constructed under Missouri Construction Permit Number \_\_\_\_\_

This form is to be filled out in addition to Forms A & C "Application for Discharge Permit" for the Primary Industries listed below:

INDUSTRY CATEGORY

|                                   |   |
|-----------------------------------|---|
| Adhesives and sealants            | Ore mining                                  |
| Aluminum forming                  | Organic chemicals manufacturing             |
| Auto and other laundries          | Paint and ink formulation                   |
| Battery manufacturing             | Pesticides                                  |
| Coal mining                       | Petroleum refining                          |
| Coil coating                      | Pharmaceutical preparations                 |
| Copper forming                    | Photographic equipment and supplies         |
| Electric and electronic compounds | Plastic & synthetic materials manufacturing |
| Electroplating                    | Plastic processing                          |
| Explosives manufacturing          | Porcelain enameling                         |
| Foundries                         | Printing and publishing                     |
| Gum and wood chemicals            | Pump and paperboard mills                   |
| Inorganic chemicals manufacturing | Rubber processing                           |
| Iron and steel manufacturing      | Soap and detergent manufacturing            |
| Leather tanning and finishing     | Steam electric power plants                 |
| Mechanical products manufacturing | Textile mills                               |
| Nonferrous metals manufacturing   | Timber products processing                  |

FOOTNOTES FOR 1.30:

- \* These parameters have been deleted from GC/MS volatile fraction (40 CFR, Appendix D)
- \*\* This parameter is 1,3 Dichloropropylene per 40 CFR 122, Appendix D



APPLICATION FOR DISCHARGE PERMIT  
Form D - Primary Industries

Table II

NPDES #  NPDES #

| 1. POINT NAME AND CAUSALITY               | 2. WATER "C"        |                    | 3. EFFLUENT             |           | 4. POINT ANALYSIS | 5. LIMITS |                 | 6. ANALYSIS METHOD |
|---|---------------------|--------------------|-------------------------|-----------|-------------------|-----------|-----------------|--------------------|
|   | 4. DISCHARGE PERMIT | 5. RW (RUL) AB (S) | 3. MAXIMUM 30 DAY VALUE |           |                   | 6. MASS   | 7. INTERPOLATED |                    |
|   | 1. 15-DAY           | 2. 30-DAY          | 1. 15-DAY               | 2. 30-DAY |                   | 1. 15-DAY |                 |                    |
| <b>METALS, CYANIDE, AND TOTAL PHENOLS</b> |                     |                    |                         |           |                   |           |                 |                    |
| MS, Arsenic, Total (17400.148)            | X                   |                    | <0.001                  | <0.002    | 1                 | mg/l      | 0.05            | 0.05               |
| MS, Arsenic, Total (17400.925)            | X                   |                    | <0.004                  | <0.003    | 1                 | mg/l      | 0.05            | 0.05               |
| MS, Barium, Total (17400.117)             | X                   |                    | <0.0006                 | <0.0005   | 1                 | mg/l      | 0.05            | 0.05               |
| MS, Cadmium, Total (17400.119)            | X                   |                    | <0.005                  | <0.004    | 1                 | mg/l      | 0.05            | 0.05               |
| MS, Chromium, Total (17400.117)           | X                   |                    | <0.005                  | <0.004    | 1                 | mg/l      | 0.05            | 0.05               |
| MS, Copper, Total (17400.119)             | X                   |                    | <0.2                    | <0.2      | 1                 | mg/l      | 0.05            | 0.05               |
| MS, Lead, Total (17400.119)               | X                   |                    | 0.20                    | 0.16      | 2                 | mg/l      | 0.16            | 0.12               |
| MS, Manganese, Total (17400.119)          | X                   |                    | <0.0001                 | <0.0006   | 1                 | mg/l      | 0.05            | 0.05               |
| MS, Nickel, Total (17400.119)             | X                   |                    | 0.10                    | 0.20      | 1                 | mg/l      | 0.05            | 0.05               |
| MS, Selenium, Total (17400.119)           | X                   |                    | <5                      | <4        | 1                 | mg/l      | 0.05            | 0.05               |
| MS, Silver, Total (17400.119)             | X                   |                    | <0.001                  | <0.002    | 1                 | mg/l      | 0.05            | 0.05               |
| MS, Zinc, Total (17400.119)               | X                   |                    | <0.007                  | <0.005    | 1                 | mg/l      | 0.05            | 0.05               |
| MS, Zinc, Total (17400.119)               | X                   |                    | 0.07                    | 0.05      | 1                 | mg/l      | 0.05            | 0.05               |
| MS, Cyanide, Total (17400.119)            | X                   |                    | 0.005                   | 0.0050    | 1                 | mg/l      | 0.05            | 0.05               |
| MS, Chloride, Total (17400.119)           | X                   |                    | 0.001                   | 0.0016    | 1                 | mg/l      | 0.05            | 0.05               |
| <b>DIOXIN</b>                             |                     |                    |                         |           |                   |           |                 |                    |
| MS, Dioxin, Total (17400.119)             | X                   |                    |                         |           |                   |           |                 |                    |

ENSURE RESULTS

8

| 1. PRIORITY AND C.S. NO. of Contaminant    |   |  | 2. NAME "X"                    |                            | 3. EFFLUENT                          |                               |                            |                     | 4. LIMITS             |               | 5. DYNAMIC COMPLIANCE |               |      |               |
|--|---|--|--------------------------------|----------------------------|--------------------------------------|-------------------------------|----------------------------|---------------------|-----------------------|---------------|-----------------------|---------------|------|---------------|
|  |   |  | IS THIS CONTAMINANT REGULATED? | IS THIS CONTAMINANT A PCB? | IS THIS CONTAMINANT A TRACE ORGANIC? | CLASSIFICATION OF CONTAMINANT | CLASSIFICATION OF ANALYSIS | MAXIMUM DAILY VALUE | MONTHLY AVERAGE VALUE | CONCENTRATION | UNIT                  | CONCENTRATION | UNIT | CONCENTRATION |
| <b>GC/MS REACTION - VOLATILE COMPOUNDS</b> |   |  |                                |                            |                                      |                               |                            |                     |                       |               |                       |               |      |               |
| 01. Benzene (0100-84-6)                    | X |  | < 50                           | < 0.004                    |                                      | < 0.004                       |                            |                     |                       |               |                       |               |      |               |
| 02. Toluene (0100-91-2)                    | X |  | < 50                           | < 0.008                    |                                      | < 0.008                       |                            |                     |                       |               |                       |               |      |               |
| 03. Xylenes (0100-93-2)                    | X |  | < 5                            | < 0.004                    |                                      | < 0.004                       |                            |                     |                       |               |                       |               |      |               |
| 04. Ethylbenzene (0100-95-7)               | X |  |                                |                            |                                      |                               |                            |                     |                       |               |                       |               |      |               |
| 05. Methyl Ethyl Ketone (0100-78-5)        | X |  | < 5                            | < 0.004                    |                                      | < 0.004                       |                            |                     |                       |               |                       |               |      |               |
| 06. Methyl Isobutyl Ketone (0100-75-8)     | X |  | < 5                            | < 0.004                    |                                      | < 0.004                       |                            |                     |                       |               |                       |               |      |               |
| 07. Methyl Propyl Ketone (0100-66-7)       | X |  | < 10                           | < 0.007                    |                                      | < 0.007                       |                            |                     |                       |               |                       |               |      |               |
| 08. Diethyl Ether (0100-75-4)              | X |  | < 10                           | < 0.007                    |                                      | < 0.007                       |                            |                     |                       |               |                       |               |      |               |
| 09. Diethylamine (0100-75-4)               | X |  | < 5                            | < 0.004                    |                                      | < 0.004                       |                            |                     |                       |               |                       |               |      |               |
| 10. Triethylamine (0100-75-4)              | X |  | < 5                            | < 0.004                    |                                      | < 0.004                       |                            |                     |                       |               |                       |               |      |               |
| 11. Dichloroethane (0100-71-8)             | X |  | < 5                            | < 0.004                    |                                      | < 0.004                       |                            |                     |                       |               |                       |               |      |               |
| 12. Chloroethane (0100-71-8)               | X |  | < 5                            | < 0.004                    |                                      | < 0.004                       |                            |                     |                       |               |                       |               |      |               |
| 13. Dichloromethane (0100-93-2)            | X |  | < 5                            | < 0.004                    |                                      | < 0.004                       |                            |                     |                       |               |                       |               |      |               |
| 14. Chloroform (0100-77-4)                 | X |  | < 5                            | < 0.004                    |                                      | < 0.004                       |                            |                     |                       |               |                       |               |      |               |
| 15. Bromoethane (0100-74-9)                | X |  | < 5                            | < 0.004                    |                                      | < 0.004                       |                            |                     |                       |               |                       |               |      |               |
| 16. Bromoform (0100-75-4)                  | X |  | < 5                            | < 0.004                    |                                      | < 0.004                       |                            |                     |                       |               |                       |               |      |               |
| 17. Iodoethane (0100-71-8)                 | X |  | < 5                            | < 0.004                    |                                      | < 0.004                       |                            |                     |                       |               |                       |               |      |               |
| 18. Iodobenzene (0100-75-4)                | X |  | < 5                            | < 0.004                    |                                      | < 0.004                       |                            |                     |                       |               |                       |               |      |               |
| 19. Acetylene (0100-74-9)                  | X |  | < 10                           | < 0.007                    |                                      | < 0.007                       |                            |                     |                       |               |                       |               |      |               |
| 20. Ethane (0100-74-9)                     | X |  | < 10                           | < 0.007                    |                                      | < 0.007                       |                            |                     |                       |               |                       |               |      |               |



| 1. FOR IDENT AND<br>C/O NO.<br>ANALYST        | 2. NAME "Y"                 |                        | 3. BASELINE                 |                             |                             |                             | 4. NO OF<br>ANALYSIS       |   | 5. LIMITS |                            | 6. INITIAL VALUE           |          |
|---|-----------------------------|------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|----------------------------|---|-----------|----------------------------|----------------------------|----------|
|   | A. HISTORIC<br>BY<br>METHOD | B. NO<br>EXHIBIT<br>NO | A. MAXIMUM DAILY VALUE      |                             | B. MAXIMUM 7 DAY VALUE      |                             | C. EDGING THERM ASYC VALUE |   | D. ASSAY  | E. TYPIC THERM ASYNC VALUE | F. TYPIC THERM ASYNC VALUE | G. ASSAY |
|   |                             |                        | EDGING<br>THERM ASYNC VALUE | EDGING<br>THERM ASYNC VALUE | EDGING<br>THERM ASYNC VALUE | EDGING<br>THERM ASYNC VALUE |                            |   |           |                            |                            |          |
| <b>GUMS FRACTION - BASE/NEUTRAL COMPOUNDS</b> |                             |                        |                             |                             |                             |                             |                            |   |           |                            |                            |          |
| 176. Acrylonitrile/Styrene (105-117-1)        | X                           | X                      | X                           | X                           | X                           | X                           | X                          | X | X         | X                          | X                          | X        |
| 177. Acrylonitrile/Butadiene (105-117-1)      | X                           | X                      | X                           | X                           | X                           | X                           | X                          | X | X         | X                          | X                          | X        |
| 178. Acrylonitrile/Butadiene (105-117-1)      | X                           | X                      | X                           | X                           | X                           | X                           | X                          | X | X         | X                          | X                          | X        |
| 179. Acrylonitrile/Butadiene (105-117-1)      | X                           | X                      | X                           | X                           | X                           | X                           | X                          | X | X         | X                          | X                          | X        |
| 180. Acrylonitrile/Butadiene (105-117-1)      | X                           | X                      | X                           | X                           | X                           | X                           | X                          | X | X         | X                          | X                          | X        |
| 181. Acrylonitrile/Butadiene (105-117-1)      | X                           | X                      | X                           | X                           | X                           | X                           | X                          | X | X         | X                          | X                          | X        |
| 182. Acrylonitrile/Butadiene (105-117-1)      | X                           | X                      | X                           | X                           | X                           | X                           | X                          | X | X         | X                          | X                          | X        |
| 183. Acrylonitrile/Butadiene (105-117-1)      | X                           | X                      | X                           | X                           | X                           | X                           | X                          | X | X         | X                          | X                          | X        |
| 184. Acrylonitrile/Butadiene (105-117-1)      | X                           | X                      | X                           | X                           | X                           | X                           | X                          | X | X         | X                          | X                          | X        |
| 185. Acrylonitrile/Butadiene (105-117-1)      | X                           | X                      | X                           | X                           | X                           | X                           | X                          | X | X         | X                          | X                          | X        |
| 186. Acrylonitrile/Butadiene (105-117-1)      | X                           | X                      | X                           | X                           | X                           | X                           | X                          | X | X         | X                          | X                          | X        |
| 187. Acrylonitrile/Butadiene (105-117-1)      | X                           | X                      | X                           | X                           | X                           | X                           | X                          | X | X         | X                          | X                          | X        |
| 188. Acrylonitrile/Butadiene (105-117-1)      | X                           | X                      | X                           | X                           | X                           | X                           | X                          | X | X         | X                          | X                          | X        |
| 189. Acrylonitrile/Butadiene (105-117-1)      | X                           | X                      | X                           | X                           | X                           | X                           | X                          | X | X         | X                          | X                          | X        |
| 190. Acrylonitrile/Butadiene (105-117-1)      | X                           | X                      | X                           | X                           | X                           | X                           | X                          | X | X         | X                          | X                          | X        |

| 1. POSITIVE AND CAS NO.                             | 2. NAME "X"     |              |              | 3. EFFICACY            |          |                            |          | 4. NO OF ANALYSIS | 5. DAYS | 6. INITIAL               |           |
|---|-----------------|--------------|--------------|------------------------|----------|----------------------------|----------|-------------------|---------|--------------------------|-----------|
|   | a. USING (FORM) | b. IN (FORM) | c. IN (FORM) | 7. AVERAGE DAILY VALUE |          | 8. LONG TERM AVERAGE VALUE |          |                   |         | 9. TIME PER AVERAGE UNIT | 10. BASIS |
|   |                 |              |              | ED                     | ED BASIS | ED                         | ED BASIS |                   |         |                          |           |
| GCIMS FRACTION - BASE NEUTRAL COMPOUNDS (continued) |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 226. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 236. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 246. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 256. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 266. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 276. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 286. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 296. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 306. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 316. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 326. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 336. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 346. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 356. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 366. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 376. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 386. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 396. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 406. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 416. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 426. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 436. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 446. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 456. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 466. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 476. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 486. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 496. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |
| 506. 1,4-Dioxane                                    |                 |              |              |                        |          |                            |          |                   |         |                          |           |



| 1. PESTICIDE AND<br>CAUSE                      | 2. NUMBER |           |            |           | 3. EFFLUENT |          |             |          | 4. UNIT     |          |             | 5. DATE<br>MONTH |             |             |
|--|-----------|-----------|------------|-----------|-------------|----------|-------------|----------|-------------|----------|-------------|------------------|-------------|-------------|
|  | a. STATE  |           | b. NO.     |           | c. ANALYSIS |          | d. CLASS    |          | e. ANALYSIS |          | f. CLASS    |                  | g. ANALYSIS |             |
|  | 1. STATE  | 2. COUNTY | 3. FURNACE | 4. WATERS | 1. ANALYSIS | 2. CLASS | 1. ANALYSIS | 2. CLASS | 1. ANALYSIS | 2. CLASS | 1. ANALYSIS |                  | 2. CLASS    | 1. ANALYSIS |
|  | (01-02)   | (01-03)   | (01-04)    | (01-05)   | (01-06)     | (01-07)  | (01-08)     | (01-09)  | (01-10)     | (01-11)  | (01-12)     |                  | (01-13)     | (01-14)     |
| <b>GCMIS FRACTION - PESTICIDES (continued)</b> |           |           |            |           |             |          |             |          |             |          |             |                  |             |             |
| 17P. Insecticides Toxicity<br>11024-57-B       |           |           |            |           |             |          |             |          |             |          |             |                  |             |             |
| 18P. Pesticides<br>11024-57-B                  |           |           |            |           |             |          |             |          |             |          |             |                  |             |             |
| 19P. Pesticides<br>11024-57-B                  |           |           |            |           |             |          |             |          |             |          |             |                  |             |             |
| 20P. Pesticides<br>11024-57-B                  |           |           |            |           |             |          |             |          |             |          |             |                  |             |             |
| 21P. Pesticides<br>11024-57-B                  |           |           |            |           |             |          |             |          |             |          |             |                  |             |             |
| 22P. Pesticides<br>11024-57-B                  |           |           |            |           |             |          |             |          |             |          |             |                  |             |             |
| 23P. Pesticides<br>11024-57-B                  |           |           |            |           |             |          |             |          |             |          |             |                  |             |             |
| 24P. Pesticides<br>11024-57-B                  |           |           |            |           |             |          |             |          |             |          |             |                  |             |             |
| 25P. Pesticides<br>11024-57-B                  |           |           |            |           |             |          |             |          |             |          |             |                  |             |             |
| 26P. Pesticides<br>11024-57-B                  |           |           |            |           |             |          |             |          |             |          |             |                  |             |             |
| 27P. Pesticides<br>11024-57-B                  |           |           |            |           |             |          |             |          |             |          |             |                  |             |             |

APPLICATION FOR DISCHARGE PERMIT

Form D - Primary

NOXIS #  CONTROL #

NOTE: If you are a primary polluter and this table contains primary pollutants, refer to Table A in the instructions to determine which of the C/PAS values you must list. Check "X" in column 2 for all such C/PAS locations that wish to pre-facility and for all base loads, upsets, and major peaks. Check "Y" in column 2 for each pre-facility peak listed in the permit. If you must enter values in column 2 or 3 for any pollutant, you must provide the units of at least one analysis for that pollutant. Note that there are seven pages to this form please review each carefully. Complete one table for each pollutant.

| 1. POLLUTANT AND CAS NO.           | 2. SOURCE "X"               |                        | 3. EFFLUENT            |              | 4. NO. OF ANALYSES | 5. LIMITS |                            | 6. INITIAL CONCENTRATIONS |                        |         |
|------------------------------------|-----------------------------|------------------------|------------------------|--------------|--------------------|-----------|----------------------------|---------------------------|------------------------|---------|
|                                    | A. EXISTING (P/L/S) (P/L/S) | B. NEW (P/L/S) (P/L/S) | A. MAXIMUM DAILY VALUE |              |                    | C. MASS   | C. LONG TERM AVERAGE VALUE |                           | D. TYPICAL DAILY VALUE | E. MASS |
|                                    |                             |                        | (P/L/S) CONCENTRATION  | (P/L/S) MASS |                    |           | (P/L/S) CONCENTRATION      | (P/L/S) MASS              |                        |         |
| METALS, CYANIDE, AND TOTAL PHENOLS |                             |                        |                        |              |                    |           |                            |                           |                        |         |
| 101. Arsenic, Total (1744317)      |                             | X                      |                        |              |                    |           |                            |                           |                        |         |
| 102. Barium, Total (1744317)       |                             | X                      |                        |              |                    |           |                            |                           |                        |         |
| 103. Cadmium, Total (1744317)      |                             | X                      |                        |              |                    |           |                            |                           |                        |         |
| 104. Chromium, Total (1744317)     |                             | X                      |                        |              |                    |           |                            |                           |                        |         |
| 105. Copper, Total (1744317)       |                             | X                      |                        |              |                    |           |                            |                           |                        |         |
| 106. Lead, Total (1744317)         |                             | X                      |                        |              |                    |           |                            |                           |                        |         |
| 107. Manganese, Total (1744317)    |                             | X                      |                        |              |                    |           |                            |                           |                        |         |
| 108. Nickel, Total (1744317)       |                             | X                      |                        |              |                    |           |                            |                           |                        |         |
| 109. Selenium, Total (1744317)     |                             | X                      |                        |              |                    |           |                            |                           |                        |         |
| 110. Silver, Total (1744317)       |                             | X                      |                        |              |                    |           |                            |                           |                        |         |
| 111. Vanadium, Total (1744317)     |                             | X                      |                        |              |                    |           |                            |                           |                        |         |
| 112. Zinc, Total (1744317)         |                             | X                      |                        |              |                    |           |                            |                           |                        |         |
| 113. Cyanide, Total (1744317)      |                             | X                      |                        |              |                    |           |                            |                           |                        |         |
| 114. Phenols, Total (1744317)      |                             | X                      |                        |              |                    |           |                            |                           |                        |         |
| DIOXIN                             |                             |                        |                        |              |                    |           |                            |                           |                        |         |
| 115. Dioxin (1744317)              |                             | X                      |                        |              |                    |           |                            |                           |                        |         |

DISCHARGE RESULTS



| 1. POLYMER AND<br>ELEM. ANAL.               | 2. MARK "Y"  |              |              | 3. EFFLUENT            |               |                    | 4. TONGUE               |               |                    | 5. TONGUE |               |                        | 6. TONGUE |               |                    |
|---|--------------|--------------|--------------|------------------------|---------------|--------------------|-------------------------|---------------|--------------------|-----------|---------------|------------------------|-----------|---------------|--------------------|
|   | A. H. (1000) | B. W. (1000) | C. M. (1000) | A. AVERAGE DAILY VALUE |               | B. NO. OF ANALYSES | C. LONG TERM AVG. VALUE |               | D. NO. OF ANALYSES | E. TONGUE |               | F. AVERAGE DAILY VALUE | G. TONGUE |               | H. NO. OF ANALYSES |
|   |              |              |              | ON MASS                | CONCENTRATION |                    | ON MASS                 | CONCENTRATION |                    | ON MASS   | CONCENTRATION |                        | ON MASS   | CONCENTRATION |                    |
| <b>GC/MS FRACTION - VOLATILE COMPOUNDS</b>  |              |              |              |                        |               |                    |                         |               |                    |           |               |                        |           |               |                    |
| PC, Acrylonitrile<br>(107-10-0)             |              |              | X            |                        |               |                    |                         |               |                    |           |               |                        |           |               |                    |
| PC, Acrylonitrile<br>(107-10-0)             |              |              | X            |                        |               |                    |                         |               |                    |           |               |                        |           |               |                    |
| PC, Benzene<br>(71-43-2)                    |              |              | X            |                        |               |                    |                         |               |                    |           |               |                        |           |               |                    |
| PC, Bis(2-Methylphenyl) Ether<br>(133-86-3) |              |              | X            |                        |               |                    |                         |               |                    |           |               |                        |           |               |                    |
| PC, Benzene<br>(71-43-2)                    |              |              | X            |                        |               |                    |                         |               |                    |           |               |                        |           |               |                    |
| PC, Carbon Tetrachloride<br>(56-23-5)       |              |              | X            |                        |               |                    |                         |               |                    |           |               |                        |           |               |                    |
| PC, Chloroform<br>(108-90-7)                |              |              | X            |                        |               |                    |                         |               |                    |           |               |                        |           |               |                    |
| PC, Dichlorodifluoromethane<br>(124-48-1)   |              |              | X            |                        |               |                    |                         |               |                    |           |               |                        |           |               |                    |
| PC, Chloroethane<br>(75-43-5)               |              |              | X            |                        |               |                    |                         |               |                    |           |               |                        |           |               |                    |
| PC, 2,3-Dichlorobutane<br>(106-11-3)        |              |              | X            |                        |               |                    |                         |               |                    |           |               |                        |           |               |                    |
| PC, Chloroform<br>(108-90-7)                |              |              | X            |                        |               |                    |                         |               |                    |           |               |                        |           |               |                    |
| PC, Dichlorodifluoromethane<br>(124-48-1)   |              |              | X            |                        |               |                    |                         |               |                    |           |               |                        |           |               |                    |
| PC, Chloroethane<br>(75-43-5)               |              |              | X            |                        |               |                    |                         |               |                    |           |               |                        |           |               |                    |
| PC, Dichlorodifluoromethane<br>(124-48-1)   |              |              | X            |                        |               |                    |                         |               |                    |           |               |                        |           |               |                    |
| PC, Chloroethane<br>(75-43-5)               |              |              | X            |                        |               |                    |                         |               |                    |           |               |                        |           |               |                    |
| PC, 1,2-Dichloroethane<br>(107-06-2)        |              |              | X            |                        |               |                    |                         |               |                    |           |               |                        |           |               |                    |
| PC, 1,1,1-Trichloroethane<br>(75-12-6)      |              |              | X            |                        |               |                    |                         |               |                    |           |               |                        |           |               |                    |
| PC, 1,1,2-Dichloroethane<br>(106-67-0)      |              |              | X            |                        |               |                    |                         |               |                    |           |               |                        |           |               |                    |
| PC, 1,1,1-Trichloroethane<br>(75-12-6)      |              |              | X            |                        |               |                    |                         |               |                    |           |               |                        |           |               |                    |
| PC, 1,1,2-Dichloroethane<br>(106-67-0)      |              |              | X            |                        |               |                    |                         |               |                    |           |               |                        |           |               |                    |
| PC, 1,1,1-Trichloroethane<br>(75-12-6)      |              |              | X            |                        |               |                    |                         |               |                    |           |               |                        |           |               |                    |
| PC, 1,1,2-Dichloroethane<br>(106-67-0)      |              |              | X            |                        |               |                    |                         |               |                    |           |               |                        |           |               |                    |
| PC, 1,1,1-Trichloroethane<br>(75-12-6)      |              |              | X            |                        |               |                    |                         |               |                    |           |               |                        |           |               |                    |
| PC, 1,1,2-Dichloroethane<br>(106-67-0)      |              |              | X            |                        |               |                    |                         |               |                    |           |               |                        |           |               |                    |



| 4. PESTICIDE AND CAS NO.                      | 2. DATE '92          |                   |                   | 3. STATEMENT           |          |                        | 4. LIMITS |         | 5. INTERPRETATION |          | 6. NO. OF ANALYSES | 7. NO. OF ANALYSES |
|---|----------------------|-------------------|-------------------|------------------------|----------|------------------------|-----------|---------|-------------------|----------|--------------------|--------------------|
|   | a. DURING (12/08/91) | b. NO. (18/15/92) | c. NO. (20/15/92) | 8. MAXIMUM DAILY VALUE |          | 9. LONG TERM AVG VALUE |           | 10. MMS | 11. USE VALUE     |          |                    |                    |
|   |                      |                   |                   | DD                     | GP BASIS | DD                     | GP BASIS  |         | DD                | GP BASIS |                    |                    |
| <b>GCMS FRACTION - BASE/NEUTRAL COMPOUNDS</b> |                      |                   |                   |                        |          |                        |           |         |                   |          |                    |                    |
| 16. Acetophenone (105-17-9)                   | X                    |                   |                   |                        |          |                        |           |         |                   |          |                    | X                  |
| 18. Acetophenone (105-17-9)                   | X                    |                   |                   |                        |          |                        |           |         |                   |          |                    | X                  |
| 19. Acetophenone (105-17-9)                   | X                    |                   |                   |                        |          |                        |           |         |                   |          |                    | X                  |
| 20. Acetophenone (105-17-9)                   | X                    |                   |                   |                        |          |                        |           |         |                   |          |                    | X                  |
| 21. Acetophenone (105-17-9)                   | X                    |                   |                   |                        |          |                        |           |         |                   |          |                    | X                  |
| 22. Acetophenone (105-17-9)                   | X                    |                   |                   |                        |          |                        |           |         |                   |          |                    | X                  |
| 23. Acetophenone (105-17-9)                   | X                    |                   |                   |                        |          |                        |           |         |                   |          |                    | X                  |
| 24. Acetophenone (105-17-9)                   | X                    |                   |                   |                        |          |                        |           |         |                   |          |                    | X                  |
| 25. Acetophenone (105-17-9)                   | X                    |                   |                   |                        |          |                        |           |         |                   |          |                    | X                  |
| 26. Acetophenone (105-17-9)                   | X                    |                   |                   |                        |          |                        |           |         |                   |          |                    | X                  |
| 27. Acetophenone (105-17-9)                   | X                    |                   |                   |                        |          |                        |           |         |                   |          |                    | X                  |
| 28. Acetophenone (105-17-9)                   | X                    |                   |                   |                        |          |                        |           |         |                   |          |                    | X                  |
| 29. Acetophenone (105-17-9)                   | X                    |                   |                   |                        |          |                        |           |         |                   |          |                    | X                  |
| 30. Acetophenone (105-17-9)                   | X                    |                   |                   |                        |          |                        |           |         |                   |          |                    | X                  |
| 31. Acetophenone (105-17-9)                   | X                    |                   |                   |                        |          |                        |           |         |                   |          |                    | X                  |
| 32. Acetophenone (105-17-9)                   | X                    |                   |                   |                        |          |                        |           |         |                   |          |                    | X                  |
| 33. Acetophenone (105-17-9)                   | X                    |                   |                   |                        |          |                        |           |         |                   |          |                    | X                  |
| 34. Acetophenone (105-17-9)                   | X                    |                   |                   |                        |          |                        |           |         |                   |          |                    | X                  |
| 35. Acetophenone (105-17-9)                   | X                    |                   |                   |                        |          |                        |           |         |                   |          |                    | X                  |
| 36. Acetophenone (105-17-9)                   | X                    |                   |                   |                        |          |                        |           |         |                   |          |                    | X                  |
| 37. Acetophenone (105-17-9)                   | X                    |                   |                   |                        |          |                        |           |         |                   |          |                    | X                  |
| 38. Acetophenone (105-17-9)                   | X                    |                   |                   |                        |          |                        |           |         |                   |          |                    | X                  |
| 39. Acetophenone (105-17-9)                   | X                    |                   |                   |                        |          |                        |           |         |                   |          |                    | X                  |
| 40. Acetophenone (105-17-9)                   | X                    |                   |                   |                        |          |                        |           |         |                   |          |                    | X                  |





| 1. PESTICIDE AND CAS NO.                | 2. MARK "P"      |                  | 3. TITLUM              |                | 4. NO OF ANALYSIS       |                | 5. LIMITS  |                          | 6. WATER ANALYSIS |  |
|---|------------------|------------------|------------------------|----------------|-------------------------|----------------|------------|--------------------------|-------------------|--|
|   | 4. DURING (DATE) | 5. NO (ANALYSIS) | 8. MAXIMUM DAILY VALUE |                | 9. IONIC JERABING VALUE |                | 10. LIMITS | 11. IONIC JERABING VALUE |                   |  |
|   |                  |                  | (I) CONCENTRATION      | (II) PER BASIS | (I) CONCENTRATION       | (II) PER BASIS |            | (I) CONCENTRATION        | (II) PER BASIS    |  |
| GC/MS FRACTION - PESTICIDES (continued) |                  |                  |                        |                |                         |                |            |                          |                   |  |
| 100-1000001-1000001                     |                  | X                |                        |                |                         |                |            |                          |                   |  |
| 100-1000001-1000002                     |                  | X                |                        |                |                         |                |            |                          |                   |  |
| 100-1000001-1000003                     |                  | X                |                        |                |                         |                |            |                          |                   |  |
| 100-1000001-1000004                     |                  | X                |                        |                |                         |                |            |                          |                   |  |
| 100-1000001-1000005                     |                  | X                |                        |                |                         |                |            |                          |                   |  |
| 100-1000001-1000006                     |                  | X                |                        |                |                         |                |            |                          |                   |  |
| 100-1000001-1000007                     |                  | X                |                        |                |                         |                |            |                          |                   |  |
| 100-1000001-1000008                     |                  | X                |                        |                |                         |                |            |                          |                   |  |
| 100-1000001-1000009                     |                  | X                |                        |                |                         |                |            |                          |                   |  |
| 100-1000001-1000010                     |                  | X                |                        |                |                         |                |            |                          |                   |  |
| 100-1000001-1000011                     |                  | X                |                        |                |                         |                |            |                          |                   |  |
| 100-1000001-1000012                     |                  | X                |                        |                |                         |                |            |                          |                   |  |

# APPLICATION FOR DISCHARGE PERMIT Form D - Primary Industries

Table II

|                       |                  |
|-----------------------|------------------|
| WFDIS #<br>A07-000001 | OUTFALL #<br>003 |
|-----------------------|------------------|

1. All effluent quality standards are based on the maximum daily average (MDA) for the effluent. In column 1, for each effluent, the maximum daily average (MDA) for each constituent is given. In column 2, for each constituent, the maximum daily average (MDA) for each constituent is given. In column 3, for each constituent, the maximum daily average (MDA) for each constituent is given. In column 4, for each constituent, the maximum daily average (MDA) for each constituent is given. In column 5, for each constituent, the maximum daily average (MDA) for each constituent is given. In column 6, for each constituent, the maximum daily average (MDA) for each constituent is given. In column 7, for each constituent, the maximum daily average (MDA) for each constituent is given. In column 8, for each constituent, the maximum daily average (MDA) for each constituent is given. In column 9, for each constituent, the maximum daily average (MDA) for each constituent is given. In column 10, for each constituent, the maximum daily average (MDA) for each constituent is given.

| 1. POLLUTANT AND CAS NO.       | 2. STATE "C"   |  | 3. FEDERAL  |   | 4. FEDERAL  |   | 5. FEDERAL  |   | 6. FEDERAL  |   | 7. STATE "C" AND FEDERAL |   |  |  |  |  |  |  |  |  |  |  |  |  |
|--------------------------------|--|--|---|---|---|---|---|---|---|---|--------------------------|---|--|--|--|--|--|--|--|--|--|--|--|--|
|                                | 8. (A) (B) (C) (D) (E) (F) (G) (H) (I) (J) (K) (L) (M) (N) (O) (P) (Q) (R) (S) (T) (U) (V) (W) (X) (Y) (Z) | 9. (A) (B) (C) (D) (E) (F) (G) (H) (I) (J) (K) (L) (M) (N) (O) (P) (Q) (R) (S) (T) (U) (V) (W) (X) (Y) (Z) | 10. (A) (B) (C) (D) (E) (F) (G) (H) (I) (J) (K) (L) (M) (N) (O) (P) (Q) (R) (S) (T) (U) (V) (W) (X) (Y) (Z) | 11. (A) (B) (C) (D) (E) (F) (G) (H) (I) (J) (K) (L) (M) (N) (O) (P) (Q) (R) (S) (T) (U) (V) (W) (X) (Y) (Z) | 12. (A) (B) (C) (D) (E) (F) (G) (H) (I) (J) (K) (L) (M) (N) (O) (P) (Q) (R) (S) (T) (U) (V) (W) (X) (Y) (Z) | 13. (A) (B) (C) (D) (E) (F) (G) (H) (I) (J) (K) (L) (M) (N) (O) (P) (Q) (R) (S) (T) (U) (V) (W) (X) (Y) (Z) | 14. (A) (B) (C) (D) (E) (F) (G) (H) (I) (J) (K) (L) (M) (N) (O) (P) (Q) (R) (S) (T) (U) (V) (W) (X) (Y) (Z) | 15. (A) (B) (C) (D) (E) (F) (G) (H) (I) (J) (K) (L) (M) (N) (O) (P) (Q) (R) (S) (T) (U) (V) (W) (X) (Y) (Z) | 16. (A) (B) (C) (D) (E) (F) (G) (H) (I) (J) (K) (L) (M) (N) (O) (P) (Q) (R) (S) (T) (U) (V) (W) (X) (Y) (Z) | 17. (A) (B) (C) (D) (E) (F) (G) (H) (I) (J) (K) (L) (M) (N) (O) (P) (Q) (R) (S) (T) (U) (V) (W) (X) (Y) (Z) |                          | 18. (A) (B) (C) (D) (E) (F) (G) (H) (I) (J) (K) (L) (M) (N) (O) (P) (Q) (R) (S) (T) (U) (V) (W) (X) (Y) (Z) |  |  |  |  |  |  |  |  |  |  |  |  |
| 199. Ammonia Total (17840308)  | X  |  |   |   |   |   |   |   |   |   |                          |   |  |  |  |  |  |  |  |  |  |  |  |  |
| 200. Ammonia Total (17840308)  | X  |  |   |   |   |   |   |   |   |   |                          |   |  |  |  |  |  |  |  |  |  |  |  |  |
| 201. Ammonia Total (17840308)  | X  |  |   |   |   |   |   |   |   |   |                          |   |  |  |  |  |  |  |  |  |  |  |  |  |
| 202. Carbon Total (17840308)   | X  |  |   |   |   |   |   |   |   |   |                          |   |  |  |  |  |  |  |  |  |  |  |  |  |
| 203. Chlorine Total (17840308) | X  |  |   |   |   |   |   |   |   |   |                          |   |  |  |  |  |  |  |  |  |  |  |  |  |
| 204. Copper Total (17840308)   | X  |  |   |   |   |   |   |   |   |   |                          |   |  |  |  |  |  |  |  |  |  |  |  |  |
| 205. Lead Total (17840308)     | X  |  |   |   |   |   |   |   |   |   |                          |   |  |  |  |  |  |  |  |  |  |  |  |  |
| 206. Nickel Total (17840308)   | X  |  |   |   |   |   |   |   |   |   |                          |   |  |  |  |  |  |  |  |  |  |  |  |  |
| 207. Selenium Total (17840308) | X  |  |   |   |   |   |   |   |   |   |                          |   |  |  |  |  |  |  |  |  |  |  |  |  |
| 208. Silver Total (17840308)   | X  |  |   |   |   |   |   |   |   |   |                          |   |  |  |  |  |  |  |  |  |  |  |  |  |
| 209. Sulfate Total (17840308)  | X  |  |   |   |   |   |   |   |   |   |                          |   |  |  |  |  |  |  |  |  |  |  |  |  |
| 210. Zinc Total (17840308)     | X  |  |   |   |   |   |   |   |   |   |                          |   |  |  |  |  |  |  |  |  |  |  |  |  |
| 211. Cyanide Total (17840308)  | X  |  |   |   |   |   |   |   |   |   |                          |   |  |  |  |  |  |  |  |  |  |  |  |  |
| 212. Phenol Total (17840308)   | X  |  |   |   |   |   |   |   |   |   |                          |   |  |  |  |  |  |  |  |  |  |  |  |  |
| 213. Boron Total (17840308)    | X  |  |   |   |   |   |   |   |   |   |                          |   |  |  |  |  |  |  |  |  |  |  |  |  |
| 214. Nickel Total (17840308)   | X  |  |   |   |   |   |   |   |   |   |                          |   |  |  |  |  |  |  |  |  |  |  |  |  |
| 215. Nickel Total (17840308)   | X  |  |   |   |   |   |   |   |   |   |                          |   |  |  |  |  |  |  |  |  |  |  |  |  |
| 216. Nickel Total (17840308)   | X  |  |   |   |   |   |   |   |   |   |                          |   |  |  |  |  |  |  |  |  |  |  |  |  |

DIOLIN

2,2,4,4-Tetrahydro-3H-pyridin-3-one

Chemical Abstracts: 1404-29-5











| 1. PESTICIDE INFO<br>CAS NO.<br>Trade Name                | 2. MARK "X"              |                   | 3. HEIGHT                             |          |                                       |          | 4. UNITS        |          | 5. INFAKE VALUE |          |
|---|--------------------------|-------------------|---------------------------------------|----------|---------------------------------------|----------|-----------------|----------|-----------------|----------|
|   | A. ST. (ft.)<br>(170000) | B. IN<br>(180000) | K. MAXIMUM DAILY VALUE<br>of analysis |          | L. LONG TERM AVG VALUE<br>of analysis |          | 4. CONTINUATION | 5. BASIS | 6. CONTINUATION | 7. BASIS |
|   |                          |                   | ED                                    | ED BASIS | ED                                    | ED BASIS |                 |          |                 |          |
| <b>GCMS FRACTION - BASE/NEUTRAL COMPOUNDS (continued)</b> |                          |                   |                                       |          |                                       |          |                 |          |                 |          |
| 438 925000<br>Methylparathion (925000)                    | X                        | X                 |                                       |          |                                       |          |                 |          |                 |          |
| 438 925000<br>Methylparathion (925000)                    | X                        | X                 |                                       |          |                                       |          |                 |          |                 |          |
| 438 925000<br>Methylparathion (925000)                    | X                        | X                 |                                       |          |                                       |          |                 |          |                 |          |
| 438 925000<br>Methylparathion (925000)                    | X                        | X                 |                                       |          |                                       |          |                 |          |                 |          |
| <b>GCMS FRACTION - PESTICIDES</b>                         |                          |                   |                                       |          |                                       |          |                 |          |                 |          |
| 107 0000<br>Diazinon (000000)                             | X                        | X                 |                                       |          |                                       |          |                 |          |                 |          |
| 207 0000<br>Diazinon (000000)                             | X                        | X                 |                                       |          |                                       |          |                 |          |                 |          |
| 307 0000<br>Diazinon (000000)                             | X                        | X                 |                                       |          |                                       |          |                 |          |                 |          |
| 407 0000<br>Diazinon (000000)                             | X                        | X                 |                                       |          |                                       |          |                 |          |                 |          |
| 507 0000<br>Diazinon (000000)                             | X                        | X                 |                                       |          |                                       |          |                 |          |                 |          |
| 607 0000<br>Diazinon (000000)                             | X                        | X                 |                                       |          |                                       |          |                 |          |                 |          |
| 707 0000<br>Diazinon (000000)                             | X                        | X                 |                                       |          |                                       |          |                 |          |                 |          |
| 807 0000<br>Diazinon (000000)                             | X                        | X                 |                                       |          |                                       |          |                 |          |                 |          |
| 907 0000<br>Diazinon (000000)                             | X                        | X                 |                                       |          |                                       |          |                 |          |                 |          |
| 1007 0000<br>Diazinon (000000)                            | X                        | X                 |                                       |          |                                       |          |                 |          |                 |          |
| 1107 0000<br>Diazinon (000000)                            | X                        | X                 |                                       |          |                                       |          |                 |          |                 |          |
| 1207 0000<br>Diazinon (000000)                            | X                        | X                 |                                       |          |                                       |          |                 |          |                 |          |
| 1307 0000<br>Diazinon (000000)                            | X                        | X                 |                                       |          |                                       |          |                 |          |                 |          |
| 1407 0000<br>Diazinon (000000)                            | X                        | X                 |                                       |          |                                       |          |                 |          |                 |          |
| 1507 0000<br>Diazinon (000000)                            | X                        | X                 |                                       |          |                                       |          |                 |          |                 |          |
| 1607 0000<br>Diazinon (000000)                            | X                        | X                 |                                       |          |                                       |          |                 |          |                 |          |
| 1707 0000<br>Diazinon (000000)                            | X                        | X                 |                                       |          |                                       |          |                 |          |                 |          |
| 1807 0000<br>Diazinon (000000)                            | X                        | X                 |                                       |          |                                       |          |                 |          |                 |          |
| 1907 0000<br>Diazinon (000000)                            | X                        | X                 |                                       |          |                                       |          |                 |          |                 |          |
| 2007 0000<br>Diazinon (000000)                            | X                        | X                 |                                       |          |                                       |          |                 |          |                 |          |

| 1. PESTICIDE NAME<br>CAS NO.<br>or other ID   | 2. NAME "X"                |                                |                                | 3. EFFLUENT                            |                       |  |                       | 4. W/D/D<br>ANALYSIS | 5. UNITS |                              | 6. STATE              |          |
|---|----------------------------|--------------------------------|--------------------------------|--|-----------------------|--|-----------------------|----------------------|----------|------------------------------|-----------------------|----------|
|   | a. EPCRA<br>ID<br>(191011) | b. M<br>(19111)<br>M<br>(1911) | c. M<br>(19111)<br>M<br>(1911) | a. RESIDUES IN DAY VALUE<br>M or other |                       | b. LONG TERM AVERAGE VALUE<br>M or other |                       |                      | b. BASIS | a. SINGLE USE/STORAGE VESSEL |                       | b. BASIS |
|   |                            |                                |                                | (i)<br>CONCENTRATION                   | (ii)<br>CONCENTRATION | (i)<br>CONCENTRATION                     | (ii)<br>CONCENTRATION |                      |          | (i)<br>CONCENTRATION         | (ii)<br>CONCENTRATION |          |
| <b>CCMS FRACTION - PESTICIDES (continued)</b> |                            |                                |                                |  |                       |  |                       |                      |          |                              |                       |          |
| 191, Dieldrin-Me (19111)<br>10026-57-8        |                            | X                              |                                |  |                       |  |                       |                      |          |                              |                       |          |
| 500, DDT (50011)<br>10105-21-9                |                            | X                              |                                |  |                       |  |                       |                      |          |                              |                       |          |
| 191, DDT (19111)<br>10097-65-0                |                            | X                              |                                |  |                       |  |                       |                      |          |                              |                       |          |
| 200, DDT (20011)<br>11104-28-0                |                            | X                              |                                |  |                       |  |                       |                      |          |                              |                       |          |
| 200, DDT (20011)<br>11104-28-0                |                            | X                              |                                |  |                       |  |                       |                      |          |                              |                       |          |
| 200, DDT (20011)<br>11207-29-4                |                            | X                              |                                |  |                       |  |                       |                      |          |                              |                       |          |
| 200, DDT (20011)<br>11096-83-0                |                            | X                              |                                |  |                       |  |                       |                      |          |                              |                       |          |
| 200, DDT (20011)<br>11208-11-0                |                            | X                              |                                |  |                       |  |                       |                      |          |                              |                       |          |
| 200, DDT (20011)<br>11208-11-0                |                            | X                              |                                |  |                       |  |                       |                      |          |                              |                       |          |

APPLICATION FOR DISCHARGE PERMIT  
Form D - Primary Industries

NPDES # 403-0018001

OUTFALL # 907

1.00 If you are a primary industry and the outfall contains any metals, cyanide, or total phenols, refer to Table A in the instructions to determine which of the CCRS facilities you must test. Mark "X" in column 2a for all test metals, cyanide, and total phenols. Mark "X" in column 2b for any pollutants you know to be absent. If you mark either column 2a or 2b for any pollutant, you must provide the results of a test over analysis for that pollutant. Note that there are seven pages to this part; please make sure you have completed all pages. Complete one table per outfall.

| 3. POLLUTANT AND CAS NO. #                | 2. NAME "X"  |                     | 6. ANALYSIS DAILY VALUE |        | 8. ANALYSIS W/DAY VALUE |        | C. LONG TERM AVG VALUE |        | 4. NO OF ANALYSES | 4. LIMITS        |          | 5. ANALYSIS METHOD        |          |
|---|--------------|---------------------|-------------------------|--------|-------------------------|--------|------------------------|--------|-------------------|------------------|----------|---------------------------|----------|
|   | a. 15 (METS) | b. RE-TESTED (METS) | 6. ANALYSIS DAILY VALUE |        | 8. ANALYSIS W/DAY VALUE |        | C. LONG TERM AVG VALUE |        |                   | a. CONCENTRATION | b. BASIS | a. TIME PER AVERAGE VALUE | b. BASIS |
|   | (METS)       | (METS)              | (METS)                  | (METS) | (METS)                  | (METS) | (METS)                 | (METS) |                   | (METS)           | (METS)   | (METS)                    | (METS)   |
| <b>METALS, CYANIDE, AND TOTAL PHENOLS</b> |              |                     |                         |        |                         |        |                        |        |                   |                  |          |                           |          |
| 101. Cadmium, 14309-64-8                  |              | X                   |                         |        |                         |        |                        |        |                   |                  |          |                           |          |
| 201. Nickel, 14308-01-9                   |              | X                   |                         |        |                         |        |                        |        |                   |                  |          |                           |          |
| 301. Boron, 14303-10-3                    |              | X                   |                         |        |                         |        |                        |        |                   |                  |          |                           |          |
| 401. Calcium, 14304-13-8                  |              | X                   |                         |        |                         |        |                        |        |                   |                  |          |                           |          |
| 501. Chromium, 14302-74-3                 |              | X                   |                         |        |                         |        |                        |        |                   |                  |          |                           |          |
| 601. Copper, 14309-10-5                   |              | X                   |                         |        |                         |        |                        |        |                   |                  |          |                           |          |
| 701. Lead, 14302-02-2                     |              | X                   |                         |        |                         |        |                        |        |                   |                  |          |                           |          |
| 801. Manganese, 14302-29-2                |              | X                   |                         |        |                         |        |                        |        |                   |                  |          |                           |          |
| 901. Zinc, 14304-78-0                     |              | X                   |                         |        |                         |        |                        |        |                   |                  |          |                           |          |
| 1001. Cyanide, 14303-28-8                 |              | X                   |                         |        |                         |        |                        |        |                   |                  | mg/l     |                           |          |
| 1101. Phenols, 14303-10-3                 |              | X                   |                         |        |                         |        |                        |        |                   |                  |          |                           |          |
| <b>DIOXIN</b>                             |              |                     |                         |        |                         |        |                        |        |                   |                  |          |                           |          |
| 2101. Dioxin, 14303-10-3                  |              | X                   |                         |        |                         |        |                        |        |                   |                  |          |                           |          |

FORM D-15 (1/81)

| C. POSITION AND CAS NO. | J. NAME |         | K. ANALYSIS            |    |                            |    | L. SAMPLE              |     |                    |     | M. TESTS |      |         |      | N. USES  |      |              |      | O. OTHER |      |  |  |
|-------------------------|---------|---------|------------------------|----|----------------------------|----|------------------------|-----|--------------------|-----|----------|------|---------|------|----------|------|--------------|------|----------|------|--|--|
|                         | 1. NO.  | 2. NAME | 3. STANDARD DATA VALUE |    | 4. MANUFACTURER DATA VALUE |    | 5. LONG TERM AVG VALUE |     | 6. NO. OF ANALYSES |     | 7. TESTS |      | 8. USES |      | 9. OTHER |      | 10. COMMENTS |      | 11. DATE |      |  |  |
|                         |         |         | III                    | IV | IA                         | IB | IIA                    | IIB | ICA                | ICB | IIIA     | IIIB | IIIA    | IIIB | IIIA     | IIIB | IIIA         | IIIB | IIIA     | IIIB |  |  |

GC/MS FRACTION - VOLATILE COMPOUNDS

|                            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |
|----------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|--|--|
| 10. Acetone<br>(107-02-00) | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |
| 11. Acetone<br>(107-02-00) |   | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |
| 12. Benzene<br>(71-43-2)   |   |   | X |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |
| 13. Benzene<br>(71-43-2)   |   |   |   | X |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |
| 14. Benzene<br>(71-43-2)   |   |   |   |   | X |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |
| 15. Benzene<br>(71-43-2)   |   |   |   |   |   | X |   |   |   |   |   |   |   |   |   |   |  |  |  |  |
| 16. Benzene<br>(71-43-2)   |   |   |   |   |   |   | X |   |   |   |   |   |   |   |   |   |  |  |  |  |
| 17. Benzene<br>(71-43-2)   |   |   |   |   |   |   |   | X |   |   |   |   |   |   |   |   |  |  |  |  |
| 18. Benzene<br>(71-43-2)   |   |   |   |   |   |   |   |   | X |   |   |   |   |   |   |   |  |  |  |  |
| 19. Benzene<br>(71-43-2)   |   |   |   |   |   |   |   |   |   | X |   |   |   |   |   |   |  |  |  |  |
| 20. Benzene<br>(71-43-2)   |   |   |   |   |   |   |   |   |   |   | X |   |   |   |   |   |  |  |  |  |
| 21. Benzene<br>(71-43-2)   |   |   |   |   |   |   |   |   |   |   |   | X |   |   |   |   |  |  |  |  |
| 22. Benzene<br>(71-43-2)   |   |   |   |   |   |   |   |   |   |   |   |   | X |   |   |   |  |  |  |  |
| 23. Benzene<br>(71-43-2)   |   |   |   |   |   |   |   |   |   |   |   |   |   | X |   |   |  |  |  |  |
| 24. Benzene<br>(71-43-2)   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | X |   |  |  |  |  |
| 25. Benzene<br>(71-43-2)   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | X |  |  |  |  |





| 1. POLYMER AND CAS NO.                 | 2. MOLE WT      |            | 3. ELEMENT               |          | 4. NO. OF UNITS          |          | 5. INHERENT VISCOSITY |          |
|--|-----------------|------------|--------------------------|----------|--------------------------|----------|-----------------------|----------|
|  | A. STYRENE WT % | B. BR BR % | K. AVERAGE DENSITY VALUE |          | L. AVERAGE DENSITY VALUE |          | M. CLASS              | N. CLASS |
|  |                 |            | TO                       | EB CLASS | TO                       | EB CLASS |                       |          |
| GCMS FRACTION - BASE/NEUTRAL COMPOUNDS |                 |            |                          |          |                          |          |                       |          |
| 10. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 11. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 12. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 13. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 14. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 15. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 16. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 17. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 18. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 19. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 20. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 21. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 22. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 23. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 24. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 25. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 26. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 27. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 28. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 29. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 30. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 31. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 32. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 33. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 34. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 35. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 36. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 37. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 38. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 39. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 40. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 41. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 42. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 43. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 44. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 45. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 46. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 47. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 48. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 49. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |
| 50. Acrylonitrile<br>0011179           |                 | X          |                          |          |                          |          |                       |          |



| 1. POLLUTANT AND CAS NO. (if available)                    | 2. SCORE "C"     |                      |                      | 3. EFFECTS              |           |                        |           | 4. UNITS            |                | 5. INCR. AND DECR. |                    |          |
|--|------------------|----------------------|----------------------|-------------------------|-----------|------------------------|-----------|---------------------|----------------|--------------------|--------------------|----------|
|  | 4. STURM (Q1-Q4) | 5. IN (R-31) (Q1-Q4) | 6. IN (R-31) (Q1-Q4) | 8. MAXIMUM 30 DAY VALUE |           | C. LONG TERM AVG VALUE |           | 4. NO. OF ANALYSES  | 4. COMBINATION | 5. CLASS           | 6. INCR. AND DECR. |          |
|  |                  |                      |                      | 11. COMBINATION         | 12. CLASS | 10. COMBINATION        | 11. CLASS |                     |                |                    | 7. INCR. AND DECR. | 8. CLASS |
|  | 10. COMBINATION  | 11. CLASS            | 12. CLASS            | 13. COMBINATION         | 14. CLASS | 15. COMBINATION        | 16. CLASS | 17. INCR. AND DECR. | 18. CLASS      |                    |                    |          |
| <b>GCIMS FRACTION - BASE/NEUTRAL COMPOUNDS (continued)</b> |                  |                      |                      |                         |           |                        |           |                     |                |                    |                    |          |
| 408. 408.000000  |                  |                      | X                    |                         |           |                        |           |                     |                |                    |                    |          |
| 409. 409.000000  |                  |                      | X                    |                         |           |                        |           |                     |                |                    |                    |          |
| 410. 410.000000  |                  |                      | X                    |                         |           |                        |           |                     |                |                    |                    |          |
| 411. 411.000000  |                  |                      | X                    |                         |           |                        |           |                     |                |                    |                    |          |
| <b>GCIMS FRACTION - PESTICIDES</b>                         |                  |                      |                      |                         |           |                        |           |                     |                |                    |                    |          |
| 412. 412.000000  |                  |                      | X                    |                         |           |                        |           |                     |                |                    |                    |          |
| 413. 413.000000  |                  |                      | X                    |                         |           |                        |           |                     |                |                    |                    |          |
| 414. 414.000000  |                  |                      | X                    |                         |           |                        |           |                     |                |                    |                    |          |
| 415. 415.000000  |                  |                      | X                    |                         |           |                        |           |                     |                |                    |                    |          |
| 416. 416.000000  |                  |                      | X                    |                         |           |                        |           |                     |                |                    |                    |          |
| 417. 417.000000  |                  |                      | X                    |                         |           |                        |           |                     |                |                    |                    |          |
| 418. 418.000000  |                  |                      | X                    |                         |           |                        |           |                     |                |                    |                    |          |
| 419. 419.000000  |                  |                      | X                    |                         |           |                        |           |                     |                |                    |                    |          |
| 420. 420.000000  |                  |                      | X                    |                         |           |                        |           |                     |                |                    |                    |          |
| 421. 421.000000  |                  |                      | X                    |                         |           |                        |           |                     |                |                    |                    |          |
| 422. 422.000000  |                  |                      | X                    |                         |           |                        |           |                     |                |                    |                    |          |
| 423. 423.000000  |                  |                      | X                    |                         |           |                        |           |                     |                |                    |                    |          |
| 424. 424.000000  |                  |                      | X                    |                         |           |                        |           |                     |                |                    |                    |          |
| 425. 425.000000  |                  |                      | X                    |                         |           |                        |           |                     |                |                    |                    |          |
| 426. 426.000000  |                  |                      | X                    |                         |           |                        |           |                     |                |                    |                    |          |
| 427. 427.000000  |                  |                      | X                    |                         |           |                        |           |                     |                |                    |                    |          |
| 428. 428.000000  |                  |                      | X                    |                         |           |                        |           |                     |                |                    |                    |          |
| 429. 429.000000  |                  |                      | X                    |                         |           |                        |           |                     |                |                    |                    |          |
| 430. 430.000000  |                  |                      | X                    |                         |           |                        |           |                     |                |                    |                    |          |

| 1. PESTICIDE AND CAS NO.                      | 2. AARS "C"          |                        |                        | 3. EFFICACY              |             |                           |             | 4. LIMITS              |             | 5. DETAIL         |         |
|---|----------------------|------------------------|------------------------|--------------------------|-------------|---------------------------|-------------|------------------------|-------------|-------------------|---------|
|   | 4. TESTING EQUIPMENT | 5. NO. (4-151) FOR MMS | 6. NO. (4-151) FOR MMS | A. BAKERSHAW DAILY VALUE |             | B. BAKERSHAW 30 DAY VALUE |             | C. LONG TERM AVG VALUE |             | 4. NO OF ANALYSES | 5. AARS |
|   |                      |                        |                        | ED BASIS                 | ETIMINATION | ED BASIS                  | ETIMINATION | ED BASIS               | ETIMINATION |                   |         |
| <b>GCMS FRACTION - PESTICIDES (continued)</b> |                      |                        |                        |                          |             |                           |             |                        |             |                   |         |
| 17P, 1646454a 1a464b-1024-57-B                |                      |                        |                        |                          |             |                           |             |                        |             |                   |         |
| 18P, PCB 1242 15464531-9                      |                      |                        |                        |                          |             |                           |             |                        |             |                   |         |
| 19P, PCB 1234 11097453-1                      |                      |                        |                        |                          |             |                           |             |                        |             |                   |         |
| 20P, PCB 1221 11104426-2                      |                      |                        |                        |                          |             |                           |             |                        |             |                   |         |
| 21P, PCB 1232 11111115-3                      |                      |                        |                        |                          |             |                           |             |                        |             |                   |         |
| 22P, PCB 1248 1126727542                      |                      |                        |                        |                          |             |                           |             |                        |             |                   |         |
| 23P, PCB 1266 111094423-1                     |                      |                        |                        |                          |             |                           |             |                        |             |                   |         |
| 24P, PCB 1616 11267411-2                      |                      |                        |                        |                          |             |                           |             |                        |             |                   |         |
| 25P, 1a46454a 1601152-B                       |                      |                        |                        |                          |             |                           |             |                        |             |                   |         |

APPLICATION FOR DISCHARGE PERMIT  
Form D - Primary Industries

APPLICANT #                      OUTFALL #                      014

1.00 If you are a primary industry and this facility contains process water, you must include in Table A in the information to determine which of the CERCLA sections you must file for. Check "X" in column 2a for all such CERCLA sections that apply to your facility and for all toxic metals, cyanide, and total phenols. Check "X" in column 2b for each pollutant you have or intend to have in your effluent. Check "X" in column 2c for each pollutant you intend to discharge. If you wish other columns 2a or 2b for any pollutant, you must provide the results of at least one analysis for that pollutant. Note that there are some limits in this part, please review each carefully. Complete one table for each part of the facility. See instructions for additional table and requirements.

| 3. POLLUTANT AND CAS NO. of substance     | 2. SOURCE "X"              |                         | 1. EFFLUENT            |            |                         |            | 4. LIMITS         |          | 5. INFLUENT                   |            |
|---|----------------------------|-------------------------|------------------------|------------|-------------------------|------------|-------------------|----------|-------------------------------|------------|
|   | a. TREATING (USE) (CERCLA) | b. RCRA (1976) (CERCLA) | a. MAXIMUM DAILY VALUE |            | c. LONG TERM AVG. VALUE |            | d. NO OF ANALYSES | b. BASIS | a. UFGD, TERN, AGRIC, 2. VMTD |            |
|   |                            |                         | 101 CERCLA             | 102 CERCLA | 101 CERCLA              | 102 CERCLA |                   |          | 101 CERCLA                    | 102 CERCLA |
| <b>METALS, CYANIDE, AND TOTAL PHENOLS</b> |                            |                         |                        |            |                         |            |                   |          |                               |            |
| 101, Arsenic, Total (7440-02-0)           | X                          |                         | <0.05                  | <0.1       |                         |            | 1                 | mg/l     | mg/l                          |            |
| 102, Cadmium, Total (7440-05-0)           | X                          |                         | 0.002                  | 0.06       |                         |            | 1                 | mg/l     | mg/l                          |            |
| 103, Chromium, Total (7440-17-0)          | X                          |                         | <0.004                 | <0.1       |                         |            | 1                 | mg/l     | mg/l                          |            |
| 104, Copper, Total (7440-75-0)            | X                          |                         | <0.05                  | <1         |                         |            | 1                 | mg/l     | mg/l                          |            |
| 105, Lead, Total (7440-19-0)              | X                          |                         | <0.05                  | <1         |                         |            | 1                 | mg/l     | mg/l                          |            |
| 106, Nickel, Total (7440-02-0)            | X                          |                         | <0.2                   | <5         |                         |            | 1                 | mg/l     | mg/l                          |            |
| 107, Silver, Total (7440-18-0)            | X                          |                         | 0.006                  | 0.25       |                         |            | 1                 | mg/l     | mg/l                          |            |
| 108, Zinc, Total (7440-65-0)              | X                          |                         | 0.0016                 | 0.005      |                         |            | 1                 | mg/l     | mg/l                          |            |
| 109, Cyanide, Total (132-42-2)            | X                          |                         | <0.3                   | <5         |                         |            | 1                 | mg/l     | mg/l                          |            |
| 110, Phenols, Total                       | X                          |                         | <5                     | <100       |                         |            | 1                 | mg/l     | mg/l                          |            |
| 111, Mercury, Total (7440-10-0)           | X                          |                         | <0.002                 | <0.06      |                         |            | 1                 | mg/l     | mg/l                          |            |
| 112, Selenium, Total (7782-49-2)          | X                          |                         | 0.0075                 | <0.22      |                         |            | 1                 | mg/l     | mg/l                          |            |
| 113, Vanadium, Total (7440-62-0)          | X                          |                         | <0.05                  | <1         |                         |            | 1                 | mg/l     | mg/l                          |            |
| 114, Total Solids (101-12-2)              | X                          |                         | <0.004                 | <0.1       |                         |            | 1                 | mg/l     | mg/l                          |            |
| 115, Total Suspended Solids (101-12-2)    | X                          |                         | <0.005                 | <0.1       |                         |            | 1                 | mg/l     | mg/l                          |            |

|                               |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|--|--|--|--|--|--|--|--|--|--|
| <b>DIOXIN</b>                 |  |  |  |  |  |  |  |  |  |  |
| 116, 2,3,7,8-TCDF (2378-17-0) |  |  |  |  |  |  |  |  |  |  |
| 117, 2,3,7,8-TCDF (2378-17-0) |  |  |  |  |  |  |  |  |  |  |
| 118, 2,3,7,8-TCDF (2378-17-0) |  |  |  |  |  |  |  |  |  |  |

GCMS FRACTION - VOLATILE COMPOUNDS

| 5. POSITIVE AND GAS MS IDENTIFICATION          | 3. MASS "3"        |              | 4. QUANTITATIVE DATA VALUE |         |                   |         | 5. IDENTIFICATION VALUE |                   | 6. NO OF ANALYSIS |                   | 7. LIMITS         |                   | 8. OTHER COMMENTS |                   |
|--|--------------------|--------------|----------------------------|---------|-------------------|---------|-------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|  | A. IONS PER SECOND | B. ION RATIO | C. MASS SPECTROMETER       |         | D. RETENTION TIME |         | E. IDENTIFICATION       | F. IDENTIFICATION | G. IDENTIFICATION | H. IDENTIFICATION | I. IDENTIFICATION | J. IDENTIFICATION |                   | K. IDENTIFICATION |
|  |                    |              | 1. MASS                    | 2. MASS | 3. MASS           | 4. MASS |                         |                   |                   |                   |                   | 5. MASS           | 6. MASS           |                   |
| 1. Acetone<br>C3H6O<br>(58.08)                 | X                  |              | < 50                       | < 1.5   |                   |         |                         |                   | 1                 |                   |                   |                   |                   |                   |
| 2. Acrylonitrile<br>C3H3.5N<br>(53.06)         | X                  |              | < 50                       | < 1.5   |                   |         |                         |                   | 1                 |                   |                   |                   |                   |                   |
| 3. Benzene<br>C6H6<br>(78.11)                  | X                  |              | < 5                        | < 1     |                   |         |                         |                   | 1                 |                   |                   |                   |                   |                   |
| 4. Butyl Methacrylate<br>C9H18O2<br>(142.20)   | X                  |              | *                          |         |                   |         |                         |                   |                   |                   |                   |                   |                   |                   |
| 5. Benzene<br>C6H6<br>(78.11)                  | X                  |              | < 5                        | < 1     |                   |         |                         |                   | 1                 |                   |                   |                   |                   |                   |
| 6. Ethyl Chloride<br>C2H5Cl<br>(68.52)         | X                  |              | < 5                        | < 1     |                   |         |                         |                   | 1                 |                   |                   |                   |                   |                   |
| 7. Chloroform<br>C1H1.5Cl3<br>(119.38)         | X                  |              | < 5                        | < 1     |                   |         |                         |                   | 1                 |                   |                   |                   |                   |                   |
| 8. Methyl Acetate<br>C4H8O2<br>(88.10)         | X                  |              | < 10                       | < 2.5   |                   |         |                         |                   | 1                 |                   |                   |                   |                   |                   |
| 9. Methyl Ethyl Ketone<br>C6H12O<br>(98.15)    | X                  |              | < 10                       | < 2.5   |                   |         |                         |                   | 1                 |                   |                   |                   |                   |                   |
| 10. Methyl Propyl Ketone<br>C7H14O<br>(114.17) | X                  |              | < 5                        | < 1     |                   |         |                         |                   | 1                 |                   |                   |                   |                   |                   |
| 11. Diethyl Ether<br>C4H10O<br>(74.12)         | X                  |              | < 5                        | < 1     |                   |         |                         |                   | 1                 |                   |                   |                   |                   |                   |
| 12. Diethyl Sulfide<br>C4H10S<br>(102.17)      | X                  |              | *                          |         |                   |         |                         |                   |                   |                   |                   |                   |                   |                   |
| 13. Ethyl Acetate<br>C4H8O2<br>(88.10)         | X                  |              | < 5                        | < 1     |                   |         |                         |                   | 1                 |                   |                   |                   |                   |                   |
| 14. Methyl Acetate<br>C4H8O2<br>(88.10)        | X                  |              | < 5                        | < 1     |                   |         |                         |                   | 1                 |                   |                   |                   |                   |                   |
| 15. Methyl Propyl Ether<br>C5H12O<br>(100.15)  | X                  |              | < 5                        | < 1     |                   |         |                         |                   | 1                 |                   |                   |                   |                   |                   |
| 16. Diethyl Ether<br>C4H10O<br>(74.12)         | X                  |              | < 5                        | < 1     |                   |         |                         |                   | 1                 |                   |                   |                   |                   |                   |
| 17. Methyl Acetate<br>C4H8O2<br>(88.10)        | X                  |              | < 10                       | < 2.5   |                   |         |                         |                   | 1                 |                   |                   |                   |                   |                   |
| 18. Methyl Propyl Ether<br>C5H12O<br>(100.15)  | X                  |              | < 10                       | < 2.5   |                   |         |                         |                   | 1                 |                   |                   |                   |                   |                   |
| 19. Methyl Ethyl Ether<br>C4H10O<br>(74.12)    | X                  |              | < 10                       | < 2.5   |                   |         |                         |                   | 1                 |                   |                   |                   |                   |                   |
| 20. Methyl Propyl Ether<br>C5H12O<br>(100.15)  | X                  |              | < 10                       | < 2.5   |                   |         |                         |                   | 1                 |                   |                   |                   |                   |                   |
| 21. Methyl Ethyl Ether<br>C4H10O<br>(74.12)    | X                  |              | < 10                       | < 2.5   |                   |         |                         |                   | 1                 |                   |                   |                   |                   |                   |
| 22. Methyl Propyl Ether<br>C5H12O<br>(100.15)  | X                  |              | < 10                       | < 2.5   |                   |         |                         |                   | 1                 |                   |                   |                   |                   |                   |



| 1. IDENTIFIER AND CAS NO. <small>as analyzed</small> | 2. MOLE %                    |                                      | 3. EFFLUENT  |                 | 4. NO. OF ANALYSES                                   |                 | 5. LIMITS       |                 | 6. INTAKE <small>assumed</small> |                 |
|--|------------------------------|--------------------------------------|--|-----------------|--|-----------------|-----------------|-----------------|----------------------------------|-----------------|
|  | 4. ISOPHAG<br>BT<br>12/00/75 | 5. BT<br>12/01/11<br>PPO<br>12/01/11 | 8. MAXIMUM DAILY VALUE<br><small>as analyzed</small> |                 | C. LONG TERM AVG VALUE<br><small>as analyzed</small> |                 | 4. LIMITS       |                 | 6. LONG TERM AVERAGE VALUE       |                 |
|  |                              |                                      | BT<br>COMPOUNDS                                      | BT<br>COMPOUNDS | BT<br>COMPOUNDS                                      | BT<br>COMPOUNDS | BT<br>COMPOUNDS | BT<br>COMPOUNDS |                                  |                 |
|  | 7. BT<br>12/00/75            | 7. BT<br>12/01/11                    | BT<br>COMPOUNDS                                      | BT<br>COMPOUNDS | BT<br>COMPOUNDS                                      | BT<br>COMPOUNDS | BT<br>COMPOUNDS | BT<br>COMPOUNDS | BT<br>COMPOUNDS                  | BT<br>COMPOUNDS |
| <b>GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS</b>       |                              |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 18. Acetylacetone<br>85-12-9                         | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 29. Acrylonitrile<br>1278-26-2                       | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 39. Acrylonitrile<br>1278-26-2                       | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 48. Benzene<br>71-43-2                               | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 59. Benzyl Alcohol<br>100-51-6                       | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 68. Benzyl Pyrene<br>104-12-9                        | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 79. 1,4-Dioxane<br>205-106-2                         | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 88. Benzoin<br>130-82-0                              | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 99. Benzoin<br>130-82-0                              | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 108. Benzoin<br>130-82-0                             | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 118. Benzoin<br>130-82-0                             | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 128. Benzoin<br>130-82-0                             | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 138. Benzoin<br>130-82-0                             | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 148. Benzoin<br>130-82-0                             | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 158. Benzoin<br>130-82-0                             | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 168. Benzoin<br>130-82-0                             | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 178. Benzoin<br>130-82-0                             | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 188. Benzoin<br>130-82-0                             | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 198. Benzoin<br>130-82-0                             | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 208. Benzoin<br>130-82-0                             | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 218. Benzoin<br>130-82-0                             | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 228. Benzoin<br>130-82-0                             | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 238. Benzoin<br>130-82-0                             | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 248. Benzoin<br>130-82-0                             | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 258. Benzoin<br>130-82-0                             | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 268. Benzoin<br>130-82-0                             | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 278. Benzoin<br>130-82-0                             | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 288. Benzoin<br>130-82-0                             | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 298. Benzoin<br>130-82-0                             | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |
| 308. Benzoin<br>130-82-0                             | X                            |                                      |  |                 |  |                 |                 |                 |                                  |                 |



| 3. IDENTIFY AND CAS NO. <small>if available</small>        | 3. MARK "X" |            |            | 4. MAXIMUM DAILY VALUE |             | 5. TONGUE TERN AVERAGE VALUE |             | 6. NO. OF ANALYSES |             | 7. LIMITS   |             | 8. ANALYSE  | 9. TONGUE TERN AVERAGE VALUE | 10. MOLE % ANALYSES |  |
|--|-------------|------------|------------|------------------------|-------------|------------------------------|-------------|--------------------|-------------|-------------|-------------|-------------|------------------------------|---------------------|--|
|  | A. (15/886) | B. (18/21) | C. (17/10) | (a)                    | (b)         | (a)                          | (b)         | (a)                | (b)         | (a)         | (b)         |             |                              |                     |  |
|  | (2/18/81)   | (7/18/81)  | (7/18/81)  | COMBINATION            | COMBINATION | COMBINATION                  | COMBINATION | COMBINATION        | COMBINATION | COMBINATION | COMBINATION | COMBINATION | COMBINATION                  | COMBINATION         |  |
| <b>GCMS FRACTIONS - BASE NEUTRAL COMPOUNDS (continued)</b> |             |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 208. 1,4,6-trimethylbenzene (108-66-7)                     | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 208. 1,3,5-trimethylbenzene (108-14-1)                     | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 208. (1-methyl-1H-pyridine) (84-72-2)                      | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 208. (1-methyl-2H-pyridine) (110-82-9)                     | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 208. (1,6-dimethyl-1H-pyridine) (84-74-2)                  | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 208. 2,4-dimethylpyridine (112-11-2)                       | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 208. 2,6-dimethylpyridine (106-70-2)                       | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 208. (1,6-dimethyl-2H-pyridine) (112-84-0)                 | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 208. 1,2-Dimethylpyridine (108-99-5)                       | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 108. 1-methylpyridine (84-71-7)                            | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 108. 1-methyl-2-methylpyridine (110-77-0)                  | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 108. 1-methyl-3-methylpyridine (85-04-8)                   | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 108. 1-methyl-4-methylpyridine (127-07-0)                  | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 108. 1-methyl-3-methylpyridine (85-04-8)                   | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 108. 1-methyl-2-methylpyridine (112-77-0)                  | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 108. 1-methyl-4-methylpyridine (127-07-0)                  | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 108. 1-methyl-3-methylpyridine (85-04-8)                   | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 108. 1-methyl-2-methylpyridine (112-77-0)                  | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 108. 1-methyl-4-methylpyridine (127-07-0)                  | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 108. 1-methyl-3-methylpyridine (85-04-8)                   | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 108. 1-methyl-2-methylpyridine (112-77-0)                  | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 108. 1-methyl-4-methylpyridine (127-07-0)                  | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 108. 1-methyl-3-methylpyridine (85-04-8)                   | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 108. 1-methyl-2-methylpyridine (112-77-0)                  | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 108. 1-methyl-4-methylpyridine (127-07-0)                  | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 108. 1-methyl-3-methylpyridine (85-04-8)                   | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 108. 1-methyl-2-methylpyridine (112-77-0)                  | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |
| 108. 1-methyl-4-methylpyridine (127-07-0)                  | X           |            |            |                        |             |                              |             |                    |             |             |             |             |                              |                     |  |

| 1. POLLUTANT AND CAS NO.                                   | 2. NAME "C" |            | 3. EFFLUENT            |                         | 4. NO OF ANALYSES        |                          | 5. LIMITS                |                          | 6. WATER QUALITY |  |
|--|-------------|------------|------------------------|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------|--|
|  | 4. CATIONIC | 5. ANIONIC | A. ANIONIC DAILY VALUE | B. ANIONIC 30 DAY VALUE | C. LD50C TERBAI RANGKUP  |                          | D. LD50C TERBAI RANGKUP  |                          |                  |  |
|  |             |            |                        |                         | 11. LD50C TERBAI RANGKUP | 12. LD50C TERBAI RANGKUP | 13. LD50C TERBAI RANGKUP | 14. LD50C TERBAI RANGKUP |                  |  |
| <b>GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS (continued)</b> |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 406, 412, 413  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 416, 417, 418  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 419, 420, 421  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 422, 423, 424  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| <b>GC/MS FRACTION - PESTICIDES</b>                         |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 425, 426, 427  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 428, 429, 430  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 431, 432, 433  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 434, 435, 436  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 437, 438, 439  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 440, 441, 442  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 443, 444, 445  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 446, 447, 448  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 449, 450, 451  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 452, 453, 454  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 455, 456, 457  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 458, 459, 460  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 461, 462, 463  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 464, 465, 466  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 467, 468, 469  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 470, 471, 472  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 473, 474, 475  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 476, 477, 478  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 479, 480, 481  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 482, 483, 484  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 485, 486, 487  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 488, 489, 490  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 491, 492, 493  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 494, 495, 496  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 497, 498, 499  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 500, 501, 502  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 503, 504, 505  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 506, 507, 508  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 509, 510, 511  |             |            |                        |                         |                          |                          |                          |                          |                  |  |
| 512, 513, 514  |             |            |                        |                         |                          |                          |                          |                          |                  |  |

| 1. PESTICIDE AFD<br>CAS NO.<br>#        | 2. ALLEN "L"      |                   | 3. WELLS          |                   | 4. NO. OF ANALYSES |                   | 5. LONG TERM AVERAGE VALUE |                   | 6. NO. OF ANALYSES |                    | 7. LONG TERM AVERAGE VALUE |  | 8. STATE USE |
|---|-------------------|-------------------|-------------------|-------------------|--------------------|-------------------|----------------------------|-------------------|--------------------|--------------------|----------------------------|--|--------------|
|   | 4. 11/19/81<br>BY | 3. 11/19/81<br>BY | 4. 11/19/81<br>BY | 5. 11/19/81<br>BY | 6. 11/19/81<br>BY  | 7. 11/19/81<br>BY | 8. 11/19/81<br>BY          | 9. 11/19/81<br>BY | 10. 11/19/81<br>BY | 11. 11/19/81<br>BY | 12. 11/19/81<br>BY         |  |              |
|   | 12/19/81<br>MNI   | 12/19/81<br>MNI   | 12/19/81<br>MNI   | 12/19/81<br>MNI   | 12/19/81<br>MNI    | 12/19/81<br>MNI   | 12/19/81<br>MNI            | 12/19/81<br>MNI   | 12/19/81<br>MNI    | 12/19/81<br>MNI    | 12/19/81<br>MNI            |  |              |
| GC/MS FRACTION - PESTICIDES (continued) |                   |                   |                   |                   |                    |                   |                            |                   |                    |                    |                            |  |              |
| 10P, 100% 100% 100%<br>100% 100%        |                   |                   |                   |                   |                    |                   |                            |                   |                    |                    |                            |  |              |
| 10P, PCB 1242<br>100% 100%              |                   |                   |                   |                   |                    |                   |                            |                   |                    |                    |                            |  |              |
| 10P, PCB 1254<br>100% 100%              |                   |                   |                   |                   |                    |                   |                            |                   |                    |                    |                            |  |              |
| 20P, PCB 1221<br>100% 100%              |                   |                   |                   |                   |                    |                   |                            |                   |                    |                    |                            |  |              |
| 20P, PCB 1212<br>100% 100%              |                   |                   |                   |                   |                    |                   |                            |                   |                    |                    |                            |  |              |
| 20P, PCB 1248<br>100% 100%              |                   |                   |                   |                   |                    |                   |                            |                   |                    |                    |                            |  |              |
| 20P, PCB 1260<br>100% 100%              |                   |                   |                   |                   |                    |                   |                            |                   |                    |                    |                            |  |              |
| 20P, PCB 1016<br>100% 100%              |                   |                   |                   |                   |                    |                   |                            |                   |                    |                    |                            |  |              |
| 20P, 100% 100%<br>100% 100%             |                   |                   |                   |                   |                    |                   |                            |                   |                    |                    |                            |  |              |

2.00 POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

A. Is any pollutant listed in Item 1.30 a substance or a component of a substance which you do or expect that you will over the next 5 years use or manufacture as an intermediate or final product or byproduct?  
 YES (list all such pollutants)  NO (go to B)

The following substances are used in our laboratories and might be present in trace quantities in our discharges; Antimony, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Phenols, Selenium, and Silver.

The following solvents are used on the plant site but are not believed present in our discharges: Trichloroethane, Trichloroethene, Tetrachloroethene, Toluene, Methylene Chloride, Xylene, Acetone, and Methyl ethyl ketone.

The following metals are produced as a by-product of the fission and/or activation process and trace quantities may be present as radioisotopes in Outfall 001: Antimony, Chromium, Nickel, Silver, and Zinc.

B. Are your operations such that your raw materials, processes, or products can reasonably be expected to vary so that you discharges of pollutants may during the next 5 years exceed two times the maximum values reported in item 1.30?  
 YES (complete C below)  NO (go to Section 3.00)

C. If you answered YES to item B, explain below and describe in detail the sources and expected levels of such pollutants which you anticipate will be discharged from each outfall over the next 5 years, to the best of your ability at this time. Continue on additional sheets if you need more space.

Waste streams can be expected to exhibit variability as the result of varying influent water quality. Variability in intake water quality due to the effects of rainfall, runoff, and upstream pollutant discharges might cause the discharge value on a gross basis to exceed two times the maximum values reported in Item 1.30.

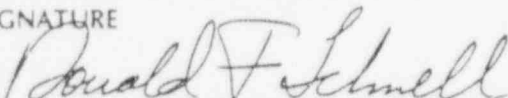
3.00 CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in 1.30 performed by a contract laboratory or consulting firm?  
 YES (list the name, address, and telephone number of and analyzed by, each such laboratory or firm below)  
 NO (go to 4.00)

| A. NAME                  | B. ADDRESS   | C. TELEPHONE | D. POLLUTANTS ANALYZED                      |
|--------------------------|--|--------------|---|
| Maxim Technologies, Inc. | 1908 Innerbelt Business Center Dr.<br>St. Louis, MO 63114-5700 | 314/426-0880 | See Attachment E, NPDES Sampling & Analysis |

4.00 CERTIFICATION

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 the 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.

|   |  |
|---|--|
| A. NAME AND OFFICIAL TITLE<br>Donald F. Schnell, Senior Vice President, Nuclear                     | B. PHONE NO. (area code & no.)<br>314/554-2650 |
| C. SIGNATURE<br> | D. DATE SIGNED<br>14 Sept 95                   |

ATTACHMENT A  
Description of Outfalls

001 - Radwaste Treatment System

This system serves to collect, process, store, recycle, and dispose of liquid radioactive waste generated at Callaway. Five general sub-systems can be defined as described below.

The **Boron Recycle System** receives reactor coolant for the purpose of recovering the boric acid for reuse in the plant. Boric acid is used as a neutron absorber in the primary loop.

The **Liquid Radwaste System** collects and processes floor and equipment drains from the containment, auxiliary building, fuel building, and radwaste buildings during normal operation. However, during outages, non-radioactive drainage from equipment in these buildings may be treated by the Oily Waste System as described in Attachment C.

The **Laundry and Hot Shower** system collects waste generated from washing radioactively contaminated protective gear and clothing and personnel decontamination shower wastewater. These wastes are then transferred to the liquid Radwaste system for treatment.

The **Secondary Liquid Waste** system is used to process condensate demineralizer regeneration wastes and potentially radioactive liquid waste collected from the turbine building. The condensate demineralizer regeneration waste is divided into two wastestreams; High TDS waste from the acid and caustic rinses used when chemically regenerating spent resin, and low TDS waste which results from the initial backflushing of unregenerated resin and the final rinsing of the regenerated resin to remove acid and caustic.

**Steam Generator Blowdown** is normally recycled to the main condenser for reuse in the secondary cycle. Provisions also exist to discharge the treated blowdown via 001 although this has not been done in the last ten years.

It should be noted that the radwaste treatment system is specifically designed for flexibility to achieve Nuclear Regulatory Commission (NRC) limitations. Actual treatment for any given batch of wastewater is dictated by the following criteria.

1. The level of radiological contamination and the corresponding NRC mandated discharge criteria.
2. The NPDES permit discharge limitations.
3. The most effective waste treatment scheme that will give the smallest volume of solid radwaste.
4. Overall wastestream management - processing and holdup rates, volumes of other wastestreams requiring treatment or storage, etc.
5. The need, feasibility, and economics of the recycle versus discharge options.

The following wastewater treatment systems are used as required to treat this wastestream for recycle or discharge in compliance with NRC requirements and are also available as auxiliary or backup treatment systems to treat this discharge for compliance with NPDES permit limitations: Evaporation and/or Mixing and/or Filtration and/or Carbon Adsorption and/or Ion Exchange and/or Neutralization and/or Reuse/Recycle of Treated Effluent. All processing in the Radwaste Treatment System is done on a batch basis except steam generator blowdown. After monitoring for radioactive content, release rates are controlled administratively to ensure that radioactive discharge criteria are met.

#### 002 - Cooling Tower Blowdown

A cooling tower is utilized to dissipate excess heat to the atmosphere from the Circulating and Service Water Systems. Outfall 002 is designated as the cooling tower blowdown discharge. Blowdown from the cooling tower is necessary to maintain dissolved solids concentration in the recirculating water within acceptable operating limits.

#### 003 - Water Treatment Plant Wastes

The water treatment plant supplies clarified river water for cooling tower makeup and various other plant systems. The suspended material that is removed from the river water is drawn from the bottom of the clarifiers as sludge. This sludge is routed to a sedimentation lagoon for solids removal. The oil separator discharge is also routed to this sedimentation lagoon. Note that this discharge includes effluent from an oil recovery well used to remediate a historic on-site release. We are currently routing Demineralizer System Wastes, Outfall 004 in our current permit, to this outfall. This waste stream consists of wastes generated from resin regeneration and miscellaneous wastes from floor drainage and wet well overflows. We have requested that Outfall 004 be eliminated. The supernatant from this sedimentation lagoon is designated as Outfall 003. Outfall 003 is normally recycled by routing it back to the head of the water treatment plant. Filter backwash from the sand and carbon filters are also a component of this outfall.

#### 004 - Demineralizer System Wastes

We have requested that this outfall be eliminated.

#### 007 - Sanitary Treatment Plant (STP)

Outfall 007 is defined as the sanitary wastewater treatment system discharge. The existing system consists of two 25,000 gallon aerated surge tanks, two 20,000 gallon per day extended aeration treatment units and a 7,500 gallon sludge holding tank. The STP sludge is currently trucked to the city of Fulton, or Columbia, treatment plant for further treatment and disposal. Infrequently, STP sludge is found to contain very low levels of radionuclides. This waste is processed in accordance with Nuclear Regulatory Commission requirements.

The flow from the STP is routed to the treatment wetland for further treatment prior to discharge. We have requested that the monitoring point for this outfall be changed to the discharge from the wetland.

During the five year term of the reissued permit, we plan to submit a request for a construction permit to replace our current extended aeration STP with a lagoon system. We believe that the quality of the waste water discharge from Outfall 007 will not change significantly with the lagoon system since the final effluent will have been polished with the evolved wetland prior to discharge to waters of the state.

009 - Intake Heater Blowdown

The river intake structure contains two recirculating electric heaters which are used to prevent ice formation on the intake bar screens during the winter months. Outfall 009 consists of discharges from the infrequent blowdown or drainage of these boilers. We have not discharged from this outfall in the past ten years. The boilers are currently kept in a dry lay up condition.

016 - Cooling Tower Bypass

This Outfall consists of clarified river water and waste water that has been recycled through the water treatment plant. It is used to moderate flow through the water treatment plant and to provide carrier water in the discharge line when discharging from Outfall 001.

017 - Ultimate Heat Sink

The Ultimate Heat Sink is a cooling pond that can provide cooling water to various plant systems during other than normal conditions. Outfall 017 is the overflow from the Ultimate Heat Sink to local runoff. It is a no discharge outfall.

ATTACHMENT B  
Return of River Water

1. Intake Structure Stilling Basin - The stilling basin at the intake structure predominantly receives water from the excess flow of intake pumps and returns this flow to the river. Other minor contributions include the intake sump discharge and an alluvial well used as lube water. As this flow is not contaminated with process waste, we believe it constitutes a return of river water back to the river.
2. Raw Water Bypass - This line diverts untreated water from the head of the water treatment plant to the plant discharge line. It is used to release excess water that is pumped from the river. The flow through this line can vary from 0 to 10,000 gallons per minute based on operating requirements. Since this line returns untreated river water back to the river, it is a return of river water.
3. Intake Line Drainage - The intake line at Callaway is a 48" line that carries Missouri River water from the intake structure to the plant which is about 5 miles away. Infrequently, it is necessary to drain this line. Usually, this only occurs about two or three times a year. The line is drained by opening the free discharge valve and/or the discharge valves for the intake pumps. This allows the water in the line to flow back to the river through the free discharge valve and the de-energized intake pumps. The drainage rate is about the same as the intake rate when the pumps are operating, so it should not pick up any additional solids that may have settled out. Therefore, we believe that this intake line drain back flow is a return of river water to the river.
4. Downstream River Sampler - Approximately 1 ½ miles downstream of the intake structure is an automatic river sampler. The sampler pumps from 1 to 2.5 GPM continuously from the river and returns it to the river. No pollutants are added to this flow so it is our position that this discharge flow is a return of river water.



**ATTACHMENT C**  
**Description of Intermittent Flows**

Four out of the seven conventional outfalls defined in this application can be considered to include intermittent discharges since they process and/or release wastewater intermittently. Each is described below.

**ROUTINE RELEASES:**

001 - Radwaste Treatment - All of the subsystems described in Attachment A, except steam generator blowdown, process or release discrete batches of wastewater. The frequency and magnitude of each is variable. The flows from the subsystems accumulate in the Discharge Monitor Tanks (DMTs). The discharge flow rate from the DMTs is relatively constant for each batch. The current system typically produces discharge flows of approximately 250 gpm. Approximately one tank is discharged per day.

During recovery from major plant outages and other unusual transient conditions, it may be necessary to discharge steam generator blowdown. The discharge flow rate varies up to 360 gpm, resulting in a maximum daily discharge flow of up to 518,400 gallons. Past operation has shown that discharge of steam generator blowdown occurs very infrequently. Since this discharge is used very infrequently, the steam generator blowdown flow was not included in the maximum flows shown in Form C, Item 2.40. The following data represents the typical steam generator blowdown demineralizer effluent quality:

| Form C, Table A Parameters                 |             |
|--|-------------|
| TSS  | <0.1 mg/l   |
| Ammonia                                    | 0.9 ug/l    |
| Flow                                       | 0.24 MGD    |
| Temperature                                | 120° F      |
| pH   | 6.08        |
| Form C, Table B Parameters                 |             |
| Sulfate                                    | 0.003 mg/l  |
| Iron                                       | <0.1 mg/l   |
| Form D, Table 1.30 Believed Present Metals |             |
| Chromium                                   | <0.002 mg/l |
| Nickel                                     | <0.2 mg/l   |
| Titanium                                   | <0.1 mg/l   |

NOTE: Data is from a grab sample taken on August 4, 1995 for all parameters except ammonia and pH which were sampled on September 8, 1995.

003 - Water Treatment Plant Wastes - This outfall is normally recycled so expected discharge flow would be zero. However, conditions may warrant this outfall to be discharged instead of recycled. It is estimated that this would only happen once a year.

009 - Intake Heater Blowdown - Discharges from this outfall are seasonal and intermittent. During winter operational periods, it is estimated that blowdown will occur approximately once per week (less than 100 gallons). Anticipated annual drainage is approximately 6,000 gallons.

016 - Cooling Tower Bypass - Discharges occur as needed to control Water Treatment Plant flow, and to provide additional water to the discharge line during Outfall 001 discharges. This outfall is used approximately 6 times per week.

#### DISCHARGES DURING PLANT OUTAGES:

It is necessary to drain many systems during plant outages for inspections and maintenance. In order to ensure that this water is of the same quality as water that is discharged during operations, some additional/alternate monitoring is performed.

When the cooling tower basin, and/or associated lines (between the basin and the power block) are drained, a single grab sample will be obtained and analyzed to verify compliance with Outfall 002 permit limits prior to discharge. This alternate monitoring will be performed since continuous monitoring will not be possible at all times during the draining of these systems.

Various non-radioactive systems in the Auxiliary Building have been drained in the past to floor drains in the Auxiliary Building to allow for inspection and maintenance. The floor drains from the Auxiliary Building are normally routed to the Radwaste System for processing and treatment. Since it is not necessary to process these non-radioactive liquid wastes through the Radwaste System, at times we divert non-radioactive Auxiliary Building equipment drainage to the Oily Waste Processing System for treatment prior to being recycled or discharged from Outfall 003. Recycling of this water also results in trace amounts of chemicals in Outfalls 002, 003, and 016. Attachment D, Chemical Usage, Table 1, lists these chemicals.

ATTACHMENT D  
Chemical Usage

The various chemical compounds that may occur in the discharges from Callaway Plant during normal operation fall into three usage categories.

Bulk Usage

This group of compounds describes chemicals which are added directly to specific water systems for treatment at some regular rate or interval. Table 1 lists these chemicals along with their predominant function and potential discharge points.

Laboratory Reagents

This category consists of a group of compounds stored and used in the plants four on-site laboratories. The predominant characteristic of this group is the relatively low usage which would result in negligible levels in the effluent. Laboratory reagents may be discharged through the radwaste treatment Outfall 001, and sanitary wastewater in Outfall 007. At the request of the Department, Union Electric will provide an inventory of these chemical compounds.

Other Chemical Compounds

This grouping includes other chemical compounds which may be discharged and are not included in the previous lists. General housekeeping and maintenance chemicals, and erosion/corrosion products or byproducts from the Plant's infrastructure or fuel materials, are not individually assessed. However, the Form C and D analytical data should reflect any contributions from routine use of these compounds. Note that 12% sodium hypochlorite identified in Table 1 is also used to clean the intake well periodically. At times, we use 20% hydrochloric acid to clean scale in the well. Less than 1,000 gallons of 12% sodium hypochlorite or 20% hydrochloric acid are used annually for intake well cleaning.

**TABLE 1**  
**BULK CHEMICAL USAGE - CALLAWAY**

|     |   |
|-----|---|
| 1.  | Ammonium hydroxide (Reboiler/Aux. boiler) - used for pH control in recirculating water systems; Outfalls 001 and 003.   |
| 2.  | Boric acid - used as a neutron absorber to provide reactivity control and corrosion inhibitor; Outfall 001.   |
| 3.  | Dispersants - (organic sulfonated copolymers) used to reduce solids deposition in process tanks and plant water systems; Outfalls 001, 002, and 003.  |
| 4.  | Ethylene Glycol - used as freeze protection in recirculating water systems; Outfalls 001, 003, and 007.   |
| 5.  | Hydrazine - used for dissolved oxygen control in recirculating water systems; Outfalls 001 and 003.   |
| 6.  | Hydrogen Peroxide - used as a chemical shock and biocide treatment in water systems; Outfall 001 and 003.   |
| 7.  | Lithium hydroxide - used for pH control in the primary loop; Outfall 001.   |
| 8.  | Nitrite/borate products (solutions) - used as corrosion inhibitors in recirculating water systems; Outfalls 001 and 003.  |
| 9.  | Coagulants - proprietary organic polymers are used as coagulants in the water treatment plant; Outfalls 001, 002, and 003.  |
| 10. | Sodium hydroxide - used for regenerating demineralizer resins and for pH control in various plant and wastewater systems; Outfalls 001, 003, and 009.   |
| 11. | Sodium hypochlorite - used as a biocide in the circulating, service, water treatment, ultimate heat sink, clarifiers, and potable water systems; Outfalls 001, 002, 003, and 016.               |
| 12. | Sodium molybdate - used as a corrosion inhibitor in closed water systems; Outfalls 001 and 003.   |
| 13. | Sodium sulfite - used as an oxygen scavenger and for conductivity control in the intake structure heaters; Outfall 009.   |
| 14. | Sodium tolytriazole - used as a copper corrosion inhibitor; Outfalls 001, 002, and 003.   |
| 15. | Sulfuric acid - used for regenerating demineralizer resins and for pH control in various water and wastewater systems; Outfalls 001, 002, 003, and 009.   |
| 16. | Monoethanolamine - used as a pH control in closed water systems; Outfalls 001 and 003.  |
| 17. | Sodium bromide - used in conjunction with sodium hypochlorite as a biocide in water systems; Outfalls 001, 002, and 003.  |
| 18. | Titanium dioxide - used to inhibit corrosion in steam generators; Outfalls 001 and 003.   |
| 19. | (1-Hydroxyethylidene) diposphonic acid, Potassium hydroxide (HEDP) - used to inhibit calcium carbonate scale formation in water systems and the ultimate heat sink; Outfalls 001, 002, and 003. |
| 20. | Dimethylamide (DMAD) - used as a biopenetrant to improve the efficiency of biocides in controlling bacteria that exist under deposits in piping systems; Outfalls 001, 002, and 003.            |
| 21. | Phosphoric Acid - used as a corrosion inhibitor for mild steel in recirculating water systems; Outfalls 001, 002, and 003.  |
| 22. | Gluteraldehyde - used as a biocide in low flow areas of plant water systems; Outfalls 001, 002, and 003.  |
| 23. | Diethylhydroxylamine (DEHA) - oxygen scavenger and pH control used in service water system for control of microbiological induced corrosion; Outfalls 001, 002, and 003.                        |
| 24. | Proprietary Methylene Bis based biocide - used in plant water systems; Outfalls 001, 002, and 003.  |
| 25. | Proprietary Quaternary ammonium compound - used as a biostat in plant water systems; Outfalls 001, 002 and 003.   |

**ATTACHMENT E**  
NPDES Sampling and Analysis

The chemical analysis of the various wastestreams reported in this application came from two principal sources: 1) discharge monitoring data as required by our existing NPDES permit, and 2) a special sampling and analytical project conducted in 1995.

The reapplication sampling effort was conducted by plant personnel. Power generation at the plant averaged in excess of 90% of capacity during the main sampling period.

Note that some special sampling techniques were used. The intermittent or batch discharge of some of the outfalls made it necessary to deviate from the reapplication sampling instructions. Each sample location is discussed below to clarify these details and to allow the data to be interpreted correctly.

For the sampling project, analyses were performed by the plant laboratories, Union Electric's Corporate Laboratory Service function, and two commercial laboratories: Maxim Technologies and Teledyne. All analyses were conducted in accordance with Standard Methods and/or EPA methodology. Specific test methods or additional details on other aspects of the sampling or analysis program is available upon request.

Outfall 001

As previously defined, routine discharges from this outfall are from one of five sources - the Boron Recycle System, the Liquid Radwaste System, Laundry and Hot Shower system, Secondary Liquid Waste system, and (less frequently) Steam Generator Blowdown. While processed separately, these wastestreams, except for Steam Generator Blowdown, are normally commingled and retained in various tanks prior to discharge. Thus, discrete samples of each subsystem were not obtained. Further, Steam Generator Blowdown was recycled without discharge during our sampling project schedule. (See Attachment C concerning blowdown analysis.)

In view of the above conditions and the necessity that plant operations not be constrained by the testing program, the following approach was utilized. Each sampling event consisted of a single grab sample, taken from either one of two well mixed Discharge Monitor Tanks (under recirculating conditions) prior to its batch release. Other than the exceptions listed below, all of the data shown in Forms C and D is from a sample taken from Discharge Monitor Tank B on February 9, 1995. The values shown in the following Maximum Daily Value columns reflect the corresponding analytical data and total masses calculated from this data.

- Form C, Table i, Item 3.0C
  - A, Heading 2a; and
  - B, Heading 3a; and
- Form D, Item 1.30, Heading 3a

Data under "Maximum 30 Day" and "Long Term Average" values are based on DMR data from April, 1994 through March, 1995, inclusive.

Another sample was taken on August 17, 1995, from a Discharge Monitor Tank in order to analyze the following parameters which were inadvertently omitted from the original monitoring plan. Data shown in Form C and D for molybdenum, titanium, phenols, and both the Acid and Base/Neutral compounds listed in GS/MS Fraction under Form D is from this sample.

A third sample was taken on September 8, 1995, to reanalyze in an attempt to validate the lead and ammonia data from the original sample (taken on February 9). Both values are used in calculation of the average shown in Form D.

#### Outfall 002

Cooling tower blowdown was sampled over a 24-hour period January 19 and 20, 1995. The discharge was maintained at a constant flow rate. Flow proportional composite and multiple grab samples were taken as appropriate. Other than the exceptions listed below, all of the data shown in Forms C and D is from this sampling event.

Data under "Maximum 30 Day" and "Long Term Average" values are based on DMR data from April, 1994 through March, 1995, inclusive.

A single grab sample was taken on August 17, 1995, in order to analyze for molybdenum, which was inadvertently omitted from the original monitoring plan.

#### Outfall 003

Water treatment plant wastes are routed to a sedimentation lagoon before being recycled or discharged. Effluent from the Demineralizer System wastes, the old outfall 004 is now part of Outfall 003. A 24-hour flow composite and multiple grab samples were taken from this waste water flow on August 15 and 16, 1995 while it was being recycled. Although we were not discharging at the time, the water quality at the sample point would be the same as the quality of the waste water if we had been discharging. Other than the exceptions listed below, all of the data shown in Forms C and D is from this sampling event.

No data were reported under "Maximum 30 Day" and "Long Term Average" values for this outfall since this outfall is normally recycled and thus there is not any historical monitoring data from the DMR's to report.

A single grab sample was taken on September 9, 1995 from the water treatment plant supernatant return sump. This is a well mixed, accessible location which would be representative of the outfall effluent, if it was being discharged, although this wastestream was being recycled at the time of sampling. The sample was taken in an attempt to validate the lead data from the original sample (taken on August 15). Both values are used in calculation of the average shown in Form D.

Outfall 007

The Sanitary Treatment Plant was operated at a constant rate during the sampling period. Flow proportional composite and grab samples were taken during a 24-hour period on February 9, 1995.

Data under "Maximum 30 Day" and "Long Term Average" values are reported based on discharge monitor reports from April 1994 through March 1995, inclusive. Other than the exceptions listed below, all of the data shown in Forms C and D is from this sampling event.

A single grab sample was taken on August 17, 1995 in order to analyze for gross alpha and beta. These analyses were not run correctly on the original sample.

Outfall 009

The intake electric boilers are currently in a dry layup condition as they have been for many years and so it was not possible to obtain a sample from them. The last discharge from this system occurred in early 1985, so recent past discharge data are not available. We desire to keep this outfall permitted because we plan to use the electric boilers should the weather or other conditions warrant their use.

Since no sample was possible, we have not reported any data. If data is needed, we can take a sample when we start discharging from the electric boilers.

Outfall 016

Cooling tower bypass was sampled over a 24-hour period on January 19 and 20, 1995. The discharge was maintained at a constant flow rate. Flow proportional composite and multiple grab samples were taken as appropriate. Other than the exceptions listed below, all of the data shown in Forms C and D is from this sampling event.

Data under "Maximum 30 Day" and "Long Term Average" values are based on discharge monitor report data from April 1994 through March 1995, inclusive.

A single grab sample was taken on August 17, 1995 in order to analyze for molybdenum which was inadvertently omitted on the original sample.

Missouri River

A single grab sample was taken of Missouri River water being pumped to the head of the water treatment plant. It is believed that a single grab sample would be representative of the river over a normal 24-hour period. Data available on the Missouri River indicate substantial variability over longer periods. Other than the exceptions listed below, all of the data shown in Forms C and D is from this sampling event.

A single grab sample was taken on August 17, 1995 to analyze for molybdenum which was omitted from the original sample.

General Notes

Important notes on mass discharge calculations:

- Where calculated, mass discharges under the Maximum Daily Value Heading, represent values calculated from the analytical data and the measured flows during the sampling event. Consequently, the values shown do not necessarily represent an actual maximum mass discharge value.
- For Outfall 009, the estimated maximum flow was used to calculate mass values.

The following parameters were analyzed by Maxim Technologies, Inc.

|                         |                                    |                            |                       |
|-------------------------|------------------------------------|----------------------------|-----------------------|
| COD                     | Tin, Total                         | <sup>55</sup> Fe           | Chloroform            |
| Ammonia (as N)          | Antimony, Total                    | Acrolein                   | Dichlorobromomethane  |
| Total Kjeldahl Nitrogen | Arsenic, Total                     | Acrylonitrile              | 1,1 Dichloroethane    |
| Bromide                 | Beryllium, Total                   | Benzene                    | 1,2 Dichloroethane    |
| Fecal Coliform          | Mercury, Total                     | Bromoform                  | 1,1 Dichloroethylene  |
| N, Total Organic        | Silver, Total                      | Carbon Tetrachloride       | 1,2 Dichloropropane   |
| Sulfide (as S)          | Thallium, Total                    | Chlorobenzene              | 1,3 Dichloropropylene |
| Surfactants             | Cyanide, Total                     | Chlorodibromomethane       | Ethylbenzene          |
| Magnesium, Total        | Phenols, Total                     | Chloroethane               | Methylbenzene         |
| Manganese, Total        | <sup>87</sup> Sr/ <sup>90</sup> Sr | 2, Chloroethylvinyl Ether  | Methyl Bromide        |
| Methyl Chloride         | Methylene                          | 1,1,2,2 Tetrachloroethane  | Tetrachloroethylene   |
| Toluene                 | Vinyl Chloride                     | 1,2 Trans-Dichloroethylene | 1,1,1 Trichloroethane |
| 1,1,2 Trichloroethane   | Trichloroethylene                  | 2 Chlorophenol             | 2,4 Dichlorophenol    |
| 2,4 Dimethylphenol      | 4,6 Dinitro-O-Cresol               | 2,4 Dinitrophenol          | 2 Nitrophenol         |
| 4 Nitrophenol           | P-Chloro-M-Cresol                  | Pentachlorophenol          | Phenol                |
| 2,4,6 Trichlorophenol   |                                    |                            |                       |

- Gross Alpha and Gross Beta for Outfall 007, Sanitary Treatment Plant was performed by Teledyne Isotopes Midwest Laboratory.
- Titanium analysis for Outfall 001, Radwaste Treatment System was performed by UE's Central Laboratory. All other analysis was performed by the Callaway plant's on-site laboratory.



**ATTACHMENT F**  
**Section 311 and CERCLA Exemptions**

The chemicals listed below are used in water treatment processes and may be discharged in amounts exceeding their "reportable quantities" under 40 CFR 117 and 302 (1989).

| CHEMICAL            | ANTICIPATED USAGE<br>(Avg lbs/day) | REPORTABLE QUANTITY<br>(lbs/day) | TYPICAL QUANTITY ON SITE<br>(lbs) | OUTFALLS                |
|---------------------|------------------------------------|----------------------------------|-----------------------------------|-------------------------|
| Sodium hydroxide    | 1,160                              | 1,000                            | 173,000                           | 001, 003, and 009*      |
| Sodium hypochlorite | 1,880                              | 100                              | 104,850                           | 001, 002, 003, and 016  |
| Sulfuric acid       | 31,000                             | 1,000                            | 702,920                           | 001, 002, 003, and 009* |
| Hydrazine           | 100                                | 1                                | 24,200                            | 001 and 003*            |

- \* Recycling of Outfall 003 (as described in Attachment A) may also result in trace amounts of these chemicals in Outfalls 002 and/or 016.

Union Electric requests exclusion under the NPDES exemptions from Section 311 and Superfund reporting for these four compounds and all others that are, as reported in this application, present in continuous or anticipated intermittent discharges (See Attachment D). These and other discharges for which exclusion are requested are exempt from Section 311 liability by 40 CFR 117.12(a)(1) if they are in compliance with the permit and by 117.12(a)(2) or (3) if they are not. Discharges that are excluded from 311 reporting are also excluded from Superfund reporting. Any discharges other than those resulting from on-site spills would either result from circumstances identified in this application and be subject to neutralization treatment (see 117.12(c)) or would be continuous or anticipated intermittent discharge originating within the operating or treatment systems at the plant (see 117.12(d)). These discharges are, therefore, excluded from Section 311 and Superfund reporting requirements.

ATTACHMENT G  
General Comments on Standards Setting

In anticipation of conditions which may be set in this permit renewal, Union Electric requests the consideration of the following comments.

1. **Mass Limits** - On November 19, 1982, EPA published new regulation for 40 CFR Part 423, "Steam Electric Power Generating Point Source Category" (47 FR 52290). Section 423.13(g) specifically allows the permitting authority to express the quantity of pollutants allowed to be discharged as a concentration limitation instead of a mass-based limitation. Fixed numerical mass discharge limitations necessarily impose implicit flow restrictions at the allowable concentration levels. These flow restrictions are too inflexible to cope with the flow variability conditions and the electrical reliability imperatives placed on steam electric power plants. Unlike some industries in which wastestream flow variability is the result of a single factor, like production, Callaway Plant has no such single parameter indicative of flow. Further as a utility whose production is dictated by public consumption, the plant must be capable of attaining and maintaining full power production for as long as necessary.

Since we feel that the concentration based limits are sufficient and more appropriate for regulation of power plant discharges, we request that you do not impose any mass limitations when reissuing this permit.

2. **Net Credits** - In a situation whereby a limitation might be set on the discharge of a priority pollutant, Union Electric feels it should reflect an adjustment credit for pollutants in the intake water, because discharges are returned to the Missouri River. As complete removal of compounds in this category would not be achieved by the water treatment systems at the Callaway Power Plant, we hereby request an appropriate net limitation be applied as necessary. We anticipate no adverse water quality effects from net limitations.

ATTACHMENT H  
Section 316(b) Demonstration Status

The Callaway 316(b) demonstration consists of two parts, an impingement study and an entrainment study. Part one, the impingement study was started during the spring of 1984 and was successfully completed fall of 1984. Part two, the entrainment study was completed and submitted in June, 1986. Your letter dated April 15, 1987, approved the 316(b) study and agreed with the conclusions of the study that the impacts from the use of the intake structure at Callaway are minimal.

There have been no significant modifications or changes in the construction, design, location, or capacity of the cooling water intake structure. Accordingly, UE hereby incorporates by reference the results and conclusions of these prior studies and requests renewal of the 316(b) approval at Callaway.

ATTACHMENT I  
Secondary Liquid Waste (Cuno) Filters

A component of Outfall 001, Radwaste Treatment System, is secondary liquid waste (SLW). The main portion of the SLW comes from regeneration waste water from the condensate polisher system. However, during the last several years, we have also routed most of the turbine building floor drains to this process path. The addition of the floor drains to this waste treatment system has significantly increased the solids loading on the filters. The increased loading combined with a small pore size for the filter has caused increased filter plugging.

The SLW filter system consists of a filter housing containing eighty 30-inch long filters. During the construction permitting process in 1986, we specified a one micron pore size for these filters in supplemental information which we provided to the Department.

Each change out of these filters generates a significant amount of solid waste. The increased plugging has increased the amount of solid waste generated in the form of used filters as well as increased labor and expense. In an effort to reduce the amount of radioactively contaminated solid waste generated at the plant, we plan to increase the pore size of these filters. We believe a larger pore size will reduce the frequent change out of these filters without any significant degradation in effluent quality.

**ATTACHMENT J**  
**Monitoring Requests**

As part of the permit reapplication process, we have reviewed past monitoring results and looked for possibilities to improve the monitoring and still provide the same level of useful data. We also looked for changes in operations or regulations that would require changes to our permit. In this attachment, we are proposing monitoring changes to our permit as a result of our review.

1. **Changes in Reporting Due to Nuclear Regulatory Commission (NRC) Changes:** Some of the conditions in our permit under Section D, Other Requirements, either reference or are based on NRC requirements. Due to some changes in the NRC requirements over the period of the last permit, we are requesting two changes.
  - a. The frequency of our Radioactive Effluent Release Report has changed from semi-annual to annual. This requires a revision in Section D, Item 4e of our NPDES permit. Specifically, the wording "Semi-Annual Radioactive Effluent Release Report" should be revised to "Annual Radioactive Effluent Release Report."
  - b. 10 CFR 20 has changed and the change affects some of the reporting requirements. In our NPDES permit, it affects Section D, Item 4f reporting. This section should be revised to read: "The Department of Natural Resources of the State of Missouri, and any other state agency or officer designated in the State's emergency response plan or any other plan to protect its citizens from radioactive liquid discharge from the Caliaway Plant, shall receive within one hour of the event, notice of any unplanned or uncontrolled liquid radioactive release in accordance with 10 CFR 50.72(a) and notification of reportable events per 10 CFR 20.2202 and 10 CFR 20.2203 that involve off-site release of liquid radioactive material."
2. **Change in Whole Effluent Toxicity (WET) Testing Frequency:** During the period of our last permit, we have performed WET testing annually on our effluent. Each test has shown that our discharge is not acutely toxic to any of the test organisms. We believe that continuance of the annual frequency for performing a WET test is excessive and would not provide useful data. We request that the frequency of the WET test requirement be changed to once per permit period.
3. **Change in Monitoring for Outfall 001, Radwaste System:**
  - a. Outfall 001 is discharged in batches, usually about 90,000 gallons (one tank) in each batch. We typically discharge one tank per day, but sometimes we discharge two tanks in one 24-hour period. The flow monitoring for this outfall requires a frequency of measurement of "when discharge occurs" and a measurement type of "24-hour total" which makes it confusing to report. We believe that more understandable and useful data could be provided if the frequency of measurement was "each batch" and the sample type was listed as "each batch total." We request that this change in flow monitoring be made in our new permit.
  - b. Outfall 001 currently requires that oil and grease be monitored in each batch. Over the period of our current permit, we have not had any non-compliance on this parameter for this outfall. Each batch is monitored with the approved solvent extraction-gravimetric method.

Based on the results of past monitoring, we think that monitoring each batch with an approved method is not necessary.

We request that the monitoring frequency for oil and grease on Outfall 001 be changed from once each batch to once per quarter. For this once per quarter sample, we will use the approved freon extraction-gravimetric method. We will still spot check each batch for oil and grease using an oil in water analyzer such as the Horiba OCMA-220. This analyzer is used by various industries to do spot checks for oil and grease in various waters. The method uses solvent extraction followed by analysis using an infrared spectrophotometer. This method is quite accurate and even more accurate for light hydrocarbons which would be lost in EPA method 413.1.

Additional benefits from changing the frequency of the oil and grease analysis will be a decrease in the amount of solvent used at the facility for this analysis. The solvent used in the spot check analysis is less and we will recycle the solvent. We can provide additional information on the spot check analysis at your request.

4. Change in Analyses on Outfall 002:

- a. There have been changes in the chemical treatment of the cooling tower water over the term of our current permit. One of the changes included the elimination of the zinc based corrosion inhibitor. With the elimination of the zinc based corrosion inhibitor, we have essentially eliminated our input of zinc to the wastewater for Outfall 002. The zinc monitoring of Outfall 002 was not required until we started using the zinc based corrosion inhibitor. Since we have discontinued the use of this corrosion inhibitor, we request that the monitoring requirement for both dissolved and total recoverable zinc on Outfall 002 be removed.
  - b. Our current permit requires monthly monitoring for copper and nickel on Outfall 002. Past data shows that over the period of our current permit, we have not exceeded any limit for copper or nickel. Based on our past compliance with the copper and nickel limits, we request that the monitoring frequency for these metals be changed from monthly to quarterly.
  - c. Oil and grease monitoring is required weekly on Outfall 002 in our current permit. We have not had any exceedance of the oil and grease limit on this outfall over the life of the facility. There are not many reasonable ways that oil could enter this system. In the event that it did, it would most likely either be discovered by knowing about the event or by personnel observing an oil sheen on the surface of the cooling tower basin. We request that the oil and grease monitoring be eliminated on this outfall.
5. Elimination of Outfall 004: We request that Outfall 004 and all associated monitoring be eliminated in the reissued permit.
6. Change in Outfall 007, Sanitary Treatment Plant (STP), Monitoring: The STP has been operating well within limitations for the past few years. Additionally, in early 1992, we built a lift station and piping (construction permit #2521) to route the STP effluent to an evolved wetland for further treatment. Although we have had some problems with the wetland, we have corrected them as we identified them. We have been sampling both the STP effluent and the effluent of the wetland to determine if it is effective at further polishing of the STP effluent.

We have found that the wetland does provide some additional treatment for BOD and TSS. As reported in Form C for Outfall 007, the STP long term average value for TSS is 9.7 mg/l and for BOD is 6.0 mg/l. Over the same period, the wetland effluent long term average for TSS is 5.6 mg/l and for BOD is 4.4 mg/l.

These averages show that the wetland does provide additional treatment for the STP effluent. The effluent from the wetland is what is actually routed to our plant discharge line and discharged to the Missouri River. It would be more representative of the water quality discharged from Outfall 007 to sample the wetland effluent. Therefore, we request that the monitoring location for Outfall 007 be changed to the wetland discharge. Additionally, due to the stability of the wetland treatment, we request that the monitoring frequency for all of the monitored parameters on Outfall 007 be changed from monthly to quarterly.

7. **Change in Monitoring on Outfall 016, Cooling Tower Bypass:** This waste water consists of essentially clarified river water. There is a small recycled component from Outfall 003 that has been treated for reuse. The use of this outfall has been reduced over the term of our current permit. In our last reapplication, the average flow was 4.25 MGD and the average flow now is 1.25 MGD. Due to the consistent high quality water quality of this outfall and the reduction in its use, we are requesting some changes in monitoring.

Oil and grease is monitored once per month in our current permit. It is very unlikely that any oil could ever get in this outfall. In the event that it did, it would be noticed as an oil sheen on the top of the clarifiers or clearwell. This outfall was just designated as an outfall in our current permit. Over the term of our current permit, we have not had any exceedance of the oil and grease limit. Based on these reasons, we request that the oil and grease monitoring requirement be removed from this outfall.

All other parameters on this outfall are monitored once per month. As we have noted, this outfall is essentially all clarified river water. We have not had any exceedance of any of the parameter limits on this outfall over the term of our current permit. Therefore, we are requesting that the monitoring frequency for all parameters on this outfall be changed from monthly to once per year.

ATTACHMENT K  
Land Application of STP Sludge

In August 1992, we submitted a land application plan for our STP sludge. To address some issues in the plan, we submitted additional information as well as a revised plan on April 12, 1993. With this attachment, we are cancelling that request. Per P. M. Bell's letter dated September 8, 1995 to D. Schuette, this issue is hereby incorporated by reference.



ATTACHMENT L  
Environmental Projects

Domestic Wastewater Treatment

Domestic wastewater at Callaway Plant is currently treated with an extended aeration package plant. The effluent from this treatment plant is then routed to an evolved wetland for further treatment. The package plant is labor intensive and fairly susceptible to upsets. The energy required for treatment is quite high as the aerators run constantly. We plan to replace the package plant with a lagoon treatment system. The effluent will still be routed to the wetland for further treatment.

The treatment lagoon will not be as prone to upset and will require significantly less labor and energy to operate. Since the wastewater will also be treated by the wetland, we believe that it will receive equivalent treatment when compared to the current system. We plan to submit the engineering package for the construction permit during the term of the reissued permit.

Water Treatment Plant Settling Lagoon

Treatment lagoon #2 is essentially full. We recently switched to lagoon #3 to treat our clarifier blowdown. Treatment lagoon #2 solids are river solids from the clarification of river water, the same as the solids that filled lagoon #1 which we are currently using as a treatment wetland for our STP effluent.

The solids in lagoon #2 are soil like material and can be expected to have the same makeup as those in lagoon #1. We will pursue closure for lagoon #2 in accordance with waste management program regulations and guidance.

Intake Deep Well

During the five year term of the permit, it is planned to drill and use a deep well at the intake structure to replace the current shallow well (see Attachment B, Return to River Water). The deep well will supply lubricating water to the same components as the current shallow well.

ATTACHMENT M  
Macroinvertebrate Control

Purpose of Attachment

This attachment requests approval for macroinvertebrate control strategies for the anticipated macrofouling of Callaway power plant water systems caused by the invasion of zebra mussels into the lower Missouri River. Zebra mussels have been shown to have significant detrimental effects on power plant water systems unless effective controls are promptly initiated when their presence is detected. The zebra mussel has established substantial populations in the Mississippi River on the eastern border of the state of Missouri. The zebra mussel will probably extend its range to the Missouri River in the next several years. We have an ongoing monitoring program at the plant. We believe that the control strategies we are requesting will need to be implemented during the term of the new NPDES permit. These macroinvertebrate control strategies represent known and accepted technologies for limiting zebra mussel macrofouling effects on power plant capacity and availability.

Zebra Mussel Biology and Distribution

Dreissena polymorpha, the European freshwater macrofouling zebra mussel, was introduced to Lake Saint Clair, near Detroit, in 1985. It has since spread throughout the Great Lakes and is beginning to spread to the inland river systems. These mussels have a very high reproductive rate, and their larvae are small enough to pass through most industrial water screens and strainers. They can attach with secreted byssal threads to almost any hard substrate where water velocity is less than 6 ft/s. Accumulations of zebra mussels in power plant cooling-water systems impede flow, reduce heat transfer, and aggravate sedimentation and corrosion.

The zebra mussel is spreading widely and rapidly. The zebra mussel is now found in the Mississippi river both upstream and downstream of the Missouri river confluences. The adult mussel is expanding its range by attaching to boat hulls and floating debris, and the larvae (veligers) can float with water currents. The mussel's potential range in North America is likely to include all of the United States except for the southwestern and southern tier of states where the summer water temperature may be too high (greater than 82 degrees F) for development and settlement of the veligers. The zebra mussel has a greater potential than the Asian clam for fouling power plant cooling-water systems because the mussels use their byssal threads not only to attach to hard substrate but also to each other. Affected power plant components include intake structures, intake lines, heat exchangers, service water systems, fire protection systems, and cooling-water basins.

Zebra Mussel Monitoring and Detection Program

During 1990 Union Electric initiated a monitoring and detection program for zebra mussels at all potentially threatened Company facilities. Settlement block samplers and shoreline/maintenance inspections are the techniques being used for providing an early warning of the presence of the organism. The Company initiated these programs to respond and minimize the threat this organism can cause to providing reliable and economical generation of power.

### System Descriptions

We have identified two systems at Callaway that are vulnerable to macroinvertebrate fouling. The first system is the intake structure, which is located on the Missouri River. The intake contains screen wells, pump bays, vertical traveling screens, pumps, trash racks, and other equipment for supplying raw water to the plant. The other system which will need treatment is the 5-mile pipeline from the intake structure to the plant. Note that these systems supply the majority of the raw water to the plant. The treatments that are planned for the above systems will not be implemented until the monitoring verifies that fouling is imminent.

### Intake Structure - Control Strategy

Static molluscicide treatment of isolated intake bays will be used to control macroinvertebrate fouling in the intake structure. The intake bays will be isolated by closing all gate openings to adjacent cells and the river. The intake pump in the isolated bay will have the discharge valve closed to prevent backflow from operating pumps in adjacent bays. After the treatment, the waste water will be pumped to the plant for use.

Molluscicide product will be injected into a isolated bay to achieve the manufacturers recommended concentration. The product concentration will be maintained for the specified time limit for effective treatment. This method of macrofouling control for intake bays uses a similar method and molluscicide products which has already been approved by the Missouri Department of Natural Resources for the Union Electric power plant intake structures on the Mississippi River. Treatment for controlling fouling in the intake bays will be conducted 3 to 4 times per year. The molluscicide products which we contemplate using are Betz Clam-Trol.

Betz Clam-Trol maximum control dosage would be 15 ppm as product (2.0 ppm as active compounds) for a maximum of 12 hours per treatment.

MSDS and manufacturers toxicity data for the product is in Attachment N.

### Intake Pipeline - Control Strategy

The pipeline from the intake structure to the plant will also be treated with molluscicide. The planned injection location will be in the combined pump discharge header at the intake. A quaternary ammonium compound will be used.

The quaternary ammonium compound will be injected at 2.0 mg/l as product for a period of four weeks. Two treatments will be conducted per year; one treatment in the spring and another in the fall.

MSDS and manufacturers toxicity data for a typical product is in Attachment N.

### Other Control Strategies

Union Electric will be investigating and evaluating various chemical treatment control strategies for zebra mussels which are being developed and researched within the electric utility industry. If we discover a viable and feasible alternate control strategy which has been proven to be more efficient or environmentally acceptable than the control strategies described above, we will provide notice to the DNR of our intent to implement a new macroinvertebrate control strategy.

ATTACHMENT N

MATERIAL SAFETY DATA SHEETS

This attachment contains MSDSs for  
proposed firewater treatment and  
zebra mussel control chemicals.



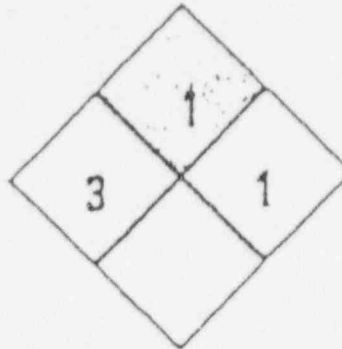
## MATERIAL SAFETY DATA SHEET

BULAB 6067

Revision Date: 9/24/93

Phone 1-800-BUCKMAN

Buckman Laboratories, Inc.  
1256 North McLean Boulevard  
Memphis, TN 38108



24 Hour Emergency Phone  
(901) 767-2722

|           |                             |
|-----------|-----------------------------|
| SECTION 1 | OSHA HAZARD CLASSIFICATIONS |
|-----------|-----------------------------|

Corrosive to eyes and skin. Sanitizer.

|           |                      |
|-----------|----------------------|
| SECTION 2 | HAZARDOUS COMPONENTS |
|-----------|----------------------|

| Chemical Name      | CAS Number | % by Weight | TLV              |
|--------------------|------------|-------------|------------------|
| Methanol           | 67-56-1    | < 1 %       | 200 ppm          |
| Glutaraldehyde     | 111-30-8   | 45 %        | 0.2 ppm, ceiling |
| Total listed: 46 % |            |             |                  |

The remainder of the components comprise proprietary information.

|           |   |
|-----------|---|
| SECTION 3 | PRECAUTIONARY LABEL INFORMATION AS PRESCRIBED BY THE U.S. EPA |
|-----------|---|

Corrosive. Causes irreversible eye damage. Causes skin burns. Harmful if inhaled. Harmful if swallowed. Harmful if absorbed through skin. May cause skin sensitization. Do not get in eyes, on skin, or on clothing. Avoid breathing vapor. Do not swallow. Wear goggles, protective clothing and rubber gloves. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

**ENVIRONMENTAL HAZARDS**

This pesticide is toxic to fish. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or public waters unless this product is specifically identified and addressed in an NPDES permit. Do not discharge effluent containing this product to sewer systems without previously notifying the sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

**STATEMENT OF PRACTICAL TREATMENT**

- IF IN EYES: Immediately flush with plenty of water for at least 15 minutes. Get immediate medical attention.
- IF ON SKIN: Immediately wash with plenty of soap and water. Get medical attention.
- IF INHALED: Remove to fresh air. If breathing is difficult, administer oxygen. If symptoms persist, call a physician.
- IF SWALLOWED: DO NOT INDUCE VOMITING. Do not give anything to drink. Seek medical advice with urgency.

Note to Physician: Aspiration may cause lung damage. Probable mucosal damage may contraindicate the use of gastric lavage.

#### SECTION 4

#### FIRST AID INFORMATION

**Eye exposure:** Flush immediately with copious amounts of tap water or normal saline (minimum of 15 minutes). Take exposed individual to a health care professional, preferably an ophthalmologist, for further evaluation.

**Skin exposure:** Wash exposed area with plenty of soap and water. Repeat washing. Remove contaminated clothing and wash thoroughly before reuse. If irritation persists consult a health care professional.

**Inhalation:** If exposure by inhalation is suspected, immediately move exposed individual to fresh air. If individual experiences nausea, headache, dizziness, has difficulty in breathing or is cyanotic, seek a health care professional immediately.

**Ingestion:** DO NOT INDUCE VOMITING. Rinse with copious amounts of water or milk, first. Irrigate the esophagus and dilute stomach contents by slowly giving one (1) to two (2) glasses of water or milk. Avoid giving alcohol or alcohol related products. In cases where the individual is semi-conscious, comatose or convulsing, DO NOT GIVE FLUIDS BY MOUTH. In case of intentional ingestion of the product seek medical assistance immediately; take individual to nearest medical facility.

**NOTE TO PHYSICIAN:** No specific antidote is known. Probable mucosal damage may contraindicate the use of gastric lavage. Treat Symptoms. Medical Consultation is available 24 hours a day. Call the NPI-Buckman Center for Product Information at U.S.A. (1) (901) 767-2722.

#### SECTION 5

#### PRIMARY ROUTES OF EXPOSURE

##### 1. Effects from Acute Exposure:

**Eye exposure:** Corrosive to the eyes with possible permanent damage depending on the length of exposure, solution concentration and first aid measures.

**Skin exposure:** Dermal irritant, corrosive. Moderate to severe skin irritation (corrosion) depending on length of exposure, solution concentration and first aid measures. Exposure to skin may cause allergic reactions. This product has caused allergic reactions in animal studies.

**Inhalation:** May cause irritation or corrosion of mucous membranes and the lungs. Exposed individuals should be monitored for respiratory distress, bronchitis or pneumonia.

**Ingestion:** Ingestion is not expected to be a primary route of exposure.

##### 2. Effects from Chronic Exposure:

The effects from chronic exposure to this product have not been fully evaluated.

#### SECTION 6

#### TOXICOLOGICAL INFORMATION

**Acute effects:** This product has not been tested. The following health hazard information is based on test results from a similar product.

Acute Oral LD50: 733.0 mg/kg

Acute Dermal LD50: 897.0 mg/kg

**Irritant effects:** Corrosive to eyes and skin.

**Sensitization effects:** Sensitizer.

**Carcinogenic potential:** Not listed in any of OSHA Standard, Section 1910.1200 ~~as~~ as carcinogenic; not tested by Buckman Laboratories, Inc.

**Other health effects:** Methanol causes narcotic effects. Symptoms of exposure include blurring of vision, photophobia, and

BULAB 5067

Page 2 of 6

conjunctivitis. There may be conjunctival, corneal, and a tearing or irritation. Prolonged contact to the eye can result from continuous or severe exposure.

**SECTION 7 ENVIRONMENTAL TOXICOLOGICAL INFORMATION**

Acute Aquatic LC50's

48 Hr. Daphnia Magna: 11.5 mg/L  
96 Hr. Bluegill sunfish: 22.4 mg/L  
96 Hr. Rainbow trout: 23.7 mg/L

Avian Acute Oral LD50's

Mallard ducks: 933.0 mg/kg

Avian Dietary LC50's

Mallard ducks: 10,000.0 ppm  
Bobwhite quail: 10,000.0 ppm

**SECTION 8 PHYSICAL AND CHEMICAL PROPERTIES**

Appearance . . . . . clear liquid  
Odor . . . . . sharp  
Density @ 25 °C . . . . . 1.12 g/mL  
Flash Point . . . . . None  
Freezing Point . . . . . -17 °C (1.4 °F)  
Boiling Point . . . . . 102 °C (216 °F)  
Solubility . . . . . Completely soluble in water.  
pH . . . . . N/A  
pH (100 ppm in water) . . . . . N/T  
Vapor Pressure . . . . . 14.7 mm Hg @ 20 °C  
o/w Partition Coefficient . . . . . N/T  
Oxidizing/Reducing Properties . . . . . N/T  
Vapor Density . . . . . >1  
Evaporation Rate . . . . . 0.88

NOTE: N/A = Not Applicable, N/T = Not Tested

**SECTION 9 FIRE AND EXPLOSION INFORMATION**

Flammable limits: Not determined.

Extinguishing media: Water fog, carbon dioxide, foam dry chemical

Special fire fighting procedures: Self contained breathing apparatus and full body protective clothing. Water spray may be used to cool containers.

**SECTION 10 REACTIVITY INFORMATION**

Stability: stable

Incompatibility: strong acids, strong alkali, strong oxidizers

Hazardous Decomposition Products: oxides of carbon

BULAB 6067  
Page 3 of 6

Body-protective clothing and rubber safety shoes are required.  
 Ventilation must be sufficient to achieve the TLV listed above.  
 Rubber gloves and safety glasses or goggles required.  
 Eye-wash fountains in the work area are required.

## SECTION 12

Reserved for  
 SATISFACTORY MATERIALS OF CONSTRUCTION

## SECTION 13

SPILL, LEAK, AND DISPOSAL PROCEDURES

## SPILL AND LEAK RESPONSE GUIDELINES

Important: Before responding to a spill or leak of this product, review each section of this MSDS. Follow the recommendations given in the Handling Precautions sections. Check the Fire and Explosion Data section to determine if the use of non-sparking tools is merited. Insure that spilled or leaked product does not come into contact with materials listed as incompatible. If irritating fumes are present, consider evacuation of enclosed areas.

Emergency Response Assistance: Emergency technical assistance is available at any time from Buckman Laboratories, Inc., by calling (901) 767-2722.

Initially minimize area affected by the spill or leak. Block any potential routes to water systems (e.g., sewers, streams, lakes, etc.). Based on the product's toxicological and chemical properties, and on the size and location of the spill or leak, assess the impact on contaminated environments (e.g. water systems, ground, air equipment, etc.). There are no methods available to completely eliminate any toxicity this product may have on aquatic environments. Minimize adverse effects on these environments. Buckman Laboratories, Inc. can be contacted for technical assistance. Determine if federal, state, and/or local release notification is required (see Regulatory Classifications section of this MSDS). Recover as much of the pure product as possible into appropriate containers. Later, determine if this recovered product can be used for its intended purpose. Address clean-up of contaminated environments. Spill or leak residuals may have to be collected and disposed of. Clay, soil, or commercially available absorbents may be used to recover any material that can not readily be recovered as pure product. Flushing residual material to an industrial sewer, if present at the site of a spill or leak incident, may be acceptable if authorized approval is obtained. If product and/or spill/leak residuals are flushed to an industrial sewer, insure that they do not come into contact with incompatible materials. Contact the person(s) responsible for the operation of your facility's industrial sewer system prior to intentionally flushing or pumping spills or leaks of this product to the industrial sewer.

## DISPOSAL GUIDELINES

Note: Follow federal, state, and local regulations governing the disposal of waste materials.

Next Product: Contact your Buckman representative or Buckman Laboratories, Inc., at (901) 278-0330.

Contaminated Materials: Determine if waste containing this product can be handled by available industrial effluent system or other on-site waste management unit. If off-site management is required, contact a company experienced in industrial waste management. This product is not specifically listed in 40 CFR 261 as a Resource Conservation and Recovery Act (RCRA) hazardous waste. However, spill or leak residuals may meet the criteria of a characteristic hazardous waste under this Act. Check the characteristics of the material to be disposed of and/or the physical and reactivity data given in this MSDS for the next product.



Container Disposal: Empty containers, as defined by appropriate sections of the RCRA, are not RCRA hazardous waste. However, insure proper management of any residuals remaining in container.

SECTION 14

TRANSPORTATION AND SHIPPING INFORMATION

DOT Shipping Name: CORROSIVE LIQUID, N.O.S. (Glutaraldehyde), 2, UN 1760, PG III  
(PLG GUIDE 60)

The shipping name listed above applies only to a 55 gallon drum of the product. This product may have more than one proper shipping name, depending on packaging, product properties, and mode of shipment. All products shipped from Buckman Laboratories have been properly packaged and labeled according to appropriate hazardous shipping regulations that apply for that particular shipment. If any alteration of packaging, product, or mode of transportation is further intended, different shipping names and labeling may apply. If there are any questions pertaining to hazardous shipping requirements, contact the Buckman Transportation Department for further details.

SECTION 15

REGULATORY INFORMATION

The following Regulations are known to apply to the use and disposal of this product. Additional Federal, State and Local regulations may also be applicable.

SARA (Superfund Amendments and Reauthorization Act):

SARA 302 Extremely Hazardous Substances List (40 CFR 300): No components of this product are listed.

SARA 312 Hazard Category: Immediate (Acute) Health Hazard.

SARA 313 Toxic Chemicals List: The following components are listed on the SARA 313 Toxic Substances List (may be listed as categories):

Methanol

CERCLA (Comprehensive Environmental Response, Compensation and Liability Act): The following components are listed on the CERCLA Hazardous Substances List (may be listed as categories):

Methanol

RQ = 5,000

RCRA (Resource Conservation and Recovery Act) Listed Hazardous Wastes: No components of this product are listed.

CWA (Clean Water Act, 40 CFR 401.15) Listed Substances: No components of this product are listed.

FDA (Food and Drug Administration): This product not approved for food contact uses.

TSCA (Toxic Substances Control Act) Applicability: Registered pesticides are exempt from the requirements of TSCA. All components are listed on TSCA Inventory.

FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act): This product is a registered pesticide.  
EPA Reg. No. 10352-22-1448

HMIS/NPCA Ratings: Health 3; Flammability 1; Reactivity 1

NFPA Ratings: Health 3; Flammability 1; Reactivity 1

STATE REGULATIONS

Various State Right to Know Acts: Non-proprietary hazardous chemicals are listed in Section 2 of this MSDS. Should you require further information on specific proprietary chemicals or inerts please contact Buckman Laboratories' Regulatory Affairs Department.

BULAB 6067

Page 5 of 6

The information on the Industrial Safety Data Sheet is for the use of the person using the product and does not constitute an offer, recommendation, or warranty of the product under the Environmental Protection Act. The use of the product or method of application is not described in the Product Data Sheet is the responsibility of the user. This Industrial Safety Data Sheet was prepared in accordance with the OHSAS 18001 Certification requirements.

Business Laboratories, Inc. warrants that the product conforms to the chemical description and is suitable for the purposes indicated in the description for use when used in accordance with the directions under normal conditions. Buyer assumes the risk of any use contrary to such directions.

It is advised that other necessary or appropriate use of this product, including the use of this product, including NO USE FOR AGRICULTURE OR PESTICIDE OR FERTILIZER OR ANY OTHER PURPOSES. The user assumes the risk of any use of this product or method of application to which this warranty is not expressly or impliedly extended.

The product is not intended for use as a flame retardant or for use in the production of the product, unless stated otherwise. It is advised that a label is placed upon the product of the nature of the use.

Any statements or claims relating to or in connection with this product, or herein provided, shall be subject to verification in accordance with the environmental information rules of the American Association of Environmental Chemists and Engineers upon the product described by the Environmental Data Sheet as required in any state health jurisdiction statute.

14033

14-04-058

(BL)

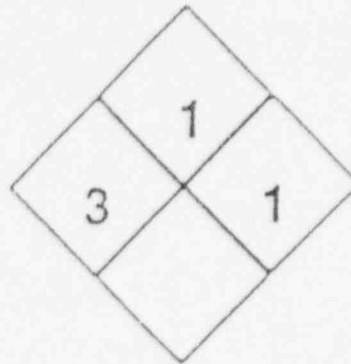
# MATERIAL SAFETY DATA SHEET

BULAB 8006

Revision Date: 11/08/93

Phone 1-800-BUCKMAN

Buckman Laboratories, Inc.  
1256 North McLean Boulevard  
Memphis, TN 38108



24 Hour Emergency Phone  
(901) 767-2722

**SECTION 1 OSHA HAZARD CLASSIFICATIONS**

Corrosive to eyes and irritating to skin.

**SECTION 2 HAZARDOUS COMPONENTS**

The components of this product comprise proprietary information.

**SECTION 3 PRECAUTIONARY LABEL INFORMATION AS PRESCRIBED BY THE U.S. EPA**

*This section not applicable to non-biocides.*

**SECTION 4 FIRST AID INFORMATION**

Eye exposure: Flush immediately with copious amounts of tap water or normal saline (minimum of 15 minutes). Take exposed individual to a health care professional, preferably an ophthalmologist, for further evaluation.

Skin exposure: Wash exposed area with plenty of soap and water. Repeat washing. Remove contaminated clothing and wash thoroughly before reuse. If irritation persists consult a health care professional.

Inhalation: If exposure by inhalation is suspected, immediately move exposed individual to fresh air. If individual experiences nausea, headache, dizziness, has difficulty in breathing or is cyanotic, seek a health care professional immediately.

Ingestion: **DO NOT INDUCE VOMITING.** Rinse with copious amounts of water or milk, first. Irrigate the esophagus and dilute stomach contents by slowly giving one (1) to two (2) glasses of water or milk. Avoid giving alcohol or alcohol related products. In cases where the individual is semi-comatose, comatose or convulsing, **DO NOT GIVE FLUIDS BY MOUTH.** In case of intentional ingestion of the product seek medical assistance immediately; take individual to nearest medical facility.

of gastric lavage. Treat Symptoms. Medical Consultation is available 24 hours a day. Call the NPI-Buckman Center for Product Information at U.S.A. (1) (401) 767-2722.

SECTION 5 PRIMARY ROUTES OF EXPOSURE

1. Effects from Acute Exposure:

Eye exposure: Corrosive. Effects may range from moderate to severe (corrosion) depending on the length of exposure, solution concentration and first aid measures.

Skin exposure: Irritant. Effects may vary depending on length of exposure, solution concentration and first aid measures.

Inhalation: May cause irritation or corrosion of mucous membranes and the lungs. Exposed individuals should be monitored for respiratory distress, bronchitis or pneumonia.

Ingestion: No data is available on human ingestion.

2. Effects from Chronic Exposure:

The effects from chronic exposure to this product have not been fully evaluated.

SECTION 6 TOXICOLOGICAL INFORMATION

Acute effects:

Acute Oral LD50: > 2,000.0 mg/kg

Acute Dermal LD50: > 2,000.0 mg/kg

Irritant effects: Expected to be corrosive to eyes and irritating to skin.

Sensitization effects: None expected.

Carcinogenic potential: Not listed in any of OSHA Standard, Section 1910.12(X) sources as carcinogenic; not tested by Buckman Laboratories, Inc.

Other health effects: None known.

SECTION 7 ENVIRONMENTAL TOXICOLOGICAL INFORMATION

Acute Aquatic LC50's

96 Hr. Fathead minnow: 3.82 mg/L

Acute Marine LC50's

96 Hr. Sheepshead minnow: 2.51 mg/L

96 Hr. Mysid Shrimp: 1.19 mg/L

SECTION 8 PHYSICAL AND CHEMICAL PROPERTIES

Appearance ..... clear, yellow liquid  
Odor ..... slight  
Density @ 25°C ..... 1.12 g/mL

|                               |             |
|-------------------------------|-------------|
| Freezing Point                | N/T         |
| Boiling Point                 | >100°C      |
| Solubility                    | Miscible.   |
| pH                            | 12          |
| pH (100 ppm in water)         | 8.9         |
| Vapor Pressure                | N/T         |
| o/w Partition Coefficient     | N/T         |
| Oxidizing/Reducing Properties | N/T         |
| Viscosity                     | 60 - 71 cps |

NOTE: N/A = Not Applicable, N/T = Not Tested

|           |                                |
|-----------|--------------------------------|
| SECTION 9 | FIRE AND EXPLOSION INFORMATION |
|-----------|--------------------------------|

Flammable limits: Not applicable.  
 Extinguishing media: Water fog, carbon dioxide, foam, dry chemical  
 Special firefighting procedures: None.

|            |                        |
|------------|------------------------|
| SECTION 10 | REACTIVITY INFORMATION |
|------------|------------------------|

Stability: stable  
 Incompatibility: strong acids  
 Hazardous Decomposition Products: None known.

|            |                      |
|------------|----------------------|
| SECTION 11 | HANDLING PRECAUTIONS |
|------------|----------------------|

Rubber gloves and safety glasses or goggles required.  
 Eye wash fountains in the work place are strongly recommended.

|            |  |
|------------|--|
| SECTION 12 | Reserved for<br>SATISFACTORY MATERIALS OF CONSTRUCTION |
|------------|--|

|            |                                      |
|------------|--------------------------------------|
| SECTION 13 | SPILL, LEAK, AND DISPOSAL PROCEDURES |
|------------|--------------------------------------|

**SPILL AND LEAK RESPONSE GUIDELINES**

Important: Before responding to a spill or leak of this product, review each section of this MSDS. Follow the recommendations given in the Handling Precautions sections. Check the Fire and Explosion Data section to determine if the use of non-sparking tools is merited. Insure that spilled or leaked product does not come into contact with materials listed as incompatible. If irritating fumes are present, consider evacuation of enclosed areas.

Emergency Response Assistance: Emergency technical assistance is available at any time from Buckman Laboratories, Inc., by calling (901) 767-2722.

streams, lakes, etc.). Based on the product's toxicological and chemical properties, and on the size and location of the spill or leak, assess the impact on contaminated environments (e.g. water systems, ground, air equipment, etc.). There are no methods available to completely eliminate any toxicity this product may have on aquatic environments. Minimize adverse effects on these environments. Buckman Laboratories, Inc. can be contacted for technical assistance. Determine if federal, state, and/or local release notification is required (see Regulatory Classifications section of this MSDS). Recover as much of the pure product as possible into appropriate containers. Later, determine if this recovered product can be used for its intended purpose. Address clean-up of contaminated environments. Spill or leak residuals may have to be collected and disposed of. Clay, soil, or commercially available absorbents may be used to recover any material that can not readily be recovered as pure product. Flushing residual material to an industrial sewer, if present at the site of a spill or leak incident, may be acceptable if authorized approval is obtained. If product and/or spill/leak residuals are flushed to an industrial sewer, insure that they do not come into contact with incompatible materials. Contact the person(s) responsible for the operation of your facility's industrial sewer system prior to intentionally flushing, or pumping spills or leaks of this product to the industrial sewer.

#### DISPOSAL GUIDELINES

Note: Follow federal, state, and local regulations governing the disposal of waste materials.

Neat Product: Contact your Buckman representative or Buckman Laboratories, Inc., at (901) 278-0330.

Contaminated Materials: Determine if waste containing this product can be handled by available industrial effluent system or other on-site waste management unit. If off-site management is required, contact a company experienced in industrial waste management. This product is not specifically listed in 40 CFR 261 as a Resource Conservation and Recovery Act (RCRA) hazardous waste. However, spill or leak residuals may meet the criteria of a characteristic hazardous waste under this Act. Check the characteristics of the material to be disposed of and/or the physical and reactivity data given in this MSDS for the neat product.

Container Disposal: Empty containers, as defined by appropriate sections of the RCRA, are not RCRA hazardous wastes. However, insure proper management of any residuals remaining in container.

#### SECTION 14

#### TRANSPORTATION AND SHIPPING INFORMATION

DOT Shipping Name: NONHAZARDOUS

#### SECTION 15

#### REGULATORY INFORMATION

The following Regulations are known to apply to the use and disposal of this product. Additional Federal, State and Local regulations may also be applicable.

SARA (Superfund Amendments and Reauthorization Act):

SARA 302 Extremely Hazardous Substances List (40 CFR 300): No components of this product are listed.

SARA 312 Hazard Category: Immediate (Acute) Health Hazard.

SARA 313 Toxic Chemicals List: No Section 313 listed substances are present above de minimus levels.

CERCLA (Comprehensive Environmental Response, Compensation and Liability Act): No components of this product are listed.

CWA (Clean Water Act, 40 CFR 401.15) Listed Substances: No components of this product are listed.

FDA (Food and Drug Administration): This product is approved under the following FDA (21 CFR) sections:  
176.210

TSCA (Toxic Substances Control Act) Applicability: All components are listed on TSCA Inventory.

FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act): This product is not a registered pesticide.

HMIS/NPCA Ratings: Health 2; Flammability 1; Reactivity 1

NFPA Ratings: Health 3; Flammability 1; Reactivity 1

## STATE REGULATIONS

Various State Right to Know Acts: Non-proprietary hazardous chemicals are listed in Section 2 of this MSDS. Should you require further information on specific proprietary chemicals or inerts please contact: Buckman Laboratories' Regulatory Affairs Department.

The information on this Material Safety Data Sheet reflects the best information and data that we have on hazards, properties, and handling of this product under the recommended conditions of use. Any use of this product or method of application which is not described in the Product Data Sheet is the responsibility of the user. The Material Safety Data Sheet was prepared to comply with the OSHA Hazard Communication regulations.

Buckman Laboratories, Inc. warrants that this product conforms to its chemical description and is reasonably fit for the purpose referred to in the directions for use when used in accordance with the directions under normal conditions. Buyer assumes the risk of any use contrary to such directions.

Seller makes no other warranty or representation of any kind, express or implied, concerning the product, including NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS OF THE GOODS FOR ANY OTHER PARTICULAR PURPOSE. No such warranty shall be implied by law and no agent or seller is authorized to alter the warranty in any way except in writing with a specific reference to this warranty.

The exclusive remedy against seller shall be a claim for damages not to exceed the purchase price of the product, without regard to whether such a claim is based upon breach of warranty or not.

Any controversy or claim arising out of or relating to this contract, or breach thereof shall be settled by arbitration in accordance with the commercial arbitration rules of the American Arbitration Association, and judgment upon the award rendered by the Arbitrator(s) may be entered in any court having jurisdiction thereof.

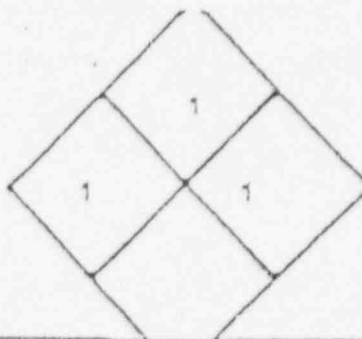


BULAB 7034

Revision Date: 8/14/91

Phone 1-800-BUCKMAN

Buckman Laboratories, Inc.  
1256 North McLean Boulevard  
Memphis, TN 38108



24 Hour Emergency Phone  
(901) 767-2722

SECTION 1

OSHA HAZARD CLASSIFICATIONS

Irritating to eyes.

SECTION 2

HAZARDOUS COMPONENTS

The components of this product comprise proprietary information.

SECTION 3

PRECAUTIONARY LABEL INFORMATION

This section not applicable to non-biocides.

SECTION 4

FIRST AID INFORMATION

Eye exposure: Flush immediately with copious amounts of tap water or normal saline (minimum of 15 minutes). Take exposed individual to a health care professional, preferably an ophthalmologist, for further evaluation.

Skin exposure: Wash exposed area with plenty of soap and water. Repeat washing. Remove contaminated clothing and wash thoroughly before reuse. If irritation persists consult a health care professional.

Inhalation: If exposure by inhalation is suspected, immediately move exposed individual to fresh air. If individual experiences nausea, headache, dizziness, has difficulty in breathing or is cyanotic, seek a health care professional immediately.

Ingestion: DO NOT INDUCE VOMITING. Rinse with copious amounts of water or milk, first. Irrigate the esophagus and dilute stomach contents by slowly giving one (1) to two (2) glasses of water or milk. Avoid giving alcohol or alcohol related products. In cases where the individual is semi-comatose, comatose or convulsing, DO NOT GIVE FLUIDS BY MOUTH. In case of intentional ingestion of the product, seek medical assistance immediately; take individual to nearest medical facility.

NOTE TO PHYSICIAN: No specific antidote is known. Probable mucosal damage may contraindicate the use of gastric lavage. Treat Symptoms. Medical Consultation is available 24 hours a day. Call the Buckman Center for Product Information at (901) 767-2722.



1. Effects from Acute Exposure:

Eye exposure: Eye irritant. Effects may vary depending on the length of exposure, solution concentration and first aid measures.

Skin exposure: Non-irritating to the skin.

Inhalation: May cause irritation of mucous membranes and the lungs. Exposed individuals should be monitored for respiratory distress, bronchitis or pneumonia.

Ingestion: No data is available on human ingestion.

2. Effects from Chronic Exposure:

The effects from chronic exposure to this product have not been evaluated. Chronic ingestion of some barium compounds may have an adverse effect on the cardiovascular system.

SECTION 6 TOXICOLOGICAL INFORMATION

Acute effects:

Acute Oral LD50: > 5,000.0 mg/kg

Acute Dermal LD50: > 5,000.0 mg/kg

Irritant effects: Expected to be irritating to eyes.

Sensitization effects: None expected based on components.

Carcinogenic potential: Not listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic; not tested by Buckman Laboratories, Inc.

Other health effects: None known.

SECTION 7 Reserved for ENVIRONMENTAL TOXICOLOGICAL INFORMATION

SECTION 8 PHYSICAL AND CHEMICAL PROPERTIES

|                               |  |
|-------------------------------|--|
| Appearance                    | clear, yellow liquid                               |
| Odor                          | slight   |
| Density @ 25°C                | 1.2 g/mL   |
| Flash Point                   | > 212 °F   |
| Freezing Point                | N/T  |
| Boiling Point                 | > 212°F  |
| Solubility                    | Completely miscible with water in all proportions. |
| pH                            | 4.2  |
| pH (100 ppm in water)         | 4.5 - 5.5  |
| Vapor Pressure                | N/T  |
| o/w Partition Coefficient     | N/T  |
| Oxidizing/Reducing Properties | Not tested   |

## SECTION 9

## FIRE AND EXPLOSION INFORMATION

Flammable limits: Not applicable.

Extinguishing media: Water fog, carbon dioxide, foam, dry chemical

Special firefighting procedures: Self contained breathing apparatus is required. Water spray may be used to cool containers.

## SECTION 10

## REACTIVITY INFORMATION

Stability: stable

Incompatibility: None known. Not tested.

Hazardous Decomposition Products: carbon monoxide, carbon dioxide

## SECTION 11

## HANDLING PRECAUTIONS

Rubber gloves and safety glasses or goggles are required.

Eye-wash fountains in the workplace are strongly recommended.

## SECTION 12

## SATISFACTORY MATERIALS OF CONSTRUCTION

Tested Satisfactory Materials

This product has not been tested for Materials of Construction data. This Material Safety Data Sheet will be updated after this product is tested.

*NOTE: The materials listed above have been tested with BULAB 7034. With respect to all other materials not listed above, user should be aware that use of such materials with BULAB 7034 may be hazardous and result in damages to such materials and other property and personal injuries. No data concerning such materials not listed above should be implied by the user.*

## SECTION 13

## SPILL, LEAK, AND DISPOSAL PROCEDURES

## SPILL AND LEAK RESPONSE GUIDELINES

Important: Before responding to a spill or leak of this product, review each section of this MSDS. Follow the recommendations given in the Handling Precautions sections. Check the Fire and Explosion Data section to determine if the use of non-sparking tools is merited. Insure that spilled or leaked product does not come into contact with materials listed as incompatible. If irritating fumes are present, consider evacuation of enclosed areas.

Emergency Response Assistance: Emergency technical assistance is available at any time from Buckman Laboratories, Inc., by calling (901) 767-2722.

Initially minimize area affected by the spill or leak. Block any potential routes to water systems (e.g., sewers, streams, lakes).

to completely eliminate any toxicity this product may have on aquatic environments. Maximize adverse effects on these environments. Buckman Laboratories, Inc. can be contacted for technical assistance. Determine if federal, state, and/or local release notification is required (see Regulatory Classifications section of this MSDS). Recover as much of the pure product as possible into appropriate containers. Later, determine if this recovered product can be used for its intended purpose. Address clean-up of contaminated environments. Spill or leak residuals may have to be collected and disposed of. Clay, soil, or commercially available absorbents may be used to recover any material that can not readily be recovered as pure product. Flushing residual material to an industrial sewer, if present at the site of a spill or leak incident, may be acceptable if authorized approval is obtained. If product and/or spill/leak residuals are flushed to an industrial sewer, insure that they do not come into contact with incompatible materials. Contact the person(s) responsible for the operation of your facility's industrial sewer system prior to intentionally flushing or pumping spills or leaks of this product to the industrial sewer.

#### DISPOSAL GUIDELINES

Note: Follow federal, state, and local regulations governing the disposal of waste materials.

Neat Product: Contact your Buckman representative or Buckman Laboratories, Inc., at (901) 278-0330.

Contaminated Materials: Determine if waste containing this product can be handled by available industrial effluent system or other on-site waste management unit. If off-site management is required, contact a company experienced in industrial waste management. This product is not specifically listed in 40 CFR 261 as a Resource Conservation and Recovery Act (RCRA) hazardous waste. However, spill or leak residuals may meet the criteria of a characteristic hazardous waste under this Act. Check the characteristics of the material to be disposed of and/or the physical and reactivity data given in this MSDS for the neat product.

Container Disposal: Empty containers, as defined by appropriate sections of the RCRA, are not RCRA hazardous wastes. However, insure proper management of any residuals remaining in container.

#### SECTION 14

#### TRANSPORTATION AND SHIPPING INFORMATION

DOT Shipping Name: NONHAZARDOUS

#### SECTION 15

#### REGULATORY INFORMATION

The following Regulations are known to apply to the use and disposal of this product. Additional Federal, State and Local regulations may also be applicable.

SARA (Superfund Amendments and Reauthorization Act):

SARA 302 Extremely Hazardous Substances List (40 CFR 300): No components of this product are listed.

SARA 312 Hazard Category: Immediate (Acute) Health Hazard.

SARA 313 Toxic Chemicals List: No Section 313 listed substances are present above de minimus levels.

CERCLA (Comprehensive Environmental Response, Compensation and Liability Act): No components of this product are listed.

RCRA (Resource Conservation and Reclamation Act) Listed Hazardous Wastes: No components of this product are listed.

FDA (Food and Drug Administration): This product not approved for food contact uses.

TSCA (Toxic Substances Control Act) Applicability: All components are listed on TSCA Inventory.

FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act): This product is not a registered pesticide.

HMIS/NFPA Ratings: Health 1; Flammability 1; Reactivity 1

NFPA Ratings: Health 1; Flammability 1; Reactivity 1

#### STATE REGULATIONS

Various State Right to Know Acts: Non-proprietary hazardous chemicals are listed in Section 2 of this MSDS. Should you require further information on specific proprietary chemicals or inert please contact Buckman Laboratories' Regulatory Affairs Department.

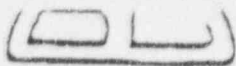
*The information on this Material Safety Data Sheet reflects the latest information and data that we have on hazards, properties, and handling of this product under the recommended conditions of use. Any use of this product or method of application which is not described in the Product Data Sheet is the responsibility of the user. This Material Safety Data Sheet was prepared to comply with the OSHA Hazard Communication regulations.*

*Buckman Laboratories, Inc. warrants that this product conforms to its chemical description and is reasonably fit for the purpose referred to in the directions for use when used in accordance with the directions under normal conditions. Buyer assumes the risk of any use contrary to such directions.*

*Seller makes no other warranty or representation of any kind, express or implied, concerning the product, including NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS OF THE GOODS FOR ANY OTHER PARTICULAR PURPOSE. No such warranties shall be implied by law and no agent of seller is authorized to alter this warranty in any way except in writing with a specific reference to this warranty.*

*The exclusive remedy against seller shall be a claim for damages not to exceed the purchase price of the product, without regard to whether such a claim is based upon breach of warranty or tort.*

*Any controversy or claim arising out of or relating to this contract, or breach thereof, shall be settled by arbitration in accordance with the commercial arbitration rules of the American Arbitration Association, and judgement upon the award rendered by the Arbitrator(s) may be entered in any court having jurisdiction thereof.*



Bulab 7034

Ingredients:

The identity of the ingredients of this product are proprietary information of Buckman Laboratories. None of the ingredients of this product are considered to be hazardous by definition of OSHA.

Aquatic Toxicity Information:

|                                     |              |
|-------------------------------------|--------------|
| 48 hour EC50 - <i>Daphnia magna</i> | > 1,000 mg/L |
| 96 hour LC50 - Rainbow trout        | > 1,000 mg/L |
| 96 hour LC50 - Bluegill sunfish     | > 1,000 mg/L |
| 96 hour EC50 - Algae                | 58 mg/L      |

17081  
MATERIAL SAFETY DATA SHEET

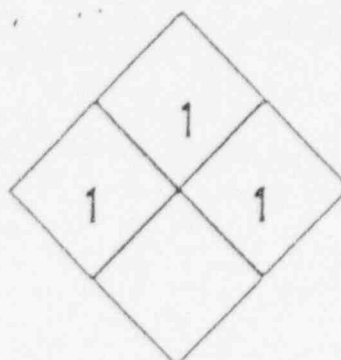
(BL)

BULAB 6002

Revision Date: 11/05/93

Phone 1-800-BUCKMAN

Buckman Laboratories, Inc.  
1256 North McLean Boulevard  
Memphis, TN 38108



24 Hour Emergency Phone  
(901) 767-2722

SECTION 1

OSHA HAZARD CLASSIFICATIONS

Irritating to eyes.

SECTION 2

HAZARDOUS COMPONENTS

| <u>Chemical Name</u>   | <u>CAS Number</u> | <u>% by Weight</u> | <u>TLV</u> |
|--|-------------------|--------------------|------------|
| Poly[oxyethylene(dimethyliminio)ethylene<br>(dimethyliminio)ethylene dichloride] | 31075-24-8        | 60 %               | N/A        |
| Total listed: 60 %   |                   |                    |            |

The remainder of the components comprise proprietary information.

SECTION 3

PRECAUTIONARY LABEL INFORMATION AS PRESCRIBED  
BY THE U.S. EPA

CAUTION: Harmful if swallowed. Avoid breathing vapors. Avoid contact with skin, eyes, or clothing.  
FIRST AID: If swallowed, drink promptly a large quantity of milk, egg whites, gelatin solution, or, if these are not available, drink large quantities of water. Avoid alcohol. Call a physician immediately.  
ENVIRONMENTAL HAZARDS: This product is highly toxic to fish and aquatic invertebrates. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA.

SECTION 4

FIRST AID INFORMATION

exposed individual to a health care professional, preferably an ophthalmologist, for further evaluation.

Skin exposure: Wash exposed area with plenty of soap and water. Repeat washing. Remove contaminated clothing and wash thoroughly before reuse. If irritation persists consult a health care professional.

Inhalation: If exposure by inhalation is suspected, immediately move exposed individual to fresh air. If individual experiences nausea, headache, dizziness, has difficulty in breathing or is cyanotic, seek a health care professional immediately.

Ingestion: DO NOT INDUCE VOMITING. Rinse mouth with copious amounts of water or milk, first. Irrigate the esophagus and dilute stomach contents by slowly giving one (1) to two (2) glasses of water or milk. Avoid giving alcohol or alcohol related products. In cases where the individual is semi-comatose, comatose or convulsing, DO NOT GIVE FLUIDS BY MOUTH. In case of intentional ingestion of the product seek medical assistance immediately; take individual to the nearest medical facility.

NOTE TO PHYSICIAN: No specific antidote is known. Treat Symptoms. Medical consultation is available 24 hours a day. Call the Burkman Center for Product Information at (901) 767-2722.

## SECTION 5

## PRIMARY ROUTES OF EXPOSURE

### 1. Effects from Acute Exposure:

Eye exposure: Mild irritant. Effects may range from none to mild depending on the length of exposure, solution concentration and first aid measures.

Skin exposure: Non-irritating to the skin.

Inhalation: May cause irritation or corrosion of mucous membranes and the lungs. Exposed individuals should be monitored for respiratory distress, bronchitis or pneumonia.

Ingestion: No data is available on human ingestion.

### 2. Effects from Chronic Exposure:

The effects from chronic exposure to this product have not been fully evaluated.

## SECTION 6

## TOXICOLOGICAL INFORMATION

Acute effects: Oral LD50: Male: 1951 mg/kg, Female: 2587 mg/kg

Acute Dermal LD50: > 2,000.0 mg/kg

Acute Inhalation LC50: 2.9 mg/L

Irritant effects: Mild transient irritation.

Sensitization effects: No evidence of sensitization.

Carcinogenic potential: A two year rat carcinogenicity study showed a slight increase in c-cell adenomas in female rats. Studies with male rats and male and female mice did not show any evidence of carcinogenic response. This product is not considered a carcinogen. Not listed in the OSHA Standard, Section 1910.1200 as a carcinogen.

Other health effects: Mutagenicity studies were negative.

## SECTION 7

## ENVIRONMENTAL TOXICOLOGICAL INFORMATION

### Acute Aquatic LC50's

48 Hr. Daphnia Magna: 0.37 mg/L

96 Hr. Fathead minnow: 0.43 mg/L

96 Hr. Bluegill sunfish: 0.34 mg/L

96 Hr. Rainbow trout: 0.47 mg/L

96 Hr. Mysis Shrimp: > 100.0 mg/L

96 Hr. Mysis Shrimp: 13.0 mg/L

Avian Acute Oral LD50's

Mallard ducks: 805.0 mg/kg

Bobwhite quail: 1,100.0 mg/kg

Avian Dietary LC50's

Mallard ducks: > 5,620.0 ppm

Bobwhite quail: > 20,000.0 ppm

## SECTION 8

## PHYSICAL AND CHEMICAL PROPERTIES

|                               |   |
|-------------------------------|---|
| Appearance                    | clear, pale yellow liquid   |
| Odor                          | mild  |
| Density @ 25°C                | 1.15 g/mL   |
| Flash Point                   | none  |
| Freezing Point                | < 0°C   |
| Boiling Point                 | > 100 °C (> 212 °F)   |
| Solubility                    | Completely miscible with water, insoluble in most organic solvents. |
| pH                            | 6 - 8   |
| pH (100 ppm in water)         | 6 - 7   |
| Vapor Pressure                | N/T   |
| o/w Partition Coefficient     | N/T   |
| Oxidizing/Reducing Properties | Not tested.   |

NOTE: N/A = Not Applicable, N/T = Not Tested

## SECTION 9

## FIRE AND EXPLOSION INFORMATION

Flammable limits: Not applicable.

Extinguishing media: Dry chemical, water foam or carbon dioxide. Water should be used to cool surrounding containers.

Special firefighting procedures: None

## SECTION 10

## REACTIVITY INFORMATION

Stability: stable

Incompatibility: Anionic polymers

Hazardous Decomposition Products: None known.

## SECTION 11

## HANDLING PRECAUTIONS

Rubber gloves and safety glasses or goggles are recommended.

## SECTION 12

## SATISFACTORY MATERIALS OF CONSTRUCTION



Polypropylene  
Plexiglas  
Teflon  
PVC - rigid  
Buna-N rubber  
Viton  
EPDM rubber  
PVC - flexible  
Neoprene  
Fiberglass  
Polyethylene - low density  
Tygon  
Tyril 880  
Gum rubber  
Silicone rubber  
Hypalon  
Aluminum 5052 H34

NOTE: With respect to all other materials not listed above, user should be aware that use of such materials with BULAB 6002 may be hazardous and result in damages to such materials and other property and personal injuries. No data concerning such materials not listed above should be implied by the user.

## SECTION 13

## SPILL, LEAK, AND DISPOSAL PROCEDURES

### SPILL AND LEAK RESPONSE GUIDELINES

Important: Before responding to a spill or leak of this product, review each section of this MSDS. Follow the recommendations given in the Handling Precautions sections. Check the Fire and Explosion Data section to determine if the use of non-sparking tools is merited. Insure that spilled or leaked product does not come into contact with materials listed as incompatible. If irritating fumes are present, consider evacuation of enclosed areas.

Emergency Response Assistance: Emergency technical assistance is available at any time from Buckman Laboratories, Inc., by calling (901) 767-2722.

Initially minimize area affected by the spill or leak. Block any potential routes to water systems (e.g., sewers, streams, lakes, etc.). Based on the product's toxicological and chemical properties, and on the size and location of the spill or leak, assess the impact on contaminated environments (e.g. water systems, ground, air equipment, etc.). There are no methods available to completely eliminate any toxicity this product may have on aquatic environments. Minimize adverse effects on these environments. Buckman Laboratories, Inc. can be contacted for technical assistance. Determine if federal, state, and/or local release notification is required (see Regulatory Classifications section of this MSDS). Recover as much of the pure product as possible into appropriate containers. Later, determine if this recovered product can be used for its intended purpose. Address clean-up of contaminated environments. Spill or leak residuals may have to be collected and disposed of. Clay, soil, or commercially available absorbents may be used to recover any material that can not readily be recovered as pure product. Flushing residual material to an industrial sewer, if present at the site of a spill or leak incident, may be acceptable if authorized approval is obtained. If product and/or spill/leak residuals are flushed to an industrial sewer, insure that they do not come into contact with incompatible materials. Contact the person(s) responsible for the operation of your facility's industrial sewer system prior to intentionally flushing or pumping spills or leaks of this product to the industrial sewer.

### DISPOSAL GUIDELINES

Note: Follow federal, state, and local regulations governing the disposal of waste materials.

Contaminated Materials: Determine if waste containing this product can be handled by available industrial effluent system or other on-site waste management unit. If off-site management is required, contact a company experienced in industrial waste management. This product is not specifically listed in 40 CFR 261 as a Resource Conservation and Recovery Act (RCRA) hazardous waste. However, spill or leak residuals may meet the criteria of a characteristic hazardous waste under this Act. Check the characteristics of the material to be disposed of and/or the physical and reactivity data given in this MSDS for the neat product.

Container Disposal: Empty containers, as defined by appropriate sections of the RCRA, are not RCRA hazardous wastes. However, insure proper management of any residuals remaining in container.

## SECTION 14

## TRANSPORTATION AND SHIPPING INFORMATION

DOT Shipping Name: NONHAZARDOUS

## SECTION 15

## REGULATORY INFORMATION

The following Regulations are known to apply to the use and disposal of this product. Additional Federal, State and Local regulations may also be applicable.

SARA (Superfund Amendments and Reauthorization Act):

SARA 302 Extremely Hazardous Substances List (40 CFR 300): No components of this product are listed.

SARA 312 Hazard Category: Immediate (Acute) Health Hazard.

SARA 313 Toxic Chemicals List: No Section 313 listed substances are present above de minimus levels.

CERCLA (Comprehensive Environmental Response, Compensation and Liability Act): No components of this product are listed.

RCRA (Resource Conservation and Recovery Act) Listed Hazardous Wastes: No components of this product are listed.

CWA (Clean Water Act, 40 CFR 401.15) Listed Substances: No components of this product are listed.

FDA (Food and Drug Administration): This product not approved for food contact uses.

TSCA (Toxic Substances Control Act) Applicability: Registered pesticides are exempt from the requirements of TSCA. All components are listed on TSCA Inventory.

FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act): This product is a registered pesticide.  
EPA Reg. No. 1448-42

HMIS/NPCA Ratings: Health 1; Flammability 1; Reactivity 1

NFPA Ratings: Health 1; Flammability 1; Reactivity 1

### STATE REGULATIONS

California Proposition 65: This product has been reviewed for Prop 65 components, and the following warning applies:

WARNING: This product may contain substance(s) which are known to the State of California to cause cancer or reproductive harm.

(Contains Trace levels of Dichloroethyl ether, 1,4-Dioxane, and N-nitrosodimethylamine may be detectable.)

(Trace Contaminants from Poly(oxyethylene(dimethyliminio)ethylene(dimethyliminio)ethylenedichloride))

Various State Right to Know Acts: Non-proprietary hazardous chemicals are listed in Section 2 of this MSDS. Should you require further information on specific proprietary chemicals or inert please contact Buckman Laboratories' Regulatory



# AQUATIC TOXICITY PROFILE

BUCKMAN LABORATORIES INTERNATIONAL, INC.

March 20, 1982

33400214

## Bulab 6002

### Active Ingredient:

Poly(oxyethylene(dimethylamino)ethylene(dimethylamino)ethylene dichloride) . 60% minimum

### Aquatic Toxicity Information:

#### Technical Bulab 6002 (60% Active)

|   |   |
|---|---|
| 48 hour LC50 - <i>Daphnia magna</i>         | 0.60 mg/L                                   |
| 48 hour LC50 - <i>Daphnia magna</i>         | > 7.5 mg/L (with 10 or 20 mg/L humic acids) |
| 48 hour EC50 - Clam                         | 0.35 mg/L                                   |
| 96 hour LC50 - Bluegill sunfish             | 0.34 mg/L (standard water)                  |
|   | 6.7 mg/L (natural river water)              |
| 96 hour LC50 - Rainbow trout                | 0.075 mg/L                                  |
| 96 hour LC50 - Fathead minnow               | 0.43 mg/L                                   |
| 96 hour LC50 - Sheepshead minnow            | >600 mg/L                                   |
| 96 hour LC50 - Shrimp                       | 13 mg/L                                     |
| Chronic/Reproduction - <i>Daphnia magna</i> |   |
| 16 day EC50 (reproduction)                  | >1.0 mg/L                                   |
| 16 day LC50 (mortality)                     | 1.3 mg/L                                    |
| 30 day LC50 - <i>Mytilus edulis</i>         | >20 ppm                                     |
| Bioconcentration - Channel catfish          | no bioconcentration observed                |

### Hydrolysis Information:

Studies have shown that Bulab 6002 does not degrade significantly over 30 days at pH 5, 7, or 9 in a pure water solution.<sup>1</sup> Studies are presently being conducted to determine the environmental fate of this product.

The information on this Data Sheet reflects the latest toxicological information and data that we have on this product. However, no representation or warranty of any kind, express or implied, is made as to this Data Sheet or the contents hereof, and no such warranty shall be implied by law. The exclusive remedy against Buckman Laboratories International, Inc. for any cause of action relating to this Data Sheet is a claim for damages not to exceed any price paid for the Data Sheet, without regard to whether any such claim is based upon breach of warranty or tort.

<sup>1</sup>Biospherics Inc. 1985. "Solution Hydrolysis of WSCP".

PRODUCT:CLAM-TROL CT-2

17176

EFFECTIVE DATE:09-16-94

REVISIONS TO SECTIONS: APP

PRODUCT APPLICATION:WATER-BASED MICROBIAL CONTROL AGENT.

## 1) HAZARDOUS INGREDIENTS

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION.

(C12-16)ALKYL DIMETHYL BENZYL AMMONIUM CHLORIDE\*\*\*CAS# 68424-85-1;  
CORROSIVE(SKIN AND EYES); PEL:NOT DETERMINED;TLV:NOT DETERMINED

ETHYL ALCOHOL(ETHANOL)\*\*\*CAS# 64-17-5;FLAMMABLE;EYE IRRITANT;POTENTIAL  
LIVER AND KIDNEY TOXIN.MAY CAUSE CNS DEPRESSION;PEL:1000PPM;TLV:1000PPM

## 2) TYPICAL PHYSICAL DATA

|                        |                |                                 |
|------------------------|----------------|---------------------------------|
| PH: AS IS (APPROX.)    | 8.9            | ODOR: MILD                      |
| FL.PT. (DEG.F):        | 130 P-M(CC)    | SP.GR. (70F): 0.965             |
| VAPOR PRESSURE (mmHG): | 44.0           | VAPOR DENSITY (AIR=1): < 1.00   |
| VISC cps70F:           | 73             | W SOLUBILITY (WATER): 100.0     |
| EVAP RATE: >           | 1.00 (ETHER=1) | APPEARANCE: COLORLESS TO YELLOW |
| PHYSICAL STATE: LIQUID |                | FREEZE POINT (DEG.F): -7.00     |

## 3) REACTIVITY DATA

STABLE.MAY REACT WITH STRONG OXIDIZERS.DO NOT CONTAMINATE.BETZ TANK  
CLEAN-OUT CATEGORY 'B'

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

---

#### 4) HEALTH HAZARD EFFECTS

ACUTE SKIN EFFECTS \*\*\* PRIMARY ROUTE OF EXPOSURE  
SEVERE IRRITANT TO THE SKIN.POTENTIAL SKIN SENSITIZER  
ACUTE EYE EFFECTS \*\*\*  
CORROSIVE TO THE EYES  
ACUTE RESPIRATORY EFFECTS \*\*\*  
VAPORS,GASES,MISTS AND/OR AEROSOLS MAY CAUSE IRRITATION TO UPPER  
RESPIRATORY TRACT.  
CHRONIC EFFECTS OF OVEREXPOSURE\*\*\*  
PROLONGED OR REPEATED EXPOSURES MAY CAUSE LIVER AND KIDNEY TOXICITY,CNS  
DEPRESSION AND SKIN SENSITIZATION.  
MEDICAL CONDITIONS AGGRAVATED \*\*\*  
NOT KNOWN  
SYMPTOMS OF EXPOSURE \*\*\*  
INHALATION OF VAPORS/MISTS/AEROSOLS MAY CAUSE EYE,NOSE,THROAT AND LUNG  
IRRITATION;SKIN CONTACT MAY CAUSE SEVERE IRRITATION OR BURNS.  
PRECAUTIONARY STATEMENT BASED ON TESTING RESULTS \*\*\*  
MAY BE TOXIC IF ORALLY INGESTED.

---

#### 5) FIRST AID INSTRUCTIONS

SKIN CONTACT \*\*\*  
REMOVE CLOTHING.WASH AREA WITH LARGE AMOUNTS OF SOAP SOLUTION OR WATER FOR  
15 MIN.IMMEDIATELY CONTACT PHYSICIAN  
EYE CONTACT\*\*\*  
IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES.IMMEDIATELY CONTACT A  
PHYSICIAN FOR ADDITIONAL TREATMENT  
INHALATION EXPOSURE\*\*\*  
REMOVE VICTIM FROM CONTAMINATED AREA.APPLY NECESSARY FIRST AID  
TREATMENT.IMMEDIATELY CONTACT A PHYSICIAN.  
INGESTION\*\*\*  
DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM  
DO NOT INDUCE VOMITING.IMMEDIATELY CONTACT PHYSICIAN. DILUTE CONTENTS OF  
STOMACH USING 3-4 GLASSES MILK OR WATER

---

#### 6) SPILL,DISPOSAL AND FIRE INSTRUCTIONS

SPILL INSTRUCTIONS\*\*\*  
VENTILATE AREA,USE SPECIFIED PROTECTIVE EQUIPMENT.CONTAIN AND  
ABSORB ON ABSORBANT MATERIAL.PLACE IN WASTE DISPOSAL CONTAINER.THE  
CONTAMINATED ABSORBANT SHOULD BE CONSIDERED A PESTICIDE AND  
DISPOSED OF IN AN APPROVED PESTICIDE LANDFILL.SEE PRODUCT LABEL  
STORAGE AND DISPOSAL INSTRUCTIONS.  
REMOVE IGNITION SOURCES.FLUSH AREA WITH WATER.SPREAD SAND/GRIT.  
DISPOSAL INSTRUCTIONS\*\*\*\*  
WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY  
SEWER TREATMENT FACILITY,IN ACCORDANCE WITH ANY LOCAL AGREEMENT,A  
PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT  
PRODUCT(AS IS)-  
DISPOSE OF IN APPROVED PESTICIDE FACILITY OR ACCORDING TO LABEL  
INSTRUCTIONS  
FIRE EXTINGUISHING INSTRUCTIONS\*\*\*  
FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING  
APPARATUS(FULL FACE-PIECE TYPE).PROPER FIRE EXTINGUISHING MEDIA:  
DRY CHEMICAL,CARBON DIOXIDE,FOAM OR WATER

---

## 7) SPECIAL PROTECTIVE EQUIPMENT

USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.  
VENTILATION PROTECTION\*\*\*

ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS  
RECOMMENDED RESPIRATORY PROTECTION\*\*\*

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,  
USE A RESPIRATOR WITH ORGANIC VAPOR CARTRIDGE & DUST/MIST PREFILTER  
RECOMMENDED SKIN PROTECTION\*\*\*

RUBBER GLOVES  
WASH OFF AFTER EACH USE REPLACE AS NECESSARY.  
RECOMMENDED EYE PROTECTION\*\*\*

SPLASH PROOF CHEMICAL GOGGLES

---

## 8) STORAGE AND HANDLING PRECAUTIONS

STORAGE INSTRUCTIONS\*\*\*

KEEP CONTAINERS CLOSED WHEN NOT IN USE.  
KEEP AWAY FROM FLAMES OR SPARKS. BOND CONTAINERS DURING FILLING OR  
DISCHARGE WHEN PERFORMED AT TEMPERATURES AT OR ABOVE THE PRODUCT FLASH  
POINT.

HANDLING INSTRUCTIONS\*\*\*

COMBUSTIBLE. DO NOT USE AROUND SPARKS OR FLAMES. BOND CONTAINERS DURING  
FILLING OR DISCHARGE WHEN PERFORMED AT TEMPERATURES AT OR ABOVE THE  
PRODUCT FLASH POINT.

.....  
THIS MSDS WAS WRITTEN TO COMPLY WITH THE OSHA HAZARD COMMUNICATION STANDARD  
.....

---

## APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE  
EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE.  
ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: THIS IS AN EPA REGISTERED BIOCIDES AND IS EXEMPT FROM TSCA INVENTORY  
REQUIREMENTS

...FIFRA(40CFR):EPA REG.NO.: 3E76- 149

...USDA FEDERALLY INSPECTED MEAT AND POULTRY PLANTS-AUTHORIZED CAT.:  
SEC.G5,G7

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

NO REGULATED CONSTITUENT PRESENT AT OSHA THRESHOLDS

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE,THE RCRA HAZARDOUS WASTE  
IDENTIFICATION NUMBER IS:D001-IGNITABLE

...DOT HAZARD/UN#/ER GUIDE# IS :COMBUSTIBLE LIQUID/NA1993/#27

...CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) MATERIALS:

NO REGULATED CONSTITUENT PRESENT AT OSHA THRESHOLDS

...SARA SECTION 307 CHEMICALS:

NO REGULATED CONSTITUENT PRESENT AT OSHA THRESHOLDS

...SARA SECTION 313 CHEMICALS:

NO REGULATED CONSTITUENT PRESENT AT OSHA THRESHOLDS

...SARA SECTION 312 HAZARD CLASS:IMMEDIATE(ACUTE);DELAYED(CHRONIC);FIRE

...MICHIGAN CRITICAL MATERIALS:

NO REGULATED CONSTITUENT PRESENT AT OSHA THRESHOLDS

NFPA/HMIS : HEALTH - 3; FIRE - 2; REACTIVITY - 0; SPECIAL - NONE; PE - B

(PAGE 1 OF 3)

SUBJECT: CLAM-TROL CT-4

EFFECTIVE DATE: 06-10-94

PRINTED: 06-10-94

REVISIONS TO SECTIONS: 4

PRODUCT APPLICATION: WATER-BASED MICROBIAL CONTROL AGENT.

SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION.

(C12-16)ALKYL DIMETHYL BENZYL AMMONIUM CHLORIDE\*\*\*CAS# 68424-85-1;  
CORROSIVE(SKIN AND EYES); PEL:NOT DETERMINED;TLV:NOT DETERMINED

FETHYL ALCOHOL(ETHANOL)\*\*\*CAS# 64-17-5;FLAMMABLE;EYE IRRITANT;POTENTIAL LIVER AND KIDNEY TOXIN.MAY CAUSE CNS DEPRESSION;PEL:1000PPM;TLV:1000PPM

SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS (APPROX.) 8.1 ODOR: SLIGHT  
FL.PT.(DEG.F): > 200 P-M(CC) SP.GR.(70F): 0.989  
VAPOR PRESSURE(mmHG): - 18.0 VAPOR DENSITY(AIR=1): < 1.00  
VISC @ 70F: 10 %SOLUBILITY(WATER): 100.0  
EVAP RATE: < 1.00(ETHER=1) APPEARANCE: COLORLESS TO YELLOW  
PHYSICAL STATE: LIQUID FREEZE POINT(DEG.F): 30.00

SECTION 3-----REACTIVITY DATA-----

STABLE.MAY REACT WITH STRONG OXIDIZERS.DO NOT CONTAMINATE.BETZ TANK  
CLEAN-OUT CATEGORY 'B'

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

PRODUCT : CLAM-TROL CT-4

SECTION 4 HEALTH HAZARD EFFECTS

ACUTE SKIN EFFECTS \*\*\* PRIMARY ROUTE OF EXPOSURE

1. CAUSE MODERATE IRRITATION TO THE SKIN

EYE EFFECTS \*\*\*

SEVERE IRRITANT TO THE EYES

ACUTE RESPIRATORY EFFECTS \*\*\*

MISTS/AEROSOLS MAY CAUSE IRRITATION TO UPPER RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE \*\*\*

PROLONGED OR REPEATED EXPOSURES MAY CAUSE LIVER AND KIDNEY TOXICITY, CNS DEPRESSION AND SKIN SENSITIZATION.

MEDICAL CONDITIONS AGGRAVATED \*\*\*

NOT KNOWN

SYMPTOMS OF EXPOSURE \*\*\*

INHALATION MAY CAUSE IRRITATION OF RESPIRATORY TRACT; SKIN CONTACT MAY CAUSE ITCHING AND/OR REDNESS.

PRECAUTIONARY STATEMENT BASED ON TESTING RESULTS \*\*\*

MAY BE TOXIC IF ORALLY INGESTED.

SECTION 5 FIRST AID INSTRUCTIONS

SKIN CONTACT \*\*\*

REMOVE CONTAMINATED CLOTHING. WASH EXPOSED AREA WITH A LARGE QUANTITY OF SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT \*\*\*

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES. IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE \*\*\*

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR. APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY

INGESTION \*\*\*

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM. DO NOT INDUCE VOMITING. IMMEDIATELY CONTACT PHYSICIAN. DILUTE CONTENTS OF STOMACH USING 3-4 GLASSES MILK OR WATER

SECTION 6 SPILL, DISPOSAL AND FIRE INSTRUCTIONS

SPILL INSTRUCTIONS \*\*\*

VENTILATE AREA, USE SPECIFIED PROTECTIVE EQUIPMENT. CONTAIN AND ABSORB ON ABSORBANT MATERIAL. PLACE IN WASTE DISPOSAL CONTAINER. THE

CONTAMINATED ABSORBANT SHOULD BE CONSIDERED A PESTICIDE AND DISPOSED OF IN AN APPROVED PESTICIDE LANDFILL. SEE PRODUCT LABEL STORAGE AND DISPOSAL INSTRUCTIONS.

FLUSH AREA WITH WATER. WET AREA MAY BE SLIPPERY. SPREAD SAND/GRIT.

DISPOSAL INSTRUCTIONS \*\*\*\*

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT

PRODUCT (AS IS)

DISPOSE OF IN APPROVED PESTICIDE FACILITY OR ACCORDING TO LABEL INSTRUCTIONS

FIRE EXTINGUISHING INSTRUCTIONS \*\*\*

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS (FULL FACE-PIECE TYPE). PROPER FIRE EXTINGUISHING MEDIA: DRY CHEMICAL, CARBON DIOXIDE, FOAM OR WATER



PRODUCT : CLAM-TROL CT-4

SECTION 7 SPECIAL PROTECTIVE EQUIPMENT

USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.

RECOMMENDED RESPIRATORY PROTECTION

USE SUPPLIED VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY, USE A RESPIRATOR WITH ORGANIC VAPOR CARTRIDGE & DUST/MIST PREFILTER

RECOMMENDED SKIN PROTECTION

NEOPRENE GLOVES

WASH OFF AFTER EACH USE REPLACE AS NECESSARY.

RECOMMENDED EYE PROTECTION

SPLASH PROOF CHEMICAL GOGGLES

SECTION 8 STORAGE AND HANDLING PRECAUTIONS

STORAGE INSTRUCTIONS

KEEP CONTAINERS CLOSED WHEN NOT IN USE.

DO NOT FREEZE. IF FROZEN, THAW AND MIX COMPLETELY PRIOR TO USE

HANDLING INSTRUCTIONS

NORMAL CHEMICAL HANDLING

THIS MSDS WAS WRITTEN TO COMPLY WITH THE OSHA HAZARD COMMUNICATION STANDARD

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE. ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

THIS IS AN EPA REGISTERED BIOCIDES AND IS EXEMPT FROM TSCA INVENTORY REQUIREMENTS

FIFRA(40CFR):EPA REG.NO.: 10324-43-3876

REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

NO REGULATED CONSTITUENT PRESENT AT OSHA THRESHOLDS

RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE,THE RCRA HAZARDOUS WASTE IDENTIFICATION NUMBER IS:NOT APPLICABLE

DOT HAZARD/UN#/ER GUIDE# IS : NOT APPLICABLE

CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) MATERIALS:

NO REGULATED CONSTITUENT PRESENT AT OSHA THRESHOLDS

SARA SECTION 302 CHEMICALS:

NO REGULATED CONSTITUENT PRESENT AT OSHA THRESHOLDS

SARA SECTION 313 CHEMICALS:

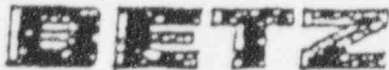
NO REGULATED CONSTITUENT PRESENT AT OSHA THRESHOLDS

SARA SECTION 312 HAZARD CLASS:IMMEDIATE(ACUTE);DELAYED(CHRONIC)

MICHIGAN CRITICAL MATERIALS:

NO REGULATED CONSTITUENT PRESENT AT OSHA THRESHOLDS

NFPA/HMIS : HEALTH - 2; FIRE - 1; REACTIVITY - 0; SPECIAL - NONE; PE - B



LABORATORIES, INC.

AQUATIC  
TOXICOLOGY  
LABORATORY



BOMERTON ROAD, TREVOR, PA 18047-U.S.A. / TEL: 215-355-3900-TELEX: 173140-FAX # 355-285

PRODUCT: CLAM-TROL CT-4

AQUATIC TOXICOLOGY

Fathead Minnow

96 hour Flow-Thru Bioassay

LC50: 1.35 MG/L

Daphnia magna

48 Hour Flow-Thru Bioassay

LC50: 0.20 MG/L

## STORM WATER SECTION

This section contains detailed information on storm water runoff at the Callaway plant. It has been compiled based on the federal storm water regulations, 40 CFR 122, and state regulations 10 CSR 20-6.200.

### Contents

This section contains EPA Form 2F since the state does not have its own form. Note that minor deviations from the federal form have been made due to the differences in the state storm water requirements. For instance, the outfall location in the federal form requires the outfall's latitude and longitude. This information is given in Township and Range per the Missouri requirements. An additional requirement of identifying and describing outdoor vehicle maintenance and cleaning areas is present in the state regulations and is included in this package.

Several attachments and drawings are also included. The attachments are labeled beginning with an "SW" (Storm Water) designation to avoid confusion with previous sections in the application. The attachments provide additional details on the required Form 2F information including storm water sampling. A plant site drawing, a site topographic map, as well as a drawing indicating changes for Refuel 7, have been included.

Throughout this section of the permit reapplication, locations of specific items at the plant site are referred to in relation to "plant north." Plant north is defined as 225° from true north. Both plant north and true north are shown on all attached drawings.

### Overview

Storm water runoff at the Callaway plant is directed by ditches and other conveyances to one of six settling ponds prior to discharge to waters of the state. The site drainage areas and the main conveyances that leave plant areas are shown on Drawing NPDES-002, Storm Water Outfalls 010-015 Topographical Map & Drainage Areas. The actual outfalls are the discharges from the sedimentation ponds, and they are designated as Outfalls 010-015.

For this permit application, only portions of the drainage areas were described as being affected by plant activities. These areas are shown on Drawing NPDES-001, NPDES Storm Water Information Outfalls 010-015.

The intake structure for the plant is located five miles from the plant site. A roof drain on this structure drains storm water from the roof directly to the Missouri River. There are no sources of storm water contamination on the roof of this structure. We believe that this storm water runoff is de minimus to the river as defined by state regulations and we have, therefore, not classified this point source to be a storm water outfall in this permit reapplication.

Storm water which collects in containment structures around aboveground storage tanks and oil filled transformers on site is discharged to storm water outfalls. The tanks generally contain oil or products that are acidic or basic. Storm water that collects in the containments is pumped to runoff ditches on site after verifying that there is no oil sheen on the water and the pH of the water is between 6-9.

Storm water is also collected in the Unit Two basin. Periodically, accumulated storm water in the Unit Two basin is pumped to a nearby retention pond, Outfall 012. If in the unlikely event that the Unit Two basin were to overflow, it would flow to Outfall 010.

The Missouri Conservation Department is responsible for the coordination of pest control around the settling ponds such as beaver control on an as needed basis.

Form  
2F  
NPDES

EPA

United States Environmental Protection Agency  
Washington, DC 20460

## Application for Permit to Discharge Stormwater Discharges Associated with Industrial Activity

**Paperwork Reduction Act Notice**

Public reporting burden for this application is estimated to average 28.6 hours per application, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate, any other aspect of this collection of information, or suggestions for improving this form including suggestions which may increase or reduce this burden to: Chief, Information Policy Branch, PM-223, U.S. Environmental Protection Agency, 401 M Street S.W., Washington, DC 20460; or Director, Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

**I. Outfall Location**

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

| A. Outfall Number | B. Latitude                        | C. Longitude | D. Receiving Water |
|-------------------|------------------------------------|--------------|--------------------|
| 010               | Section 12, Township 46N, Range 8W |              | Logan Creek        |
| 011               | Section 12, Township 46N, Range 8W |              | Logan Creek        |
| 012               | Section 14, Township 46N, Range 8W |              | Mud Creek          |
| 013               | Section 14, Township 46N, Range 8W |              | Mud Creek          |
| 014               | Section 11, Township 46N, Range 8W |              | Auxvasse Creek     |
| 015               | Section 11, Township 46N, Range 8W |              | Auxvasse Creek     |
|                   |                                    |              |                    |
|                   |                                    |              |                    |

**II. Improvements**

A. Are you now required by any Federal, State, or local authority to meet any implementation schedule for the construction, upgrading, or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

| 1. Identification of Conditions, Agreements, Etc. | 2. Affected Outfalls |                     | 3. Brief Description of Project | 4. Final Compliance Date |              |
|---|----------------------|---------------------|---------------------------------|--------------------------|--------------|
|   | Number               | Source of Discharge |                                 | a. Required              | b. Projected |
| N/A   |                      |                     |                                 |                          |              |
|   |                      |                     |                                 |                          |              |
|   |                      |                     |                                 |                          |              |
|   |                      |                     |                                 |                          |              |
|   |                      |                     |                                 |                          |              |

B. You may attach additional sheets describing any additional water pollution (or other environmental projects which may affect your discharges) you now have under way or which you plan. Indicate whether each program is now under way or planned, and indicate your actual or planned schedules for construction. N/A

**III. Site Drainage Map**

Attach a site map showing topography (or indicating the outline of drainage areas served by the outfall(s) covered in the application if a topographic map is unavailable) depicting the facility including: each of its intake and discharge structures; the drainage area of each storm water outfall; paved areas and buildings within the drainage area of each storm water outfall; each known past or present areas used as outdoor storage or disposal of significant materials; each existing structural control measure to reduce pollutants in storm water near materials loading and access areas; areas where pesticides, herbicides, soil conditioners and fertilizers are applied; each of its hazardous waste treatment, storage or disposal units (including each area not required to have a RCRA permit which is used for accumulating hazardous waste under 40 CFR 262.34); each well where fluids from the facility are injected underground; streams; and other surface water bodies which receive storm water discharges from facility. See attached Drawings NPDES-001, NPDES-002, and NPDES-003

**IV. Narrative Description of Pollutant Sources**

For each outfall, provide an estimate of the area (include units) of impervious surfaces (including paved areas and building roofs) drained to the outfall, and an estimate of the total surface area drained by the outfall.

| Outfall Number | Area of Impervious Surface (provide units) | Total Area Drained (provide units) | Outfall Number | Areas of Impervious Surface (provide units) | Total Area Drained (provide units) |
|----------------|--|------------------------------------|----------------|---|------------------------------------|
| 010            | 2.5 acres                                  | 95 acres                           | 013            | 0 acres                                     | 40 acres                           |
| 011            | 9 acres                                    | 425 acres                          | 014            | 4 acres                                     | 100 acres                          |
| 012            | 24 acres                                   | 100 acres                          | 015            | 0.5 acres                                   | 60 acres                           |

B. Provide a narrative description of significant materials that are currently or in the past three years have been treated, stored, or disposed in a manner to allow exposure to storm water method of treatment, storage, or disposal; past and present materials management practices employed in the last three years to minimize contact by these materials with storm water runoff; materials loading and access areas; and the location, manner, and frequency in which pesticides, herbicides, soil conditioners, and fertilizers are applied.

See Attachment SW-A, Significant Materials

C. For each outfall, provide the location and a description of existing structural and non structural control measures to reduce pollutants in storm water runoff, and a description of the treatment the storm water receives, including the schedule and type of maintenance for control and treatment measures and the ultimate disposal of any solid or fluid wastes other than by discharge.

| Outfall Number | Treatment  | List Codes from Table 2F |
|----------------|--|--------------------------|
| 010            | See Attachment SW-B, Outfall Descriptions and Control Measures | 4-A                      |
| 011            |  | 4-A                      |
| 012            |  | 4-A                      |
| 013            |  | 4-A                      |
| 014            |  | 4-A                      |
| 015            |  | 4-A                      |

**V. Non Storm Water Discharges**

A. I certify under penalty of law that the outfall(s) covered by this application have been tested or evaluated for the presence of nonstormwater discharges, and that all nonstormwater discharges from these outfall(s) are identified in either an accompanying Form 2C or Form 2E application for the outfall.

|                                  |                    |                      |
|----------------------------------|--------------------|----------------------|
| _____<br>Name and Official Title | _____<br>Signature | _____<br>Date Signed |
|----------------------------------|--------------------|----------------------|

B. Provide a description of the method used, the date of any testing, and the onsite drainage points that were directly observed during a test.

See Attachment SW-C, Requests for Non-Storm Water Discharges

**VI. Significant Leaks or Spills**

Provide existing information regarding the history of significant leaks or spills of toxic or hazardous pollutants at the facility in the past three years, including the approximate date and location of the spill or leak and the type and amount of material released.

See Attachment SW-D, Significant Leaks or Spills

**I. Discharge Information**

A, B, C, & D: See instructions before proceeding. Complete one set of tables for each outfall. Annotate the outfall number in the space provided. Tables VII-A, VII-B, and VII-C are included on separate sheets numbered VII-1 and VII-2.

E. Potential discharges not covered by analysis - is any pollutant listed in Table 2F-2a a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

Yes (list all such pollutants below)  No (go to section IX)

**VIII. Biological Toxicity Testing Data**

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

Yes (list all such pollutants below)  No (go to Section IX)

**IX. Contract Analysis Information**

Were any of the analyses reported in item V performed by a contract laboratory or consulting firm?

Yes (list the name, address, and telephone number of, and pollutants analyzed by each such laboratory or firm below)  
 No (go to Section X)

| A. Name                              | B. Address   | C. Phone No. | D. Pollutants Analyzed                       |
|--------------------------------------|--|--------------|--|
| Maxim Technologies, Inc.             | 1908 Innerbelt Business Center Drive<br>St. Louis, MO 63114-5700 | 314/426-0880 | See Attachment SW-E,<br>Storm Water Sampling |
| Teledyne Isotopes Midwest Laboratory | 700 Landwehr Road<br>Northbrook, IL 60062-2310                   | 708/564-0700 |  |

**X. Certification**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations.

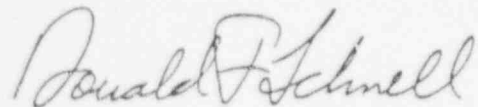
Donald F. Schnell, Senior Vice President - Nuclear

314/676-8240

A. Name and Official Title (type or print)

B. Area Code and Phone Number

C. Signature



D. Date Signed

14 Sept 95

VII. Discharge Information (Continued from page 3 of Form 2F)

You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

| Pollutant and CAS Number (if available)      | Maximum Values (include units) |                         | Average Values (include units) |                         | Number of Storm Events Sampled | Sources of Pollutants |
|--|--------------------------------|-------------------------|--------------------------------|-------------------------|--------------------------------|-----------------------|
|  | Grab Sample                    | Flow-weighted Composite | Grab Sample                    | Flow-weighted Composite |                                |                       |
| Oil and Grease                               | 1.5 mg/l                       | NA                      | 1.9 mg/l                       | NA                      | 2                              | Required Testing      |
| Biological Oxygen Demand (BOD <sub>5</sub> ) | 0.71 mg/l                      | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| Chemical Oxygen Demand (COD)                 | 12 mg/l                        | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| Total Suspended Solids (TSS)                 | 6.4 mg/l                       | NA                      | 5.8 mg/l                       | NA                      | 2                              | Required Testing      |
| Total Kjeldahl Nitrogen                      | 0.488 mg/l                     | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| Nitrate plus Nitrite Nitrogen                | 0.6 mg/l                       | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| Total Phosphorus                             | 0.06 mg/l                      | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| pH   | 8.8                            |                         |                                |                         |                                |                       |

Part B - List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutants listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

| Pollutant and CAS Number (if available) | Maximum Value (include units) |                         | Average Values (include units) |                         | Number of Storm Events Sampled | Sources of Pollutants |
|---|-------------------------------|-------------------------|--------------------------------|-------------------------|--------------------------------|-----------------------|
|   | Grab Sample                   | Flow-weighted Composite | Grab Sample                    | Flow-weighted Composite |                                |                       |
| Settleable Solids                       | <0.1 ml/l/hr                  | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| Ammonia (as N)                          | <0.030 mg/l                   | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| N, Total Organic                        | 0.458 mg/l                    | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| Magnesium, Total                        | 0.029 mg/l                    | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| TDS                                     | 56 mg/l                       | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| Chlorine, Free Avail.                   | 0.02 mg/l                     | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| PCB                                     | <0.5 ug/l                     | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| Copper, Total                           | <0.2 mg/l                     | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| Nickel, Total                           | <0.2 mg/l                     | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| Zinc, Total                             | <0.05 mg/l                    | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| Copper, Dissolved                       | <0.2 mg/l                     | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| Nickel Dissolved                        | <0.2 mg/l                     | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| Zinc, Dissolved                         | <0.05 mg/l                    | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| Trinium                                 | <155 pCi/l                    | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| I-131                                   | <6.7 E-09 uCi/ml              | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| Gamma Isotopic                          | *                             | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| Sr-90                                   | <2 pCi/l                      | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| Fe-55                                   | 6.3 pCi/l                     | NA                      | NA                             | NA                      | 1                              | Required Testing      |

\* No peaks recorded. See attached sheets for a list of nuclides and their minimum detectable activity.



Part C - List each pollutant shown in Table 2F-2, 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

| Pollutant and CAS Number (if available) | Maximum Value (include units)             |                         | Average Values (include units)            |                         | Number of Storm Events Sampled | Sources of Pollutants |
|---|---|-------------------------|---|-------------------------|--------------------------------|-----------------------|
|   | Grab Sample Taken During First 30 Minutes | Flow-weighted Composite | Grab Sample Taken During First 30 Minutes | Flow-weighted Composite |                                |                       |
| N/A                                     |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |

Part D - Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

| Date of Storm Event | Duration of Storm (in minutes) | Total Rainfall during storm event (in inches) | Number of hours between beginning of storm measured and end of previous measurable rain event | Maximum flow rate during rain event (gallons/minute or specify units) | Total flow from rain event (gallons or specify units) | Season sample was taken | Form of Precipitation (rainfall, snowmelt) |
|---------------------|--------------------------------|---|---|---|---|-------------------------|--|
| 4/16/95             | 120                            | 0.6   | >72   | *   | 0.490 MG  | Spring                  | Rainfall                                   |
| 8/2-8/3/95          | *                              | 2.4   | 15  | *   | 1.96 MG   | Summer                  | Rainfall                                   |
| 9/7/95              | *                              | *   | *   | *   | *   | Summer                  | NA*  |

9. Provide a description of the method of flow measurement or estimate.

\* See Attachment SW-E, Storm Water Sampling

VII. Discharge Information (Continued from page 2 of Form 2F)

Part A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

| Pollutant and CAS Number (if available) | Maximum Values (include units)            |                       | Average Values (include units)            |                         | Number of Storm Events Sampled | Sources of Pollutants |
|---|---|-----------------------|---|-------------------------|--------------------------------|-----------------------|
|   | Grab Sample Taken During First 30 Minutes | Time-series Composite | Grab Sample Taken During First 30 Minutes | Flow-weighted Composite |                                |                       |
| Oil and Grease                          | *   | 2.7 mg/l              | NA  | NA                      | 1                              | Required Testing      |
| Biological Oxygen Demand (BODs)         | *   | 3.8 mg/l              | NA  | NA                      | 1                              | Required Testing      |
| Chemical Oxygen Demand (COD)            | *   | 10 mg/l               | NA  | NA                      | 1                              | Required Testing      |
| Total Suspended Solids (TSS)            | *   | 29 mg/l               | NA  | NA                      | 1                              | Required Testing      |
| Total Kjeldahl Nitrogen                 | *   | 0.590 mg/l            | NA  | NA                      | 1                              | Required Testing      |
| Nitrate plus Nitrite Nitrogen           | *   | 1.53 mg/l             | NA  | NA                      | 1                              | Required Testing      |
| Total Phosphorus                        | *   | 1.07 mg/l             | NA  | NA                      | 1                              | Required Testing      |
| pH                                      | 7.4                                       |                       |   |                         |                                |                       |

Part B - List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutants listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

| Pollutant and CAS Number (if available) | Maximum Value (include units)             |                       | Average Values (include units)            |                         | Number of Storm Events Sampled | Sources of Pollutants |
|---|---|-----------------------|---|-------------------------|--------------------------------|-----------------------|
|   | Grab Sample Taken During First 30 Minutes | Time-series Composite | Grab Sample Taken During First 30 Minutes | Flow-weighted Composite |                                |                       |
| Settleable Solids                       | *   | 0.1 ml/l/hr           | NA  | NA                      | 1                              | Required Testing      |
| Ammonia (as N)                          | *   | 0.118 mg/l            | NA  | NA                      | 1                              | Required Testing      |
| N, Total Organic                        | *   | 0.47 mg/l             | NA  | NA                      | 1                              | Required Testing      |
| Magnesium, Total                        | *   | 6.94 mg/l             | NA  | NA                      | 1                              | Required Testing      |
| TDS                                     | *   | 436 mg/l              | NA  | NA                      | 1                              | Required Testing      |
| Chlorine, Free Avail.                   | *   | 0.04 mg/l             | NA  | NA                      | 1                              | Required Testing      |
| PCB                                     | *   | <0.5 ug/l             | NA  | NA                      | 1                              | Required Testing      |
| Copper, Total                           | *   | <0.1 mg/l             | NA  | NA                      | 1                              | Required Testing      |
| Nickel, Total                           | *   | <0.2 mg/l             | NA  | NA                      | 1                              | Required Testing      |
| Zinc, Total                             | *   | <0.05 mg/l            | NA  | NA                      | 1                              | Required Testing      |
| Copper, Dissolved                       | *   | <0.1 mg/l             | NA  | NA                      | 1                              | Required Testing      |
| Nickel, Dissolved                       | *   | <0.2 mg/l             | NA  | NA                      | 1                              | Required Testing      |
| Zinc, Dissolved                         | *   | <0.05 mg/l            | NA  | NA                      | 1                              | Required Testing      |
| Tritium                                 | *   | <155 pCi/l            | NA  | NA                      | 1                              | Required Testing      |
| I-131                                   | *   | <6.71E-09 uCi/ml      | NA  | NA                      | 1                              | Required Testing      |
| Gamma Isotopic                          | *   | **                    | NA  | NA                      | 1                              | Required Testing      |
| Sr-89/90                                | *   | <2 pCi/l              | NA  | NA                      | 1                              | Required Testing      |
| Fe-55                                   | *   | 4.9 pCi/l             | NA  | NA                      | 1                              | Required Testing      |

\* See Attachment SW-E Storm Water Sampling

\*\* No peaks recorded. See attached sheets for a list of nuclides and their minimum detectable activity.

Part C - List each pollutant shown in Table 2F-2, 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each fall.

| Pollutant and CAS Number (if available) | Maximum Value (include units)             |                         | Average Values (include units)            |                         | Number of Storm Events Sampled | Sources of Pollutants |
|---|---|-------------------------|---|-------------------------|--------------------------------|-----------------------|
|   | Grab Sample Taken During First 30 Minutes | Flow-weighted Composite | Grab Sample Taken During First 30 Minutes | Flow-weighted Composite |                                |                       |
| N/A                                     |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |

Part D - Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

| Date of Storm Event | Duration of Storm (in minutes) | Total Rainfall during storm event (in inches) | Number of hours between beginning of storm measured and end of previous measurable rain event | Maximum flow rate during rain event (gallons/minute or specify units) | Total flow from rain event (gallons or specify units) | Season sample was taken | Form of Precipitation (rainfall, snowmelt) |
|---------------------|--------------------------------|---|---|---|---|-------------------------|--|
| 7/4-7/5/95          | *                              | 2.2   | 48  | 100 gpm   | 7.94 MG   | Summer                  | Rainfall                                   |
| 9/7/95              | *                              | *   | *   | *   | *   | "                       | NA*  |
|                     |                                |   |   |   |   |                         |  |

\* Provide a description of the method of flow measurement or estimate.

\* See Attachment SW-E, Storm Water Sampling

VII. Discharge Information (Continued from page 3 of Form 2F)

A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

| Pollutant and CAS Number (if available) | Maximum Values (include units)            |                       | Average Values (include units)            |                       | Number of Storm Events Sampled | Sources of Pollutants |
|---|---|-----------------------|---|-----------------------|--------------------------------|-----------------------|
|   | Grab Sample Taken During First 30 Minutes | Time Series Composite | Grab Sample Taken During First 30 Minutes | Time Series Composite |                                |                       |
| Oil and Grease                          | *   | 0.6 mg/l              | *   | 0.4 mg/l              | 2                              | Parking Lot Drainage  |
| Biological Oxygen Demand (BODs)         | *   | 2.32 mg/l             | *   | 1.31 mg/l             | 2                              | Required Testing      |
| Chemical Oxygen Demand (COD)            | *   | 5 mg/l                | *   | NA                    | 1                              | Required Testing      |
| Total Suspended Solids (TSS)            | *   | 331 mg/l              | *   | 180 mg/l              | 2                              | Required Testing      |
| Total Kjeldahl Nitrogen                 | *   | 0.32 mg/l             | *   | NA                    | 1                              | Required Testing      |
| Nitrate plus Nitrite Nitrogen           | *   | 0.84 mg/l             | *   | 0.43 mg/l             | 2                              | Required Testing      |
| Total Phosphorus                        | *   | 0.17 mg/l             | *   | 0.14 mg/l             | 2                              | Required Testing      |
| pH                                      | 7.97                                      |                       |   |                       |                                |                       |

B - List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutants listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

| Pollutant and CAS Number (if available) | Maximum Value (include units)             |                       | Average Values (include units)            |                       | Number of Storm Events Sampled | Sources of Pollutants |
|---|---|-----------------------|---|-----------------------|--------------------------------|-----------------------|
|   | Grab Sample Taken During First 30 Minutes | Time-series Composite | Grab Sample Taken During First 30 Minutes | Time-series Composite |                                |                       |
| Settleable Solids                       | *   | 0.1 ml/l/hr           | *   | <0.1                  | 2                              | Required Testing      |
| Ammonia (as N)                          | *   | 0.090 mg/l            | NA  | NA                    | 1                              | Required Testing      |
| N, Total Organic                        | *   | 0.23 mg/l             | NA  | NA                    | 1                              | Required Testing      |
| Magnesium, Total                        | *   | 22.4 mg/l             | NA  | NA                    | 1                              | Required Testing      |
| TDS                                     | *   | 244 mg/l              | *   | 214 mg/l              | 2                              | Required Testing      |
| Chlorine, Free Avail.                   | *   | 0.03 mg/l             | *   | 0.02 mg/l             | 2                              | Required Testing      |
| PCB                                     | *   | <0.5 ug/l             | NA  | NA                    | 1                              | Required Testing      |
| Copper, Total                           | *   | <0.2 mg/l             | *   | <0.2 mg/l             | 2                              | Required Testing      |
| Nickel, Total                           | *   | <0.2 mg/l             | *   | <0.2 mg/l             | 2                              | Required Testing      |
| Zinc, Total                             | *   | 0.102 mg/l            | *   | 0.101 mg/l            | 2                              | Required Testing      |
| Copper, Dissolved                       | *   | <0.2 mg/l             | *   | <0.2 mg/l             | 2                              | Required Testing      |
| Nickel, Dissolved                       | *   | <0.2 mg/l             | *   | <0.2 mg/l             | 2                              | Required Testing      |
| Zinc, Dissolved                         | *   | <0.05 mg/l            | *   | <0.05 mg/l            | 2                              | Required Testing      |
| Tritium                                 | *   | <155 pCi/l            | NA  | NA                    | 1                              | Required Testing      |
| I-131                                   | *   | <4.7 E-09 uCi/ml      | NA  | NA                    | 1                              | Required Testing      |
| Gamma Isotopic                          | *   | **                    | NA  | NA                    | 1                              | Required Testing      |
| Sr-89/90                                | *   | <2 pCi/l              | NA  | NA                    | 1                              | Required Testing      |
| Fe-55                                   | *   | 11 pCi/l              | NA  | NA                    | 1                              | Required Testing      |

\* See Attachment SW-E Storm Water Sampling

\*\* No peaks recorded. See attached sheets for a list of nuclides and their minimum detectable activity.

Part C - List each pollutant shown in Table 2F-2, 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each pollutant.

| Pollutant and CAS Number (if available) | Maximum Value (include units)             |                         | Average Values (include units)            |                         | Number of Storm Events Sampled | Sources of Pollutants |
|---|---|-------------------------|---|-------------------------|--------------------------------|-----------------------|
|   | Grab Sample Taken During First 30 Minutes | Flow-weighted Composite | Grab Sample Taken During First 30 Minutes | Flow-weighted Composite |                                |                       |
| N/A                                     |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |

Part D - Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

| Date of Storm Event | Duration of Storm (in minutes) | Total Rainfall during storm event (in inches) | Number of hours between beginning of storm measured and end of previous measurable rain event | Maximum flow rate during rain event (gallons/minute or specify units) | Total flow from rain event (gallons or specify units) | Season sample was taken | Form of Precipitation (rainfall, snowmelt) |
|---------------------|--------------------------------|---|---|---|---|-------------------------|--|
| 6/23-6/26/95        | *                              | 0.85  | >72   | 180 gpm   | 1.02 MG   | Summer                  | Rainfall                                   |
| 7/4/95              | 300                            | 1.4   | >72   | 400 gpm   | 1.69 MG   | Summer                  | Rainfall                                   |
| 9/7/95              | *                              | *   | *   | *   | *   | Summer                  | NA*  |

9. Provide a description of the method of flow measurement or estimate.

\* See Attachment SW-E, Storm Water Sampling

VII. Discharge Information (Continued from page 3 of Form 2F)

A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

| Pollutant and CAS Number (if available) | Maximum Values (include units)            |                       | Average Values (include units)            |                         | Number of Storm Events Sampled | Sources of Pollutants |
|---|---|-----------------------|---|-------------------------|--------------------------------|-----------------------|
|   | Grab Sample Taken During First 30 Minutes | Time Series Composite | Grab Sample Taken During First 30 Minutes | Flow-weighted Composite |                                |                       |
| Oil and Grease                          | NA  | 0.1 mg/l              | NA  | NA                      | 1                              | Required Testing      |
| Biological Oxygen Demand (BODs)         | NA  | 4.6 mg/l              | NA  | NA                      | 1                              | Required Testing      |
| Chemical Oxygen Demand (COD)            | NA  | 11 mg/l               | NA  | NA                      | 1                              | Required Testing      |
| Total Suspended Solids (TSS)            | NA  | 124 mg/l              | NA  | NA                      | 1                              | Required Testing      |
| Total Kjeldahl Nitrogen                 | NA  | 0.178 mg/l            | NA  | NA                      | 1                              | Required Testing      |
| Nitrate plus Nitrite Nitrogen           | NA  | 8.87 mg/l             | NA  | NA                      | 1                              | Required Testing      |
| Total Phosphorus                        | NA  | 2.1 mg/l              | NA  | NA                      | 1                              | Required Testing      |
| pH                                      | 7.97                                      |                       |   |                         |                                |                       |

Part B - List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutants listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

| Pollutant and CAS Number (if available) | Maximum Value (include units)             |                       | Average Values (include units)            |                         | Number of Storm Events Sampled | Sources of Pollutants |
|---|---|-----------------------|---|-------------------------|--------------------------------|-----------------------|
|   | Grab Sample Taken During First 30 Minutes | Time Series Composite | Grab Sample Taken During First 30 Minutes | Flow-weighted Composite |                                |                       |
| Settleable Solids                       | *   | <0.1 ml/hr            | NA  | NA                      | 1                              | Required Testing      |
| Ammonia (as N)                          | *   | <0.03 mg/l            | NA  | NA                      | 1                              | Required Testing      |
| N, Total Organic                        | *   | 0.148 mg/l            | NA  | NA                      | 1                              | Required Testing      |
| Magnesium, Total                        | *   | 4.8 mg/l              | NA  | NA                      | 1                              | Required Testing      |
| TDS                                     | *   | 20 mg/l               | NA  | NA                      | 1                              | Required Testing      |
| Chlorine, Free Avail.                   | *   | <0.01 mg/l            | NA  | NA                      | 1                              | Required Testing      |
| PCB                                     | *   | <0.5 ug/l             | NA  | NA                      | 1                              | Required Testing      |
| Copper, Total                           | *   | <0.2 mg/l             | NA  | NA                      | 1                              | Required Testing      |
| Nickel, Total                           | *   | <0.2 mg/l             | NA  | NA                      | 1                              | Required Testing      |
| Zinc, Total                             | *   | <0.05 mg/l            | NA  | NA                      | 1                              | Required Testing      |
| Copper, Dissolved                       | *   | <0.2 mg/l             | NA  | NA                      | 1                              | Required Testing      |
| Nickel, Dissolved                       | *   | <0.3 mg/l             | NA  | NA                      | 1                              | Required Testing      |
| Zinc, Dissolved                         | *   | <0.05 mg/l            | NA  | NA                      | 1                              | Required Testing      |
| Trisium                                 | *   | <155 pCi/l            | NA  | NA                      | 1                              | Required Testing      |
| I-131                                   | *   | <6.7 E-09 uCi/ml      | NA  | NA                      | 1                              | Required Testing      |
| Gamma Isotopic                          | *   | **                    | NA  | NA                      | 1                              | Required Testing      |
| Sr-89/90                                | *   | <2 pCi/l              | NA  | NA                      | 1                              | Required Testing      |
| Fr-223                                  | *   | 9.3 pCi/l             | NA  | NA                      | 1                              | Required Testing      |

\* See Attachment SW-E, Storm Water Sampling.

\*\* No peaks recorded. See attached sheets for a list of nuclides and their minimum detectable activity.

Part C - List each pollutant shown in Table 2F-2, 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

| Pollutant and CAS Number (if available) | Maximum Value (include units)             |                         | Average Values (include units)            |                         | Number of Storm Events Sampled | Sources of Pollutants |
|---|---|-------------------------|---|-------------------------|--------------------------------|-----------------------|
|   | Grab Sample Taken During First 30 Minutes | Flow-weighted Composite | Grab Sample Taken During First 30 Minutes | Flow-weighted Composite |                                |                       |
| N/A                                     |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |

Part D - Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

| Date of Storm Event | Duration of Storm (in minutes) | Total Rainfall during storm event (in inches) | Number of hours between beginning of storm measured and end of previous measurable rain event | Maximum flow rate during rain event (gallons/minute or specify units) | Total flow from rain event (gallons or specify units) | Season sample was taken | Form of Precipitation (rainfall, snowmelt) |
|---------------------|--------------------------------|---|---|---|---|-------------------------|--|
| 8/2-8/3/95          | *                              | 2.4   | 48  | 10 gpm  | 0.78 MG   | Summer                  | Rainfall                                   |
| 9/7/95              | *                              | *   | *   | *   | *   | Summer                  | NA*  |
|                     |                                |   |   |   |   |                         |  |

\* Provide a description of the method of flow measurement or estimate.

\* See Attachment SW-E, Storm Water Sampling

VTL Discharge Information (Continued from page 3 of Form 2F)

Part A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

| Pollutant and CAS Number (if available) | Maximum Values (include units)            |                       | Average Values (include units)            |                       | Number of Storm Events Sampled | Sources of Pollutants |
|---|---|-----------------------|---|-----------------------|--------------------------------|-----------------------|
|   | Grab Sample Taken During First 30 Minutes | Time Series Composite | Grab Sample Taken During First 30 Minutes | Time Series Composite |                                |                       |
| Oil and Grease                          | *   | 0.25 mg/l             | NA  | NA                    | 1                              | Unpaved Parking Lot   |
| Biological Oxygen Demand (BODs)         | *   | 2.5 mg/l              | NA  | NA                    | 1                              | Required Testing      |
| Chemical Oxygen Demand (COD)            | *   | 35 mg/l               | NA  | NA                    | 1                              | Required Testing      |
| Total Suspended Solids (TSS)            | *   | 24 mg/l               | NA  | NA                    | 1                              | Required Testing      |
| Total Kjeldahl Nitrogen                 | *   | 0.804 mg/l            | NA  | NA                    | 1                              | Required Testing      |
| Nitrate plus Nitrite Nitrogen           | *   | 0.017 mg/l            | *   | 0.009 mg/l            | 2                              | Required Testing      |
| Total Phosphorus                        | *   | 0.09 mg/l             | NA  | NA                    | 1                              | Required Testing      |
| pH                                      | 5.90                                      |                       |   |                       |                                |                       |

Part B - List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutants listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

| Pollutant and CAS Number (if available) | Maximum Value (include units)             |                       | Average Values (include units)            |                         | Number of Storm Events Sampled | Sources of Pollutants |
|---|---|-----------------------|---|-------------------------|--------------------------------|-----------------------|
|   | Grab Sample Taken During First 30 Minutes | Time Series Composite | Grab Sample Taken During First 30 Minutes | Flow-weighted Composite |                                |                       |
| Settleable Solids                       | *   | 0.1 ml/hr             | NA  | NA                      | 1                              | Required Testing      |
| Arsenic (as N)                          | *   | <0.030 mg/l           | NA  | NA                      | 1                              | Required Testing      |
| N, Total Organic                        | *   | 0.804 mg/l            | NA  | NA                      | 1                              | Required Testing      |
| Magnesium, Total                        | *   | 4.13 mg/l             | NA  | NA                      | 1                              | Required Testing      |
| TDS                                     | *   | 64 mg/l               | NA  | NA                      | 1                              | Required Testing      |
| Chloride, Free Avail.                   | *   | <0.01 mg/l            | NA  | NA                      | 1                              | Required Testing      |
| PCB                                     | *   | <0.5 ug/l             | NA  | NA                      | 1                              | Required Testing      |
| Copper, Total                           | *   | <0.1 mg/l             | NA  | NA                      | 1                              | Required Testing      |
| Nickel, Total                           | *   | <0.2 mg/l             | NA  | NA                      | 1                              | Required Testing      |
| Zinc, Total                             | *   | <0.05 mg/l            | NA  | NA                      | 1                              | Required Testing      |
| Copper, Dissolved                       | *   | <0.1 mg/l             | NA  | NA                      | 1                              | Required Testing      |
| Nickel, Dissolved                       | *   | <0.1 mg/l             | NA  | NA                      | 1                              | Required Testing      |
| Zinc, Dissolved                         | *   | <0.05 mg/l            | NA  | NA                      | 1                              | Required Testing      |
| Tritium                                 | *   | <155 pCi/l            | NA  | NA                      | 1                              | Required Testing      |
| I-131                                   | *   | <4.7 E09 uCi/ml       | NA  | NA                      | 1                              | Required Testing      |
| Gamma Isotopic                          | *   | **                    | NA  | NA                      | 1                              | Required Testing      |
| Sr-89/90                                | *   | <1 pCi/l              | NA  | NA                      | 1                              | Required Testing      |
| Pu-238                                  | *   | 5.4 pCi/l             | NA  | NA                      | 1                              | Required Testing      |

\* See Attachment SW-E, Storm Water Sampling

\*\* No peaks recorded. See attached sheets for a list of nuclides and their minimum detectable activity.



Part C - List each pollutant shown in Table 2F-2, 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

| Pollutant and CAS Number (if available) | Maximum Value (include units)             |                         | Average Values (include units)            |                         | Number of Storm Events Sampled | Sources of Pollutants |
|---|---|-------------------------|---|-------------------------|--------------------------------|-----------------------|
|   | Grab Sample Taken During First 30 Minutes | Flow-weighted Composite | Grab Sample Taken During First 30 Minutes | Flow-weighted Composite |                                |                       |
| N/A                                     |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |

Part D - Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

| Date of Storm Event | Duration of Storm (in minutes) | Total Rainfall during storm event (in inches) | Number of hours between beginning of storm measured and end of previous measurable rain event | Maximum flow rate during rain event (gallons/minute or specify units) | Total flow from rain event (gallons or specify units) | Season sample was taken | Form of Precipitation (rainfall, snowmelt) |
|---------------------|--------------------------------|---|---|---|---|-------------------------|--|
| 7/4/95              | 300                            | 1.4   | >72   | 800 gpm   | 1.23 MG   | Summer                  | Rainfall                                   |
| 9/7/95              | *                              | *   | *   | *   | *   | Summer                  | NA*  |
|                     |                                |   |   |   |   |                         |  |

9. Provide a description of the method of flow measurement or estimate.

\* See Attachment SW-E, Storm Water Sampling

VII. Discharge Information (Continued from page 3 of Form 2F)

Part A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

| Pollutant and CAS Number (if available) | Maximum Values (include units) |                         | Average Values (include units) |                         | Number of Storm Events Sampled | Sources of Pollutants |
|---|--------------------------------|-------------------------|--------------------------------|-------------------------|--------------------------------|-----------------------|
|   | Grab Sample                    | Flow-weighted Composite | Grab Sample                    | Flow-weighted Composite |                                |                       |
| Oil and Grease                          | 3.9 mg/l                       | NA                      | 3.2 mg/l                       | NA                      | 1                              | Required Testing      |
| Biological Oxygen Demand (BODs)         | 3.24 mg/l                      | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| Chemical Oxygen Demand (COD)            | 15 mg/l                        | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| Total Suspended Solids (TSS)            | 14.7 mg/l                      | NA                      | 10.8 mg/l                      | NA                      | 2                              | Required Testing      |
| Total Kjeldahl Nitrogen                 | 1.18 mg/l                      | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| Nitrate plus Nitrite Nitrogen           | 0.92 mg/l                      | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| Total Phosphorus                        | 0.16 mg/l                      | NA                      | NA                             | NA                      | 1                              | Required Testing      |
| pH                                      | 8.9                            |                         |                                |                         |                                |                       |

Part B - List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutants listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

| Pollutant and CAS Number (if available) | Maximum Value (include units) |                         | Average Values (include units)            |                         | Number of Storm Events Sampled | Sources of Pollutants |
|---|-------------------------------|-------------------------|---|-------------------------|--------------------------------|-----------------------|
|   | Grab Sample                   | Flow-weighted Composite | Grab Sample Taken During First 30 Minutes | Flow-weighted Composite |                                |                       |
| Settleable Solids                       | <0.1 ml/hr                    | NA                      | NA  | NA                      | 1                              | Required Testing      |
| Ammonia (as N)                          | 0.0395 mg/l                   | NA                      | NA  | NA                      | 1                              | Required Testing      |
| N, Total Organic                        | 1.14 mg/l                     | NA                      | NA  | NA                      | 1                              | Required Testing      |
| Magnesium, Total                        | 7.26 mg/l                     | NA                      | NA  | NA                      | 1                              | Required Testing      |
| TDS                                     | 368 mg/l                      | NA                      | NA  | NA                      | 1                              | Required Testing      |
| Chlorine, Free Avail.                   | 0.07 mg/l                     | NA                      | NA  | NA                      | 1                              | Required Testing      |
| PCB                                     | <0.5 ug/l                     | NA                      | NA  | NA                      | 1                              | Required Testing      |
| Copper, Total                           | <0.2 mg/l                     | NA                      | NA  | NA                      | 1                              | Required Testing      |
| Nickel, Total                           | <0.2 mg/l                     | NA                      | NA  | NA                      | 1                              | Required Testing      |
| Zinc, Total                             | <0.05 mg/l                    | NA                      | NA  | NA                      | 1                              | Required Testing      |
| Copper, Dissolved                       | <0.2 mg/l                     | NA                      | NA  | NA                      | 1                              | Required Testing      |
| Nickel, Dissolved                       | <0.2 mg/l                     | NA                      | NA  | NA                      | 1                              | Required Testing      |
| Zinc, Dissolved                         | <0.05 mg/l                    | NA                      | NA  | NA                      | 1                              | Required Testing      |
| Trinam                                  | <155 pCi/l                    | NA                      | NA  | NA                      | 1                              | Required Testing      |
| I-131                                   | <4.7 E-09 uCi/ml              | NA                      | NA  | NA                      | 1                              | Required Testing      |
| Cesium Isotopic                         | *                             | NA                      | NA  | NA                      | 1                              | Required Testing      |
| Sr-90                                   | <2 pCi/l                      | NA                      | NA  | NA                      | 1                              | Required Testing      |
| Fr-223                                  | <4 pCi/l                      | NA                      | NA  | NA                      | 1                              | Required Testing      |

\* No peaks recorded. See attached sheets for a list of nuclides and their minimum detectable activity.  
EPA Form 3510-2F (11-90)

Part C - List each pollutant shown in Table 2F-2, 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

| Pollutant and CAS Number (if available) | Maximum Value (include units)             |                         | Average Values (include units)            |                         | Number of Storm Events Sampled | Sources of Pollutants |
|---|---|-------------------------|---|-------------------------|--------------------------------|-----------------------|
|   | Grab Sample Taken During First 30 Minutes | Flow-weighted Composite | Grab Sample Taken During First 30 Minutes | Flow-weighted Composite |                                |                       |
| N/A                                     |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |
|   |   |                         |   |                         |                                |                       |

Part D - Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

| Date of Storm Event | Duration of Storm (in minutes) | Total Rainfall during storm event (in inches) | Number of hours between beginning of storm measured and end of previous measurable rain event | Maximum flow rate during rain event (gallons/minute or specify units) | Total flow from rain event (gallons or specify units) | Season sample was taken | Form of Precipitation (rainfall, snowmelt) |
|---------------------|--------------------------------|---|---|---|---|-------------------------|--|
| 4/16/95             | 120                            | 0.6   | >72   | *   | 0.30MG  | Spring                  | Rainfall                                   |
| 8/4/95              | *                              | 2.4   | 15  | *   | 1.20 MG   | Summer                  | Rainfall                                   |
| 9/7/95              | *                              | *   | *   | *   | *   | Summer                  | NA*  |

9. Provide a description of the method of flow measurement or estimate.

\* See Attachment SW-E, Storm Water Sampling

# MINIMUM DETECTABLE ACTIVITY REPORT

| NUCLIDE  | BCKGND<br>SUM | ENERGY<br>(keV) | MDA<br>(uCi/ML) |
|----------|---------------|-----------------|-----------------|
| BE-7     | 2.            | 477.59          | 4.8462E-08      |
| NA-24    | 0.            | 1368.53         | 0.0000E+00      |
| CL-38    | 1.            | 1642.42         | 4.1327E-08      |
| K-40     | 6.            | 1460.81         | 2.0343E-07      |
| AR-41    | 0.            | 1293.64         | 0.0000E+00      |
| CR-51    | 5.            | 320.08          | 5.5128E-08      |
| MN-54    | 2.            | 834.83          | 8.0175E-09      |
| MN-56    | 3.            | 846.75          | 1.0892E-08      |
| CO-57    | 11.           | 122.06          | 6.7604E-09      |
| CO-58    | 0.            | 810.76          | 0.0000E+00      |
| CO-58SUM | 2.            | 1321.76         | 0.0000E+00      |
| FE-59    | 1.            | 1099.22         | 1.2590E-08      |
| CO-60    | 1.            | 1173.22         | 7.4655E-09      |
| CU-64    | 0.            | 1345.90         | 0.0000E+00      |
| ZN-65    | 0.            | 1115.52         | 8.9989E-09      |
| SE-75    | 7.            | 264.65          | 9.6776E-09      |
| BR-82    | 0.            | 776.49          | 0.0000E+00      |
| KR-85    | 2.            | 513.99          | 1.3305E-06      |
| KR-85M   | 8.            | 151.18          | 6.7402E-09      |
| KR-87    | 4.            | 402.58          | 1.5396E-08      |
| KR-88    | 8.            | 196.32          | 2.1599E-08      |
| RB-88    | 0.            | 1836.01         | 0.0000E+00      |
| RB88ESC  | 1.            | 1325.00         | 0.0000E+00      |
| KR-89    | 8.            | 220.90          | 3.8225E-07      |
| RB-89    | 0.            | 1031.88         | 0.0000E+00      |
| ZR-89    | 2.            | 909.10          | 8.8182E-09      |
| Y-90M    | 13.           | 202.51          | 7.3115E-09      |
| SR-91    | 0.            | 1024.30         | 0.0000E+00      |
| Y-91     | 1.            | 1204.90         | 1.8580E-06      |
| SR-92    | 0.            | 1383.94         | 0.0000E+00      |
| NB-95    | 1.            | 765.79          | 5.2901E-09      |
| NB-95M   | 5.            | 235.69          | 1.8617E-08      |
| ZR-95    | 1.            | 756.72          | 9.4531E-09      |
| NB-97    | 2.            | 657.90          | 5.9658E-09      |
| NB-97M   | 6.            | 743.36          | 1.3040E-08      |
| ZR-97    | 6.            | 743.36          | 1.3040E-08      |
| MO-99    | 11.           | 140.51          | 6.2265E-09      |
| TC-99M   | 11.           | 140.51          | 6.2265E-09      |
| TC-101   | 3.            | 306.81          | 1.0822E-08      |
| RU-103   | 2.            | 497.08          | 5.9832E-09      |
| RU-105   | 4.            | 724.50          | 2.0743E-08      |
| RH-106   | 1.            | 621.84          | 4.5292E-08      |
| RU-106   | 1.            | 621.84          | 4.5292E-08      |
| AG-110M  | 1.            | 657.75          | 5.4899E-09      |
| IN-113M  | 3.            | 391.69          | 8.0708E-09      |
| SN-113   | 3.            | 391.69          | 8.0762E-09      |
| IN-114M  | 7.            | 190.27          | 3.0529E-08      |
| SN-117M  | 7.            | 158.56          | 5.1459E-09      |
| SB-124   | 0.            | 1691.02         | 0.0000E+00      |
| SB-125   | 5.            | 427.89          | 2.4249E-08      |
| SB-126   | 1.            | 666.33          | 3.4193E-09      |
| XE-127   | 11.           | 202.84          | 9.1666E-09      |
| TE-129   | 3.            | 459.60          | 8.3751E-08      |
| I-131    | 4.            | 364.48          | 6.7103E-09      |
| XE-131M  | 10.           | 163.93          | 2.7844E-07      |
| I-132    | 1.            | 667.69          | 5.2271E-09      |
| BA-133M  | 5.            | 276.09          | 2.9420E-08      |
| I-133    | 2.            | 529.87          | 5.6757E-09      |
| XE-133   | 5.            | 81.00           | 1.7884E-08      |
| XE-133M  | 4.            | 233.22          | 4.0391E-08      |
| CS-134   | 2.            | 795.84          | 9.0236E-09      |

| NUCLIDE  | BCKGND<br>SUM | ENERGY<br>(keV) | MDA<br>(uCi/ML) |
|----------|---------------|-----------------|-----------------|
| CS134ESC | 0.            | 1400.00         | 0.000E+00       |
| I-134    | 3.            | 847.03          | 1.3165E-08      |
| TE-134   | 1.            | 767.20          | 2.4384E-08      |
| I-135    | 1.            | 1260.41         | 2.3320E-08      |
| XE-135   | 10.           | 249.79          | 7.7476E-09      |
| XE-135M  | 2.            | 526.56          | 1.4266E-08      |
| CS-136   | 0.            | 818.50          | 2.7419E-09      |
| CS-137   | 2.            | 661.65          | 8.5528E-09      |
| XE-137   | 3.            | 455.49          | 1.8876E-07      |
| CS-138   | 2.            | 1435.86         | 2.2144E-08      |
| XE-138   | 2.            | 258.31          | 2.1907E-08      |
| BA-139   | 11.           | 165.85          | 3.9077E-08      |
| BA-140   | 2.            | 537.32          | 2.2217E-08      |
| LA-140   | 0.            | 1596.49         | 0.0000E+00      |
| CE-141   | 14.           | 145.44          | 1.3008E-08      |
| CE-144   | 15.           | 133.54          | 6.0513E-08      |
| PR-144   | 15.           | 133.54          | 6.0513E-08      |
| PM-148   | 1.            | 1465.10         | 4.0007E-08      |
| PM-148M  | 2.            | 550.27          | 5.7997E-09      |
| EU-154   | 0.            | 1274.45         | 0.0000E+00      |
| EU-155   | 14.           | 105.31          | 3.5475E-08      |
| EU-156   | 1.            | 1242.42         | 1.1496E-07      |
| HF-181   | 2.            | 482.03          | 6.3420E-09      |
| W-187    | 1.            | 479.53          | 1.4603E-08      |
| TL-208   | 5.            | 583.14          | 1.1262E-08      |
| BI-212   | 3.            | 727.17          | 8.5840E-08      |
| PB-212   | 13.           | 238.63          | 1.6535E-08      |
| BI-214   | 4.            | 609.31          | 1.9015E-08      |
| PB-214   | 14.           | 351.91          | 2.8202E-08      |
| RA-224   | 6.            | 240.98          | 1.2604E-07      |
| RA-226   | 26.           | 186.21          | 2.7754E-07      |
| AC-228   | 5.            | 911.07          | 4.9579E-08      |
| RA-228   | 5.            | 911.07          | 4.9144E-08      |
| TH-228   | 13.           | 238.63          | 1.6211E-08      |
| U-231    | 12.           | 95.87           | 2.6677E-08      |
| TH-234   | 21.           | 92.38           | 3.8843E-07      |
| U-235    | 26.           | 185.71          | 1.6733E-08      |
| U-237    | 15.           | 114.00          | 5.7913E-08      |
| NP-238   | 2.            | 984.45          | 3.8687E-08      |
| NP-239   | 17.           | 106.13          | 3.5238E-08      |
| ANNIL    | 8.            | 511.00          | 0.0000E+00      |

DI WATER/LLD STUDY FOR MAT (31-AUG-1995 09:03:53.98)

Sample Identification: 95-3699-H  
Sample Quantity: 4.00000E+03  
Sample Geometry: LM4K0  
Detector: GSS-4205-HP

Operator: JMA  
Units: ML  
Shelf: 0

**ATTACHMENT SW-A**  
**Significant Materials**

The following significant materials have been identified at the Callaway plant as being in contact with storm water currently or in the last three years. They are shown on Drawing NPDES-001; NPDES Storm Water Information Outfalls 010-015; and NPDES-003, NPDES Storm Water Information Outfalls 010 - 015 Refuel 7, and are described below:

1. **AMINE STORAGE TANK** - A 6000 gallon tank containing monoethanolamine is located northeast of the turbine building. A lined trough is below the tank capable of holding 110% of the tank contents. Monoethanolamine is unloaded from tank trucks using air pressure.
2. **CAUSTIC STORAGE TANK** - A 10,000 gallon storage tank containing sodium hydroxide is located plant northeast of the turbine building. A lined trough is below the tank capable of holding 110% of the tank contents. Caustic is unloaded from tank trucks using air pressure.
3. **DEMINERALIZED CAUSTIC STORAGE TANK** - A 16,000 gallon storage tank containing sodium hydroxide is located plant north of the demineralizer building. A concrete dike surrounds the tank and is capable of holding 110% of the tank contents. Caustic is unloaded from tank trucks using air pressure.
4. **SULFURIC ACID STORAGE TANK** - A 10,000 gallon storage tank containing sulfuric acid is located plant northeast of the turbine building. A lined trough is below the tank and is capable of holding 110% of the tank contents. Acid is unloaded from tank trucks using air pressure.
5. **CIRCULATING WATER SULFURIC ACID TANK** - A 2500 gallon storage tank containing sulfuric acid is located near the circulating and service water pump house. Containment consists of a concrete trough capable of holding 110% of the tank contents. The tank can be automatically or manually filled through underground pipelines from the bulk storage tank at the circulating water chemical control system building or directly from a tanker truck.
6. **BULK SULFURIC ACID TANK** - A 25,000 gallon storage tank is located south of the circulating water chemical control system building. Containment consists of a concrete dike capable of holding 110% of the tank volume. Acid is unloaded from tank trucks using air pressure.
7. **DEMINERALIZER SULFURIC ACID STORAGE TANK** - A 10,000 gallon storage tank containing sulfuric acid is located plant north of the demineralizer building. A concrete dike surrounds the tank creating a containment area capable of holding 110% of the tank contents. Acid is unloaded from tank trucks using air pressure.
8. **GASOLINE STORAGE TANKS** - The above ground gasoline storage tank located plant west of the Stores I building has a capacity of 2000 gallons. A prefabricated metal containment exists around the tank of sufficient size to contain approximately 110% of tank capacity. Gasoline is unloaded from tank trucks using onboard truck pumps.
9. **SECURITY DIESEL STORAGE TANK** - A 3000 gallon underground tank containing diesel fuel is located by the Main Access Facility. Diesel fuel oil is unloaded from tank trucks using onboard truck pumps.

10. **EMERGENCY DIESEL FUEL TANK** - There are two 100,000 gallon underground diesel fuel oil storage tanks located plant south of the Emergency Diesel building. Diesel fuel oil is unloaded from tank trucks using onboard truck pumps. This tank is used to power the emergency diesel generators during testing and as needed to supply plant power.
11. **VEHICLE DIESEL FUEL STORAGE TANK** - The above ground vehicle diesel storage tanks are located plant west of the Stores I building with a capacity of 300 gallons for #1 diesel and 700 gallons for #2 diesel fuel oil. A prefabricated metal containment exists around the tanks of sufficient size to contain approximately 110% of the tank capacity. Diesel fuel oil is unloaded from tank trucks using onboard truck pumps. Used to fill diesel powered vehicles with a gas station type dispenser.
12. **AUXILIARY FUEL OIL STORAGE TANK** - The auxiliary fuel oil storage tank is a 300,000 gallon carbon steel tank located plant west of the demineralizer building. An earthen berm capable of containing 110% of the tank contents surrounds the tank. The tank is filled by an underground transfer line from the auxiliary fuel oil transfer system. This tank is used to supply diesel fuel oil to the auxiliary boiler and the fire protection diesel pumps.
13. **CIRCULATING WATER CHEMICAL CONTROL SYSTEM SALT STORAGE** - Two salt storage tanks full of rock salt are located plant north of the circulating water chemical control system building. They have been retired in place.
14. **ROAD SALT** - Road salt has recently been moved to permanent storage inside the maintenance shop annex. It was previously stored outside in a three-sided concrete wall and concrete floor uncovered structure.
15. **TRANSFORMER OIL** - Nine large power transformers are located on site. They are the main transformers (3 at 8,000 gallons), the Unit Auxiliary transformer (8,000 gallons), the Start Up transformer (9,700 gallons), the Station Service transformers (2 at 2,770 gallons), and the Engineered Safety Features transformers (9,700 and 11,500 gallons). Most outside oil filled electrical transformers are situated on top of a concrete lined pit which is filled with gravel. The exception to this is the Training Annex transformer and the eight 300 series site power loop transformers which do not have any containment. Any spills from these transformers would have to be contained in the drainage ditches adjacent to the transformers.
16. **DEMINERALIZED WATER TANK** - A 150,000 gallon stainless steel demineralized water tank is located plant southeast of the turbine building. No containment exists around this tank. The tank is filled from the makeup demineralizers through underground piping.
17. **CONDENSATE WATER TANK** - A 466,000 gallon stainless steel condensate water tank is located plant southeast of the turbine building. No containment exists around this tank. The tank is filled from the demineralized water storage tank through underground lines. It is used to supply water to the steam generators when the plant is shutdown and during transients. During transients the tank can also be supplied by fire water.
18. **REFUELING WATER TANK** - A 419,000 gallon stainless steel refueling water tank is located plant southwest of the containment building. No containment exists around this tank. The tank is filled through underground lines from the reactor makeup system. The tank is used to provide water to the refueling pool during outages and to the reactor system during transients. The tank contains radioactive demineralized water with 2350 to 2500 ppm boron.

19. **REACTOR MAKEUP WATER TANK** - A 153,000 gallon stainless steel reactor makeup water tank is located plant southwest of the containment building. No containment exists around this tank. The tank is filled through underground lines from the demineralized water tank. The tank is used to provide demineralized water to the reactor system and associated support systems.
20. **DEMINERALIZED WATER CLEAR WELL** - The demineralized clear well consists of a 50,000 gallon carbon steel tank located plant northwest of the demineralizer building. No containment exists around this tank. Deep well water is pumped underground to the demineralized clear well which is then transferred underground to supply water to the makeup demineralizers.
21. **FIRE WATER STORAGE TANK** - Two 300,000 gallon carbon steel fire water storage tanks are located plant southeast of the demineralizer building. No containment exists around these tanks. The tanks are filled through underground lines from the demineralized clear well. These tanks are used to supply fire water to the plant for testing and fire response.
22. **NEUTRALIZATION TANK** - The neutralization tank is a 150,000 gallon open carbon steel tank with an inner protective coating. No containment exists around this tank. The tank receives regeneration wastewater from the makeup demineralizer system through underground transfer lines. The water is pH adjusted with sulfuric acid and or caustic and then sent to sludge pond 3 through underground transfer lines for recycle through the water treatment plant.
23. **DISCHARGE MONITOR TANKS** - Two above ground 100,000 gallon stainless steel discharge monitor tanks are located plant south of the radwaste building. The tanks are used to store plant radioactive wastewater prior to discharge. Spill containment is provided by a single concrete diked area capable of holding 110% of the contents of one tank.
24. **WATER TREATMENT PLANT SODIUM HYPOCHLORITE STORAGE TANK** - A 6000 gallon plastic sodium hypochlorite tank is located plant south of the water treatment plant. No containment exists around this tank. This tank is in service from approximately April to October each year. The contents are used to chlorinate the water treatment plant clarifiers.
25. **GASEOUS CHEMICAL STORAGE**
  - a. Carbon Dioxide (CO<sub>2</sub>): The CO<sub>2</sub> storage tank is located in the plant gas yard which is plant south of the radwaste building. The primary use of CO<sub>2</sub> is to degas the main generator of hydrogen during outages. The tank has a capacity of 6 tons of liquid CO<sub>2</sub>, a maximum pressure of 350 psig at 125°F. It is constructed per section 8 of the ASME pressure vessel code.
  - b. Hydrogen (H<sub>2</sub>): There are 12 tubes for storage of H<sub>2</sub> with a total capacity of 83,232 cubic feet at 2300 psig located in the plant gas yard. The 12 tubes have a water volume of 613.2 cubic feet. Hydrogen is primarily used as a cover gas for the main turbine generator and to maintain oxygen control in the reactor coolant system. The tubes are constructed per ASME UPV code 8 Code Case 1205 of a material that meets ASME SA372 Class 4.
  - c. Oxygen (O<sub>2</sub>): There are 8 O<sub>2</sub> cylinders that are each 9 inches in diameter and 55 inches high located in the plant gas yard. They each contain 330 standard cubic feet of O<sub>2</sub> at 2640 psig. They are constructed to meet DOT specification 3AA2400. The primary use of O<sub>2</sub> at the plant is by radwaste systems in the evolution of hydrogen recombination.



- d. Nitrogen (N<sub>2</sub>): Callaway has both high and low pressure N<sub>2</sub> with storage tanks located in the plant gas yard. The low pressure N<sub>2</sub> storage tank has a capacity of 1569 cubic feet. It is constructed with an inner vessel of 5083 aluminum and an outer carbon steel vessel. The primary use of low pressure nitrogen for the plant is to purge and blanket systems to exclude oxygen. High pressure nitrogen is stored in 3 tubes each 22 feet 6.5 inches long with an outer diameter of 24 inches. They are designed and constructed to meet ASME code for pressure vessels. The three tubes have a total capacity of 24,280 cubic feet at 2300 psig. The primary use of high pressure nitrogen is to provide a backup gas supply to rapidly close plant valves during transients.
26. **RECLAIMED OIL STORAGE TANK** - The reclaim oil tank has capacity of 10,000 gallons. It is an above ground tank located within an earthen dike of sufficient size to contain 110% of tank contents. The tank is filled through underground lines from the oily wastewater separator. Used oil is removed for recycle from the tank to tank trucks by created a vacuum in the tank truck.
27. **OILY WASTE TREATMENT AREA** - This area is located plant southwest of the demineralizer building. The area consists of a building containing the oily wastewater separator and associated piping, the reclaimed oil storage tank, the equalization basin, and a 29,000 gallon carbon steel underground process surge tank that supplies plant oily wastewater to the separator. The separated water is recycled through sludge pond 3 to the head of the water treatment plant and the oil is stored in the reclaimed oil storage tank. All oily waste system water and oil transfers in this area are underground.
28. **AUXILIARY OIL TRANSFER (LOADING AREA)** - The auxiliary oil transfer loading area is located plant south of the auxiliary fuel oil storage tank. The area consists of a building containing pumps and piping to transfer diesel fuel oil to the auxiliary fuel oil storage tank. Diesel fuel oil is unloaded from tank trucks by pumps on the trucks or using the installed plant equipment pumps. Transfer lines to the auxiliary fuel oil storage tanks are underground.
29. **LOADING AREA AT STORES II** - The loading area at the Stores II building consists of a standard shipping/receiving dock. All chemicals and other products are unloaded from trucks in their own shipping containers. There are not facilities for unloading of any bulk chemicals/fuel oil/gasoline through pipelines to plant bulk storage tanks.
30. **MISC. MATERIALS STORAGE AREAS** - Three areas around the Stores II building exist for miscellaneous laydown areas for items such as metal, gravel piles, fill material and old concrete. One is a concrete pad and the other two are on grass/gravel areas. Another materials storage area exists near the outage maintenance facility. Materials stored are metal components such as pumps, and valves, structural materials made of items such as metal, wood or concrete, pipe made of materials such as carbon steel, PVC, and galvanized metal, empty portable tanks, and empty metal dumpsters.
31. **EXCAVATION SURPLUS STORAGE** - Two storage areas exist plant south of the water treatment plant sludge lagoons containing excess dirt, concrete, and asphalt from plant activities.

Temporary Significant Materials - During Refueling Outage April, 1995

The following significant materials were present on site temporarily during the recent refueling outage. Their locations are also shown on attached drawing NPDES-003, NPDES Storm Water Information Outfalls 010-015 Refuel 7. All items were removed at the end of the refueling outage unless otherwise noted.

**1. STEAM GENERATOR CHEMICAL CLEANING - BULK CHEMICAL STORAGE AREA**

- a. Diammoniummethylenediamine tetracetate: This material was stored in a 20,000 gallon lined carbon steel portable tank. The tank was inside a portable lined containment berm with a capacity of 22,000 gallons, common to the demineralized water and ethylenediamine storage tanks. 31,500 gallons of diammoniummethylenediamine tetracetate were used during the outage.
- b. Ethylenediamine: This material was stored in a 4600 gallon stainless steel tank truck. The tank truck was inside a portable lined containment berm with a capacity of 22,000 gallons, common to the demineralized water and diammoniummethylenediamine tetracetate storage tanks. 4600 gallons of ethylenediamine were used during the outage.
- c. Demineralized water for dilution: Demineralized water was stored in two 20,000 gallon carbon steel portable tanks and were refilled as needed. The tanks were inside a portable lined containment berm with a capacity of 22,000 gallons, common to the diammoniummethylenediamine tetracetate and ethylenediamine storage tanks.
- d. Hydrogen Peroxide (30%): This material was stored in a 4600 gallon stainless steel tank truck which was refilled as needed. The portable tank was inside its own portable lined containment berm which had the capacity of handling 110% of the tank contents. 9100 gallons of hydrogen peroxide were used during the outage.
- e. Diesel Fuel Oil: This material was used to supply fuel to two portable steam boilers. It was stored in a 6000 gallon fiber tank located in a portable lined spill containment berm capable of handling 110% of the tank contents.
- f. Hydrazine (35%): This material was supplied in either 55 gallon fiber drums or 350 gallon fiber totes and was located in a Sealand shipping container plant north of the demineralized water building. A total of 1900 gallons were used in the total process. The Sealand container possessed inner bermed areas to ensure that no hydrazine was released to the environment.
- g. CCI 801: This material was used as a corrosion inhibitor during the steam generator chemical cleaning was received and stored in 550 gallon stainless steel totes within a bermed area. Two totes were brought on-site for a total of 1100 gallons of product.

2. **STEAM GENERATOR CHEMICAL CLEANING - MIXING AREA** - Mixtures of chemicals were prepared in an area consisting of four 20,000 gallon portable stainless steel tanks. The portable tanks were inside a portable lined spill containment berm, capable of handling 110% of the contents of one of the tanks. A second portable spill containment berm area existed for transfer pumps and filtration of cleaning water.

3. STEAM GENERATOR CHEMICAL CLEANING - WASTE LIQUIDS AREA

- a. Copper solvent waste: This material was stored in two 20,000 gallon carbon steel tanks located in a portable lined containment berm capable of handling 110% of the contents of one of the tanks. Of the total, 54,000 gallons that was generated during the outage, 20,000 gallons is still on-site pending processing.
- b. Iron solvent waste: This material was stored in twelve 20,000 gallon carbon steel tanks located in a portable lined containment berm capable of handling 110% of the contents of one of the tanks. Two additional 20,000 gallon lined carbon steel tanks are in this same portable containment berm for use in the on site processing of the waste. A total of 215,000 gallons were generated during the outage and remain on-site pending processing.

Hazardous Wastes

Callaway is a small quantity generator of hazardous waste generating between 200 and 2200 lb. of hazardous waste per month. The waste is stored in a prefabricated Hazardous Waste Storage Building (HWSB) with containment sumps, designed specifically for storage of hazardous waste. Hazardous waste is stored in the HWSB for up to 180 days prior to disposal via an off-site vendor. Typical wastes generated are Chromium, Lead, Mercury, Silver, and solvents. Callaway also currently maintains an outside satellite accumulation area where waste paint and solvents are accumulated. These wastes are accumulated from work performed in the plant in two separate 55 gallon drums held in a prefabricated closed spill container capable of holding 110 percent of the volume of both drums.

Management Practices

A spill prevention, control and response plan is in place at the Callaway plant. This plan describes the types, locations and quantities of hazardous materials and offers guidance on the reporting of spills.

A Spill Prevention, Control and Response (SPCC) plan and implementing procedure is in place at the Callaway plant. This plan provides plant personnel with the necessary information regarding the types, locations and quantities of non-radioactive oil present at Callaway plant as well as to the reporting of oil spills.

A chemical emergency response plan (CERP) is in place at the Callaway plant. This plan provides guidance and information for responders to hazardous chemical spills.

A Chemical Emergency Response Plan (CERP) and implementing procedure, is also in place at the Callaway plant. This plan provides guidance and information for responders to hazardous chemical spills.

Stormwater management plans describe various practices employed to minimize contact by these materials with stormwater.

Stormwater management practices employed to minimize contact by these materials with stormwater.

Outdoor Vehicle Maintenance and Cleaning Areas

No outdoor vehicle maintenance and cleaning areas exist on the plant site.

Fertilizers, Pesticides, Herbicides, and Soil Conditioners

The herbicides used for weed control are: Carmex, Oust, and Weedar(2-4-D). The pesticide used at the firing range for tick control is Dursban 4E with an active ingredient of Chlorpyrifos. The amount applied to the firing range area was five pints of Dursban 4E which contains 2.5 pounds of the active ingredients. No outside usage of fertilizers or soil conditioners has been reported at the plant.

Note that fertilizers, herbicides, and soil conditioners which are used on agricultural lands within plant storm water drainage areas have been excluded from this application as they are exempt from the storm water regulations.

ATTACHMENT SW-B  
Outfall Descriptions and Control Measures

All Callaway plant storm water outfalls are located at the discharge of storm water retention ponds. All have earthen dams. The storm water samples are collected downstream of the discharge as some seepage does occur under these dams. All plant storm water is discharged to the Missouri River either via Logan Creek on the east side of the plant or Mud Creek or Auxvasse Creek on the west side of the plant. The following describes the outfall drainage areas, the retention ponds, and the receiving waters.

Outfall 010 - The drainage area for Outfall 010 consists of a total 95 acres. Only three percent of the drainage area consists of impervious plant site area. The drainage area includes plant areas such as the cooling water chemical control building, the quality control office, and an area plant west of the radwaste building. The remaining drainage area consists of grassy areas and areas leased to the Missouri Conservation Department. The pond has a retention time greater than 24 hours. Two 36-inch diameter standpipes are located at the north side of the settling pond. Flow enters this pipe and goes under the pond dam to the actual sampling location. Outfall 010 discharges to Logan Creek.

Outfall 011 - The drainage area for Outfall 011 consists of a total of 425 acres. Only two percent of the drainage area consists of impervious area on the plant site. The plant site drainage area includes areas such as the water treatment plant, radwaste building, maintenance training annex, demineralizer potable water building and the circulating and service water pumphouse. The remaining drainage area consists of grassy areas, excavation surplus storage, and areas leased to the Missouri Conservation Department. The pond has a retention time less than 24 hours. Two 36-inch diameter standpipes with 48-inch diameter skimmer pipes around them are located on the north side of the settling pond. Flow enters this pipe and goes under the pond dam to the actual sampling location. Outfall 011 discharges to Logan Creek.

Outfall 012 - The drainage area for Outfall 012 consists of a total of 100 acres. Approximately one fourth of the total drainage area consists of impervious plant site area. This outfall collects storm water runoff from most of the plant area including the parking lots, office buildings, part of the switchyard, the turbine building, the stores I building, and the periodic drainage of storm water collected in the Unit Two basin. The remaining drainage area consists of grassy areas. The pond has a retention pond less than 24 hours. A concrete spillway has been constructed at the south side of the settling pond where the actual sampling point is located. Outfall 012 discharges to Mud Creek.

Outfall 013 - The drainage area for Outfall 013 consists of a total of 40 acres. No impervious area is included in the total. The drainage area includes half of the switchyard and grassy areas. The pond has a retention time less than 24 hours. A spillway exists at the south side of this settling pond where the actual sampling point is located. Outfall 013 discharges to Mud Creek.

Outfall 014 - The drainage area for Outfall 014 consists of a total of 100 acres. Only four percent consists of impervious plant areas. These areas include, half of the construction parking lot, the stores II building and the maintenance shop annex. The remaining area consists of grassy areas and land leased to the Missouri Conservation Department. The pond has a retention time less than 24 hours. A concrete spillway has been constructed on the north side of the pond where the actual sampling point is located. Outfall 014 discharges to Auxvasse Creek.

Outfall 015 - The drainage area for Outfall 015 consists of a total of 60 acres. Only one percent of the area consists of impervious area which are paved roadways. The remaining area consists of grassy areas and land leased to the Missouri Conservation Department. The pond has a retention time greater than 24 hours. A concrete spillway has been constructed on the north side of the pond where the actual sampling point is located. Outfall 015 discharges to Auxvasse Creek.

*NOTE: The Missouri Conservation Department uses a minor portion of the leased land for farming and the remaining land is left in its native state for wildlife habitat.*

ATTACHMENT SW-C  
Requests for Non-Storm Water Discharges

We are requesting that the following non-storm water discharges be allowed to be discharged to storm water outfalls based on the following information.

Potable Water

Infrequently, the plant is required to drain potable water lines for repairs or maintenance to the system. When this is required, it is not practical to transport this water to a process outfall as the potable water system is quite large and provides water to many areas of the plant. In the past, the plant has discharged potable water to storm water in situations where other options are not practical. Missouri Regulations 10 CSR 20-6.010 Construction and Operating Permits describes water uses which are exempt from NPDES permit requirements. One such exemption states, "Water used in constructing and maintaining a drinking water well and distribution system for public and private use, geologic test holes, exploration drill holes, groundwater monitoring wells and heat pump wells." We believe that the potable water at the plant site would fall under this exemption. We are therefore requesting that potable water be allowed to be discharged to storm water outfalls without any additional monitoring as a resultant on these storm water discharges.

Firewater

The plant's firewater system consists of an underground piping loop that circles the main plant buildings and two 300,000 gallon above ground supply tanks. Makeup water is supplied to the firewater system from a deep well. Testing and maintenance of the firewater system requires quarterly flushing from 40 connections. This flush water is currently directed to storm water outfalls.

In order to ensure system integrity as required by American Nuclear Insurers and the Nuclear Regulatory Commission, a treatment program to control microbiologically influenced corrosion is scheduled to begin in the spring of 1996. The program requires an initial treatment of the firewater system with glutaraldehyde dimethylamide (DMAD) and a solids dispersant. The firewater system will then be treated long term on a continuous basis with a biostat and DMAD. Quarterly flushing of test points is then performed to maintain the treatment program.

Initial and system flushes will be directed to storm water outfalls. These flushes will be less than 50,000 gallons. Based on the expected concentrations and aquatic toxicity data, we do not believe that there will be any significant effect on the receiving waters.

Once per three years the firewater system and supply tanks require flushing. Treatment chemicals will not be added for a time prior to the flushing in order to ensure that the chemicals in the firewater system are consumed by system usage. The total volume of water for this flushing is 700,000 to 800,000 gallons. This water will be directed to storm water outfalls.

Manhole Pumpout Discharges

There are many manholes at the plant that need to be pumped periodically to remove accumulated storm water. To evaluate potential corrosion byproducts, these manhole discharges were sampled and analyzed for zinc during the first quarter of 1990, per previous discussions with the DNR on this issue. The results of these samples are provided below. Elevated levels of zinc were detected in some samples and were attributed to the corrosion of galvanized supports. The testing indicated that the zinc concentration may be reduced by maintaining the water levels below the galvanized supports. Therefore, we request authorization to continue our routine pumping of manholes (provided that there is no oil sheen and the pH is between 6-9) to storm water which will maintain lower water levels. Note that several manholes have automatic pumps installed.

MANHOLE FLOWS AND ZINC CONCENTRATIONS

| MANHOLE # | FEB 1990<br>Zn (mg/l)<br>TOTAL | MAR 1990<br>Zn (mg/l)<br>TOTAL | FEB 1990<br>VOLUME<br>(gal) | MAR 1990<br>VOLUME<br>(gal) |
|-----------|--------------------------------|--------------------------------|-----------------------------|-----------------------------|
| 59-1A     | 0.47                           | 0.19                           | 8000                        | 9000                        |
| 59-1B     | 0.42                           | 0.21                           | 7000                        | 10,500                      |
| 59-15     | 0.11                           | 0.22                           | 7000                        | 6750                        |
| 59-16     | 0.10                           | 0.25                           | 6000                        | 8500                        |
| 59-17     | 0.10                           | 0.06                           | 18,000                      | 7750                        |
| 59-44     | 0.12                           | 0.07                           | 7500                        | 2800                        |
| 59-46     | 4.07                           | 0.27                           | 3000                        | 750                         |
| 59-71     | 3.59                           | 0.26                           | 2000                        | 5250                        |
| 59-76     | 1.37                           | 1.07                           | 150                         | 250                         |
| 61-35     | 0.43                           | 1.35                           | 10,000                      | 24,800                      |
| 61-36     | 3.70                           | 0.03                           | 12,000                      | 8500                        |
| 61-38     | 3.14                           | 0.14                           | 5                           | 100                         |
| 61-39     | 2.18                           | 0.11                           | 50                          | 10                          |
| 61-44     | 6.38                           | 3.93                           | 3200                        | 3350                        |
| 99-8      | 1.42                           | 1.33                           | 250                         | 800                         |
| 99-11     | 2.22                           | 0.28                           | 15,000                      | 12,000                      |
| 99-12     | 1.32                           | 1.63                           | 2500                        | 4500                        |

Outside Eye Wash/Shower Station Discharge

Outside eye wash and shower stations currently discharge to storm water. We believe that although this is a non-storm water discharge, it would be considered exempt as it is mostly potable water. These facilities are used for emergency use only and therefore, the quantity of water per use would be infrequent and quite small.



Demineralizer Water / Essential Service Water

During unit outages and other maintenance activities, it is sometimes necessary to provide temporary hoses to supply water to equipment. When these hoses are disassembled it is difficult to collect the residual water for discharge to a process outfall.

We are therefore requesting the authorization to discharge small quantities (<500 gallons) of demineralized water and essential service water to storm water outfalls.

Demineralizer Water Storage Tank

The plant requests the authorization to drain the 50,000 gallon demineralizer water storage tank to local storm water conveyances. Existing piping only allows drainage of this tank through radwaste treatment systems which is costly and unnecessary. In the absence of another authorization mechanism, a new outfall designation may be necessary at the tank's discharge. The tank could then be discharged on site and would drain to storm water outfall O12. Past experience has shown this to occur approximately once per year.

Air Conditioning Condensate

Condensate from building intake air cooling units is typically routed to the building roof drains. These building roof drains discharge to storm water runoff conveyances as depicted in drawing NPDES-001.

**ATTACHMENT SW-D**  
**Significant Leaks or Spills**

Two significant spills have occurred in the last three years at the Callaway Plant per the criteria set forth in the regulations. They are described as follows:

1. On October 11, 1994, at approximately 1:25 p.m., transfer of the demineralized water system neutralization tank to Sludge Pond 3 commenced. During the transfer, a mechanical failure of a vacuum breaker allowed leakage of waste water to a valve pit that overflowed. The overflow went to local runoff conveyances that directed the flow to the storm water settling pond for Outfall 011. A sample of the water in the local runoff had a pH of 7.9 with no visible oil sheen. A maximum of 14,000 gallons of waste water overflowed the valve pit. The discharge of plant process water to Outfall 011 is an event that must be reported to the Missouri Department of Natural Resources (DNR) within five working days per the Callaway NPDES permit. Considering the chemical analysis performed and knowledge of the water discharged, impact on the environment in this situation was negligible. The failed vacuum breaker has been repaired, and system operation restored to normal.
2. On April 15, 1995, at approximately 1550, filling of the cooling tower basin with clarified Missouri river water commenced. During the valve restoration to perform this evolution the cooling tower basin inlet valve, VDB1101, was not opened due to inadequate communications between the personnel performing the restoration. Beginning at approximately 1550 and lasting for an estimated 15 minutes, the water treatment plant clearwell overflowed due to VDB1101 being in the closed position. This resulted in an estimated 75,000 gallons of clarified Missouri river water being directed via plant Storm Water Runoff (SWR) conveyances to the settling pond associated with SWR Outfall 011. A sample of water being discharged from Outfall 011 was analyzed and found to be within NPDES permit limits for Outfall 011. The discharge of plant process water to Outfall 011 is an event that must be reported to the Missouri Department of Natural Resources (DNR) within five working days per the Callaway NPDES permit. Considering the chemical analysis performed and knowledge of the water discharged, impact on the environment in this situation is negligible.
3. In late December, 1993, water leaking into the Auxiliary building at the plant had indications that it contained some amount of diesel. After some investigation, it was determined that the auxiliary boiler fuel oil transfer line had recently developed a leak. This is an underground line and the leak resulted in an underground release of diesel. The underground line has been replaced. This event was reported to Missouri Department of Natural Resources (DNR).

The total volume of diesel oil released is estimated to be 46,500 gallons. Oil recovery has been in progress since June 1994. A total of 39,818 gallons has been recovered to date. We are working with the appropriate divisions within the DNR to accomplish the remediation of this event.

ATTACHMENT SW-E  
Storm Water Sampling

Storm water runoff from all plant areas is diverted to settling ponds, prior to discharge to waters of the state via the outfalls specified in the existing permit. These outfalls are described in Attachment SW-B, Outfall Descriptions and Control Measures and are shown on the attached site maps. All six outfalls were evaluated for the permit reapplication, as described below.

According to the federal and state storm water regulations, the following parameters are required to be analyzed for in storm water samples:

- Oil and grease;
- Biochemical oxygen demand (BOD5);
- Chemical oxygen demand (COD);
- Total suspended solids (TSS)
- Total Kjeldahl nitrogen;
- Nitrate plus nitrite nitrogen;
- Total phosphorus; and
- pH (measured in the field).

Also required to be analyzed in storm water samples is any parameter that is currently listed in any of the plants' conventional outfalls. The following are those additional parameters:

- |                                |                     |
|--------------------------------|---------------------|
| • Settleable solids            | • Copper, Dissolved |
| • Ammonia (as N)               | • Nickel, Total     |
| • Total organic nitrogen       | • Nickel, Dissolved |
| • Magnesium, Total             | • Zinc, Total       |
| • Total dissolved solids (TDS) | • Zinc, Dissolved   |
| • Chlorine, Free available     | • I-131             |
| • PCB                          | • Gamma Isotopic    |
| • Tritium                      | • Sr-89/90          |
| • Copper, Total                | • Fe-55             |

In order to schedule the field effort for a storm event, Union Electric (UE) contracted the services of WeatherData Incorporated of Wichita, Kansas, to monitor and provide information regarding the size and duration of impending storms in the Callaway area. WeatherData provided a 90-minute notice of an impending storm which would last at least one hour and provide 0.10 inch of rainfall.

Precipitation is measured at a 90-meter permanent meteorological tower located on-site. It is measured by a Climet weighing bucket rain gauge with accuracy of +/- 1% for precipitation rates of 1 to 3 inches per hour. Detailed rainfall records are available upon request.

Each of the ponds' retention times were calculated prior to the development of the sampling program in order to evaluate sampling strategies. It was determined that settling ponds, and corresponding Outfalls 010 and 015 have retention times greater than 24 hours, allowing grab sampling techniques to be used in accordance with applicable regulations.

By convention, all other storm water outfalls (011-014) would need both first flush grab, and flow weighted composite, samples as part of the permit reapplication assessment. However, we believe

the physical configuration of the existing settling ponds and condition of their spillways/discharge structures support the use of alternative techniques. The discharge of these ponds following a rainfall event, is substantially moderated by both the highly absorptive off site drainage areas and the retention capacity of the ponds (based in part on the freeboard below the spillway, prior to the storm event). As both the absorption rate and pond capacity are highly variable, sampling strategies must target collection of usable data within cost and feasibility constraints. Initial effluent quality from a settling pond does not exhibit the elevated contaminant concentrations typical in first flush samples of unimpeded runoff from direct storm water conveyances. Thus, separate sampling and analysis of the initial discharge of each pond was not conducted. Instead, for each sampling event (with the exceptions noted below) a time-series composite sample was taken. While attempts were made to measure flow rates throughout the sampling period (three hours typically), flow proportional compositing was not attempted. The flow rate data was based on calculations using head height over the broad, irregularly surfaced existing spillways, and is only believed to be a coarse estimate. As a result, we do not believe that the use of such estimates for compositing would have increased the validity, and thus the "representativeness" of the samples.

These same settling pond properties also affected our ability to obtain samples from optimum "qualifying storm events" despite our efforts to collect samples throughout a five month period. In many cases, even though rainfall amounts and previous rainfall event criteria were met, qualifying storm events did not result in discharge from the settling ponds. Thus, as the reapplication deadline approached we revised our sampling goals allowing more flexibility as to the qualifying event criteria, to ensure that samples were collected for analysis.

The following sections provide details regarding the samples taken from each outfall, to further explain our efforts.

#### Outfalls 010 and 015

Analytical data is provided from three sampling events. As stated above, these outfalls discharge runoff from settling ponds with a retention times greater than 24 hours. Two storm events were sampled - the first on April 16 and the second August 4, 1995; grab samples were taken from the discharge following both rainfall events. All parameters listed in Form 2F, Section VII, Part A and B were analyzed from the first sampling event, except nitrate/nitrite which was inadvertently omitted from the initial sample. A sample taken on August 4 was analyzed for: nitrate/nitrite, oil and grease (O&G), pH, and total suspended solids (TSS). Special grab samples were taken (from the standing water in the settling ponds) on September 9, 1995, and analyzed for tritium as the initial analyses were not performed using an appropriate method. The September 9 "dip" samples were taken to ensure that tritium data would be supplied with the application, as sampling a rainfall event was not possible in the limited time remaining following identification of the analytical problem associated with the earlier samples.

Note the following information regarding the Form 2F, Section VII, Part D data for the two rainfall events. Instantaneous discharge flow rates were not monitored, however the total flows were calculated using rainfall records, and appropriate runoff areas and coefficients. The August 4 event refers to samples taken on that day, after the discharge from the ponds commenced following two days of intermittent rains. The "duration of the storm event" was not listed for this event as neither the total elapsed time (first rain to commencement of overflow) nor the sum of the duration of discrete events would provide particularly relevant information.

Outfall 011

All analytical data (except tritium) is from a single sampling event, on July 6, 1995. A time-series composite sample was taken on July 6, after the discharge from the ponds commenced following two days of intermittent rains. The "duration of the storm event" was not listed as neither the total elapsed time (first rain to commencement of overflow) nor the sum of the duration of discrete events would provide particularly relevant information.

A special grab sample was taken (from standing water in the settling pond) on September 9, 1995, and analyzed for tritium as the initial analysis was not performed using an appropriate method. The September 9 "dip" sample was taken to ensure that tritium data would be supplied with the application, as sampling a rainfall event was not possible in the limited time remaining following identification of the analytical problem associated with the earlier sample.

Outfall 012

Analytical data is provided from three sampling events. Two storm events were sampled - the first on June 26 and the second on July 4, 1995; time-series composites were taken from the discharge following both rainfall events. The following parameters were analyzed from the first sample: Biological Oxygen Demand (BOD), pH, Total Suspended Solids (TSS), Total Phosphorus, Oil and Grease, Total Dissolved Solids, Free Available Chlorine, Settleable Solids, Total and Dissolved Copper, Nickel, and Zinc. All parameters listed in Form 2F, Section VII, Part A and B were analyzed from the second sample on July 4, and a special grab sample was taken (from standing water in the settling pond) on September 9, 1995, and analyzed for tritium as the initial analysis was not performed using an appropriate method. The September 9 "dip" sample was taken to ensure that tritium data would be supplied with the application, as sampling a rainfall event was not possible in the limited time remaining following identification of the analytical problem associated with the earlier sample.

The June 26 event refers to samples taken on that day, after the discharge from the pond commenced, following four days of intermittent rains. The "duration of the storm event" was not listed as neither the total elapsed time (first rain to commencement of overflow) nor the sum of the duration of discrete events would provide particularly relevant information.

Outfall 013

All analytical data (except tritium) is from a single sampling event, on August 3, 1995. A time-series composite sample was taken on August 3, after the discharge from the ponds commenced, following two days of intermittent rains. The "duration of the storm event" was not listed as neither the total elapsed time (first rain to commencement of overflow) nor the sum of the duration of discrete events would provide particularly relevant information.

A special grab sample was taken (from standing water in the settling pond) on September 9, 1995, and analyzed for tritium as the initial analysis was not performed using an appropriate method. The September 9 "dip" sample was taken to ensure that tritium data would be supplied with the application, as sampling a rainfall event was not possible in the limited time remaining following identification of the analytical problem associated with the earlier sample.

Outfall 014

All analytical data (except tritium) is from a single sampling event, on July 4, 1995. A time-series composite sample was taken after the discharge from the pond commenced.

A special grab sample was taken (from standing water in the settling pond) on September 9, 1995, and analyzed for tritium as the initial analysis was not performed using an appropriate method. The September 9 "dip" sample was taken to ensure that tritium data would be supplied with the application, as sampling a rainfall event was not possible in the limited time remaining following identification of the analytical problem associated with the earlier sample.

General Notes

Analysis was performed by the on-site laboratory and by two commercial laboratories. Tritium analysis was performed by Teledyne Isotopes Midwest Laboratory. The following list indicates parameters analyzed by Maxim Technologies:

- COD
- Total Kjeldahl Nitrogen
- Magnesium, Total
- Sr-89/90
- Ammonia (as N)
- Total Organic Nitrogen
- PCB
- Fe-55

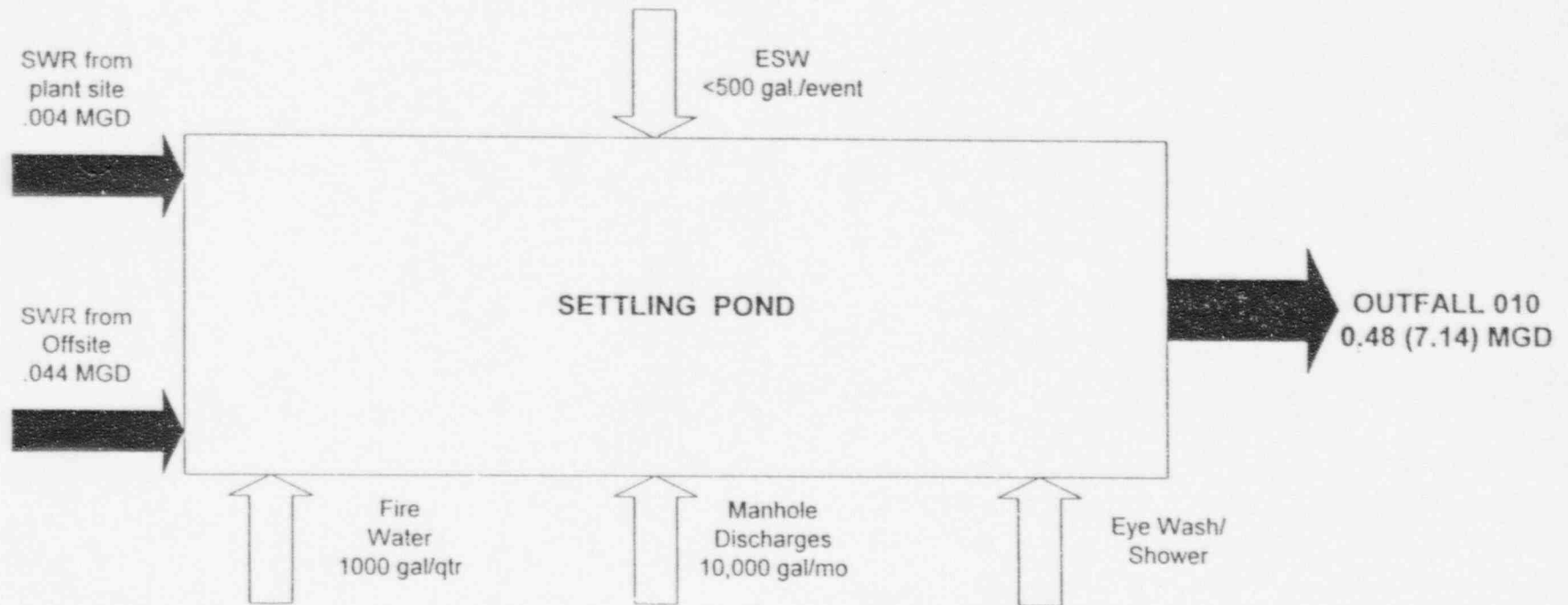
ATTACHMENT SW-F  
Monitoring Requests

In anticipation of permit conditions that may be set or continued in this renewal, Union Electric requests the consideration of the following comments. We believe that the monitoring for Oil and Grease (O&G) on storm water outfalls 010-015 should be deleted. Currently this parameter is monitored on a quarterly frequency. There are no limits placed on O&G for storm water. The facility has a spill control plan that should prevent any oil from reaching the storm water ponds. In the unlikely event that oil did reach the storm water ponds, it would most likely be discovered by a sheen on the ponds and not by sampling results. For these reasons, we believe that it is appropriate that we request that the monitoring for O&G be deleted from storm water outfalls 010, 011, 012, 013, 014, and 015.



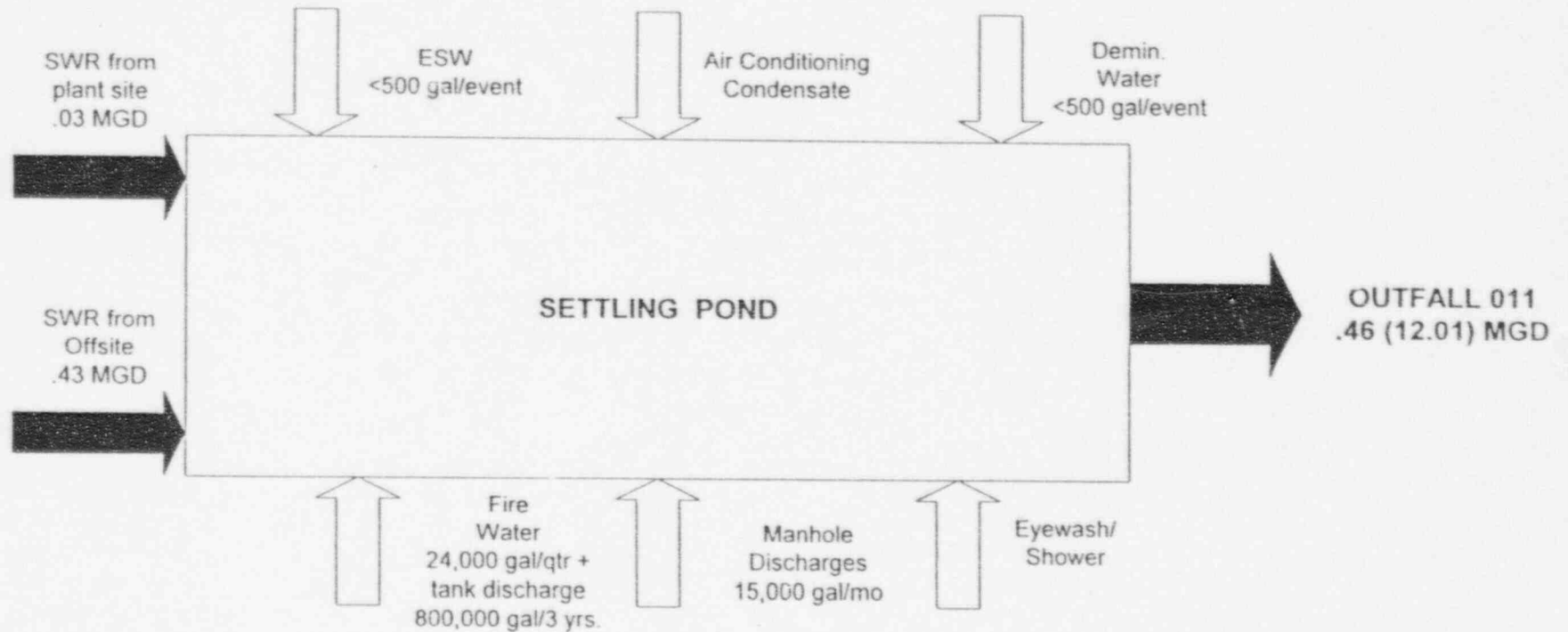


# FLOW COMPONENTS FOR STORM WATER OUTFALL 010



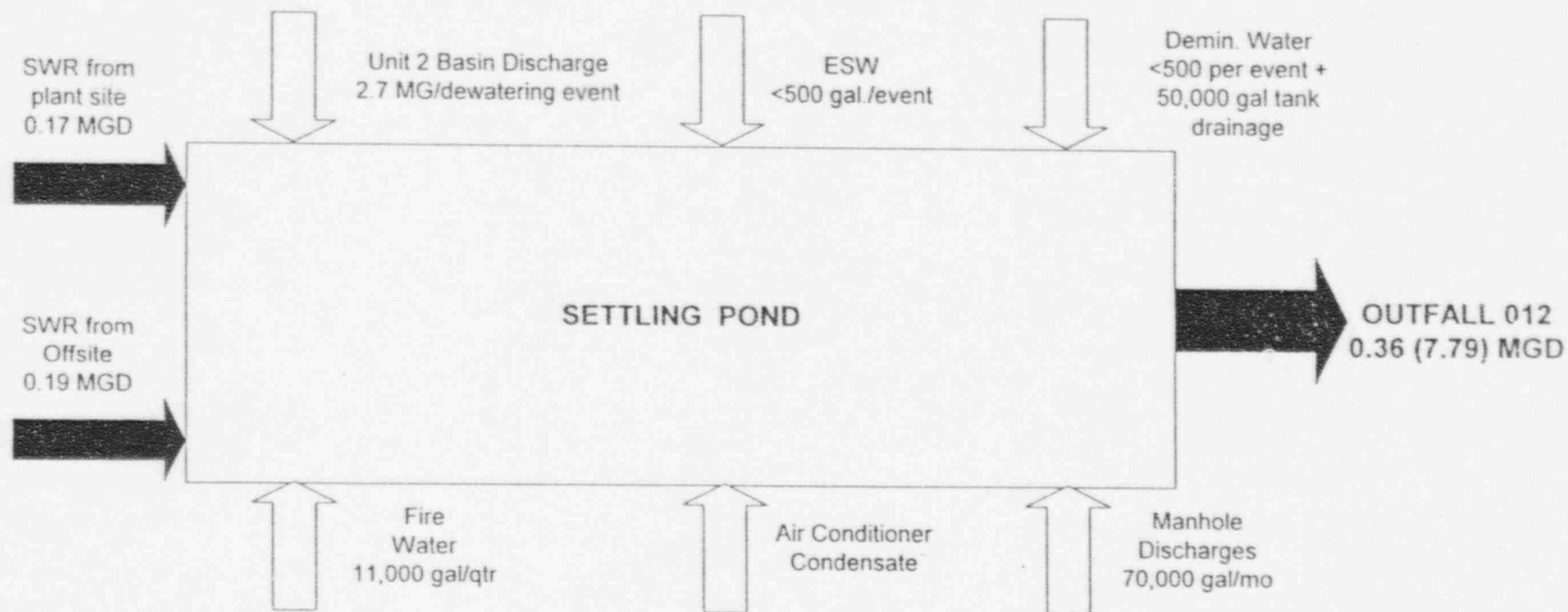
NOTE: Discharge flows are based on discharge monitoring report data.

# FLOW COMPONENTS FOR STORM WATER OUTFALL 011



NOTE: Discharge flows are based on discharge monitoring report data.

## FLOW COMPONENTS FOR STORM WATER OUTFALL 012



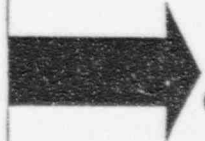
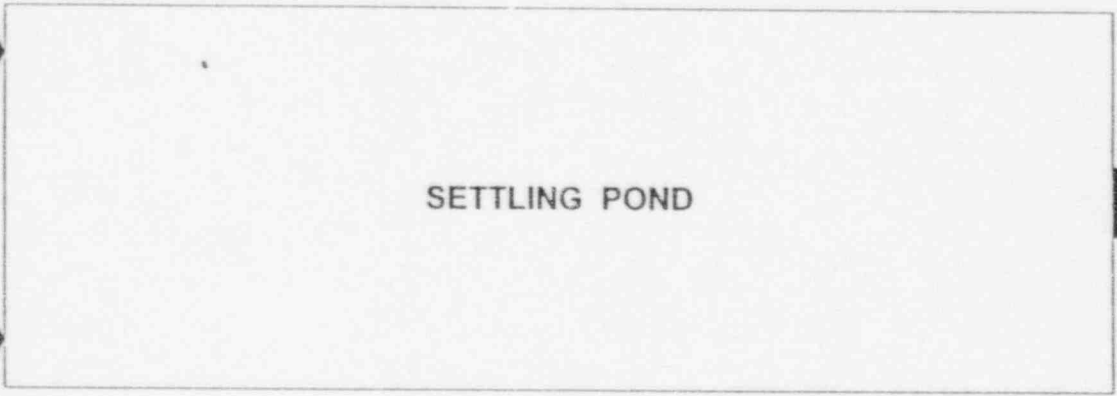
NOTE: Discharge flows are based on discharge monitoring report data.

# FLOW COMPONENTS FOR STORM WATER OUTFALL 013

SWR from  
plant site  
0.07 MGD



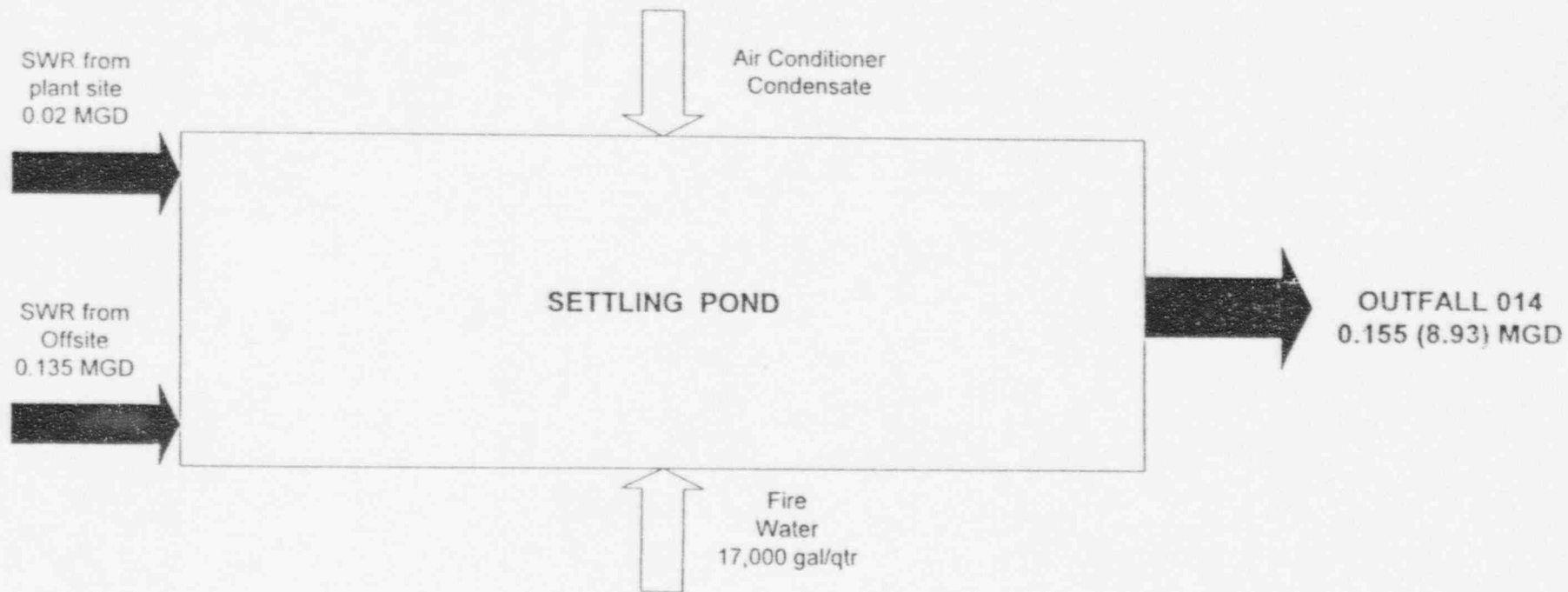
SWR from  
Offsite  
0.28 MGD



OUTFALL 013  
0.35 (1.25) MGD

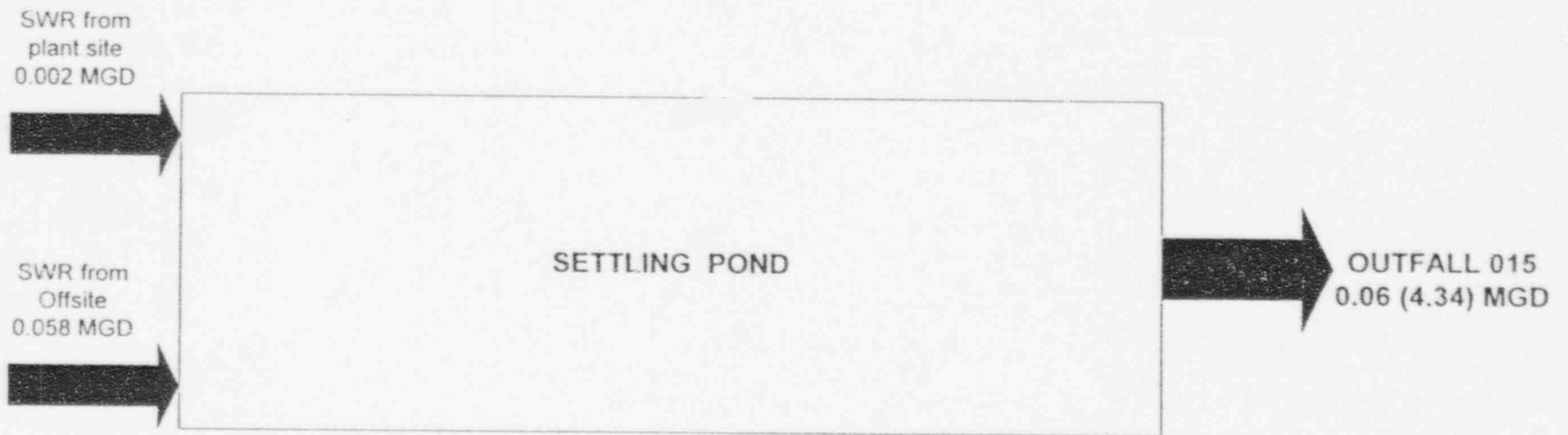
NOTE: Discharge flows are based on discharge monitoring report data.

# FLOW COMPONENTS FOR STORM WATER OUTFALL 014



NOTE: Discharge flows are based on discharge monitoring report data.

# FLOW COMPONENTS FOR STORM WATER OUTFALL 015



NOTE: Discharge flows are based on discharge monitoring report data.

# OVERSIZE DOCUMENT PAGE PULLED

---

## SEE APERTURE CARDS

---

NUMBER OF OVERSIZE PAGES FILMED ON APERTURE CARDS

3

9511080089

092

094

097

APERTURE CARD/HARD COPY AVAILABLE FROM

RECORDS AND REPORTS MANAGEMENT BRANCH

9511030072-01