

Appendix I
Leachate Collection and Removal System Operating Plan

11.0 Purpose

The purpose of this document is to provide information necessary for the proper operation and maintenance of the Leachate Collection and Removal System (LCRS). Specifically, the subsequent sections will provide the information relating to the management of leachate, maintenance and calibration of liquid level and gas monitoring instrumentation, general equipment maintenance, and reporting requirements.

12.0 Facility Description

The LCRS facility is located at the north end of the disposal cell and consists of an 11,500-gallon horizontal below-grade pipe storage sump, four pipes from the disposal cell (east and west primary and east and west secondary) to convey the leachate to the sump, liquid level and gas monitoring instruments, and other related equipment. An 8-foot chain link and barbed wire fence surrounds the sump area. An approximately 1,200-square-foot building houses supplies and instrumentation. This building is the LCRS Support Building and is located adjacent to the sump on the north side.

The sump has a secondary containment system that provides an additional barrier to the environment and a means to collect leakage and infiltration. The containment is known as the “burrito” and consists of a high density polyethylene (HDPE) liner system that totally encloses the primary and secondary leachate collection systems as well as the sump.

A 4-inch-diameter HPDE pipeline connects the LCRS Support Building to the Missouri River (NPDES outfall 007). This pipeline was extended to support the LCRS/Train 3 before approval was obtained to haul leachate to the Metropolitan Sewer District (MSD) and is available for use if the treatment system contingency plan is implemented.

A drawing of the LCRS system is presented in Appendix 1.

13.0 Leachate Management

13.1 Leachate Flow and Level Monitoring

The LCRS has been equipped to measure the volume of the primary and secondary leachate generated from the disposal cell. The east and west secondary leachate is monitored separately and the data are displayed (CTR [Counter] 401 and CTR 403) and recorded automatically at the instrumentation cabinet located in the LCRS Support Building. The data are periodically downloaded for trend analysis and other reporting needs.

A resistance-type probe (LS-1) installed in the sump monitors the total (east and west) primary leachate volume. This information is also digitally displayed and recorded at the instrumentation cabinet (LI-1) in the LCRS Support Building. The primary leachate volume is calculated by taking the measured volume in the sump minus the volume of secondary collection leachate that has accumulated. The primary leachate flow rate is calculated by taking the primary leachate volume (calculated above) divided by the number of days of accumulation. A dedicated

resistance-type probe (LSH-3) is installed to alarm when a high level is reached in the sump. The high-level alarm is a part of the call-out system that will notify off-site personnel of the condition. The leachate flow rate is approximately 275 gallons per day.

The sump has a secondary containment system capable of collecting any leachate or infiltration generated outside of the normal primary and secondary collection systems. The burrito water level is manually measured and pumped to the sump. The level probe that was previously installed has been removed to allow access to all the burrito water. An automated pumping and measuring system is being considered for the secondary containment (burrito) water. The burrito water is periodically pumped, and the volume is measured and composited with the leachate in the sump. The current flow rate is approximately 5 gallons per day. It is expected that infiltration into the burrito will decrease at the same rate as the leachate collected in the primary and secondary collections systems. Flow to the secondary containment system has remained consistent. Certain flow mechanisms are intentionally created inside the disposal cell to comply with regulatory requirements (overflow when leachate head exceeds one foot over the primary liner or long-term clogging of the transport pipes).

The procedure for transferring and measuring the burrito water volume is presented in Exhibit 1.

I3.2 Leachate Hauling

The Weldon Spring Site (WSS) was granted approval to haul the leachate to the MSD Bissell Point Plant (Appendix 2) and was later granted approval to haul monitor well purge water with the leachate (see Appendix 3). Purge water is water that is generated during the sampling of monitor wells.

WSS hauls leachate approximately once per month through a contract hauler. As the daily flow rate decreases in the LCRS, the hauling frequency will also decrease. The frequency of hauling must be such that leachate is not allowed to accumulate to a point that causes damage or inundates the LCRS instrumentation. The leachate flow rate is predictable and steady. The contract hauler is responsible for hookup and pumping, hauling, and manifesting the leachate. The hauler typically uses a 3,000-gallon tank truck with an integral vacuum pump to extract and haul the leachate. WSS personnel are responsible for scheduling the haul, providing access to the LCRS, sampling leachate during truck filling, recording the volume of leachate hauled, and general oversight of the activity.

The procedure for hauling leachate is presented in Exhibit 2.

I3.3 Metropolitan Sewer District Agreement and Requirements

WSS has monitoring and reporting obligations to the MSD that are conditions of the approval for hauling leachate. These obligations include sampling each load of leachate hauled and creating a composite sample for the entire hauling event. A hauling event usually consists of two to four truckloads. WSS has a 15,000 gallon per month maximum limit. The specific requirements are presented in Appendix 2. Monthly and quarterly reports that present volume and chemical data must be submitted to MSD for review. The current authorization to haul leachate is valid through December 21, 2006. To continue past that date, a new application must be submitted by DOE and approved by MSD.

I4.0 Leachate Characteristics and Trends

I4.1 Characteristics

The leachate meets all permitted discharge limits and goals with the exception of manganese concentration, which is approximately 2.5 mg/L. The NPDES permit effluent limit is 0.5 mg/L for discharge to the Missouri River. Uranium concentrations average approximately 40 pCi/L, which is below the goal of 100 pCi/L for discharge to the Missouri River. Concentrations of all other constituents, including radionuclides, are within permit limits. The leachate characterization data for 2002 are presented in Appendix 4.

I4.2 Trends

The leachate flow rate has been decreasing and is predicted to continue decreasing until the flow rate is essentially zero. This trend is consistent with the disposal cell design in that the cell cap/cover was designed to eliminate infiltration and subsequent leachate generation. Leachate will continue to be hauled and the flow monitored until leachate flow ceases.

Manganese concentration has continued to decrease during 2003. It is unlikely that the concentration will decrease enough in the near future to allow discharge without treatment. Uranium concentration has also been decreasing over that time period. The average uranium concentration in leachate hauled to MSD in 2003 was 25.7 pCi/L. The NPDES drinking water maximum contaminant level (MCL) is 30 µg/L (approximately 20 pCi/L), effective December 2003. The NPDES limit for discharge to the Missouri River established for WSS by the Missouri Department of Natural Resources has typically been at least two times the MCL.

I4.3 LCRS Sump Methane Monitoring System

The methane monitoring system has been removed. It was determined that the system no longer provided a useful function. Methane monitoring has indicated that the passive vent system for methane removal continues to function properly. Administrative procedures for confined space entry into the sump are in place to govern access and maintenance for the sump. The blower will remain in place to provide ventilation when confined space entry is required. Annual methane monitoring will be conducted.

I5.0 Discharge to the Missouri River

If the LCRS/Train 3 contingency plan is implemented, treated leachate will be discharged to the Missouri River via NPDES outfall 007. The procedure for discharging through the pipeline to outfall 007 is presented in Exhibit 3.

I6.0 Facility Maintenance

LCRS monitoring instrumentation shall be calibrated no less than twice per year. The methane monitoring system should be calibrated manually not less than quarterly.

I6.1 LS-1/LT-1/LI-1

I6.1.1 Calibration of LT-1

LT-1 is in the blue explosion-proof junction box located inside the LCRS cabinet (approximately 3 feet off the bottom of the cabinet, on the left side of the cabinet). LT-1 receives information from LS-1 (level sensor 1) via communication cable. LT-1 translates the LS-1 signal to a level indicator that can be read on LT-1.

LT-1 also communicates the sump water level to the digital display (LI-1) red LED indicator on the outside of the LCRS cabinet and to chart recorder CR1. LT-1 accomplishes this by driving a 4 to 20 milliamp loop, in series, through the LED indicator and through chart recorder CR1.

LS-1/LT-1/LI-1 is used to monitor and record the leachate level in the sump. This instrument shall be calibrated once a year. The procedure for calibrating LS-1/LT-1/LI-1 is presented in Exhibit 4.

I6.2 LS-2/LT-2/LI-2

The burrito water level probe has been removed. See discussion in Section I3.1.

I7.0 Methane System

The methane system has been removed. See discussion in Section I4.3.

I8.0 Routine Inspections and Rounds

I8.1 Rounds

Rounds should be conducted monthly. This inspection is intended to evaluate the general condition of the LCRS facility. The general round sheet is presented in Exhibit 7.

I8.2 LCRS

The LCRS rounds should be conducted every month. This inspection is intended to check the status of the equipment specifically related to the sump and level monitoring equipment and verify that all equipment associated with the LCRS is working properly. This includes noting level instrument display readouts and recovering stored data. The LCRS round sheet is presented in Exhibit 7.

18.3 Equipment Maintenance

Equipment corrective and preventive maintenance should be performed as needed in accordance with the manufacturers' recommendations. The equipment manuals are located in the LCRS Support Building.

19.0 Notifications and Reporting

19.1 Metropolitan Sewer District Reports

The reporting requirements for leachate hauled to MSD are described in Appendix 1. In general, WSS is required to present analytical data, volume hauled information, and radioactive content data for the leachate hauled during the reporting period. WSS is also required to track the sources (by individual monitor well) and the total volume of purge water sent with any shipment of leachate to MSD.

19.2 NPDES Reporting

A new UPDES permit was issued on March 5, 2004 (attached).

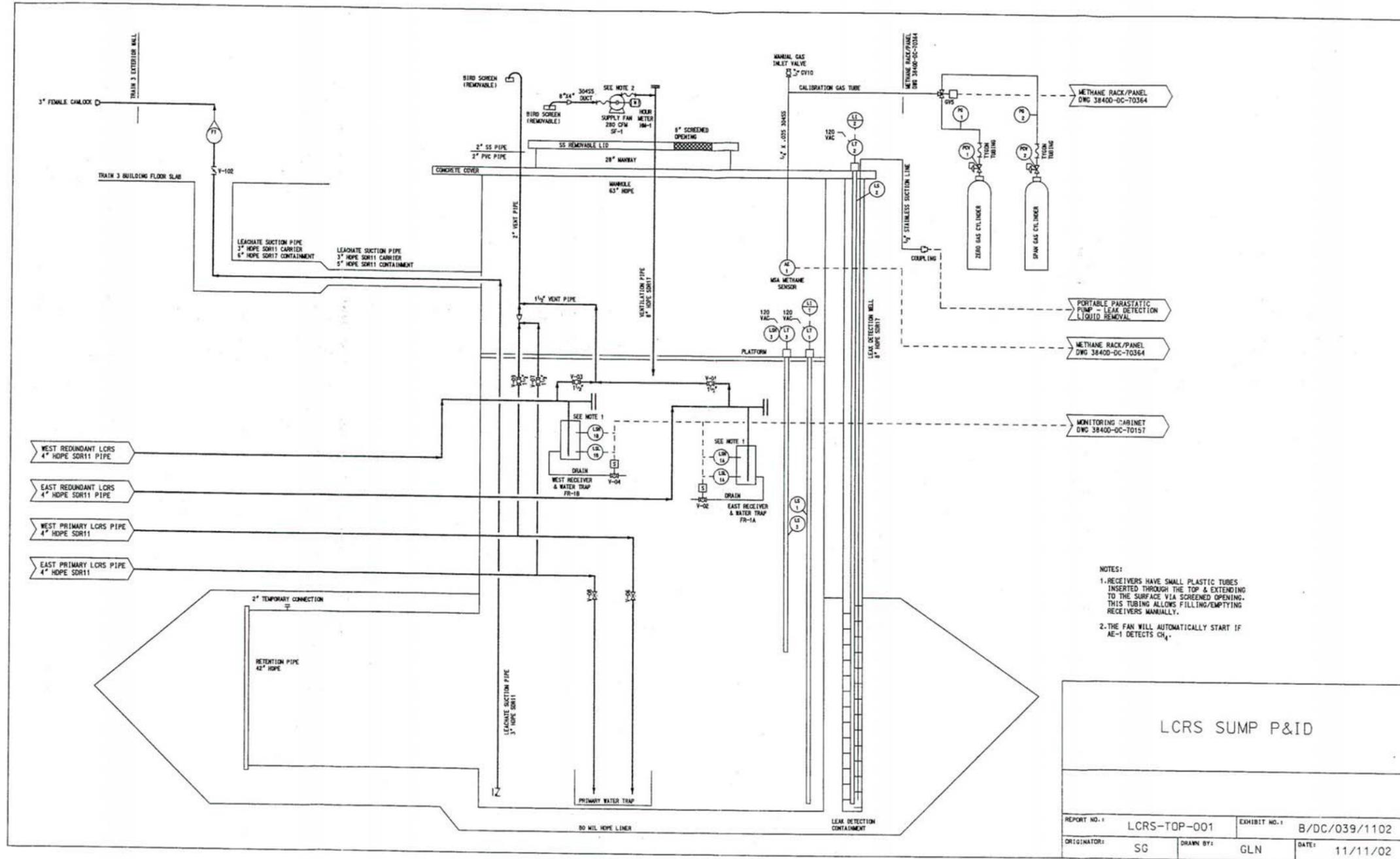
19.3 Emergency Points of Contact

The LCRS facility has a remote notification system that automatically notifies the responsible personnel in the event of a fire or a high level in the LCRS sump. The DOE/Grand Junction Office will be responsible for providing the local contact list to Central Station, the notification service. DOE local contractors will respond to LCRS high sump level and high methane concentration alarms. The local Fire Department will be the first responders to the fire alarms, followed by DOE local contractors.

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Appendix 1

Schematic of the Leachate Collection and Removal System (LCRS)



NOTES:
 1. RECEIVERS HAVE SMALL PLASTIC TUBES INSERTED THROUGH THE TOP & EXTENDING TO THE SURFACE VIA SCREENED OPENING. THIS TUBING ALLOWS FILLING/EMPTYING RECEIVERS MANUALLY.
 2. THE FAN WILL AUTOMATICALLY START IF AE-1 DETECTS CH₄.

LCRS SUMP P&ID			
REPORT NO.:	LCRS-TOP-001	EXHIBIT NO.:	B/DC/039/1102
ORIGINATOR:	SG	DRAWN BY:	GLN
		DATE:	11/11/02

Appendix 2

Initial MSD Approval Letter



Metropolitan
St. Louis Sewer
District

Office of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
(314) 436-8710
FAX (314) 436-8753

December 21, 2001

Thomas Pauling
U.S. Department of Energy
7295 Highway 94 South
St. Charles, MO 63304

Dear Mr. Pauling:

We have reviewed your application dated October 24, 2001 requesting approval to discharge up to 15,000 gallons of wastewater per month to the Metropolitan St. Louis Sewer District. This wastewater is leachate from the covered storage cell at the Weldon Spring Site Remedial Action Project (WSSRAP) located at 7295 Highway 94 South, St. Charles, Missouri. The storage cell contains waste associated with the remediation activities of former TNT production and uranium processing at the site.

Based on the analytical results, this material meets our criteria for acceptance as a hauled waste and is approved for discharge at the Bissell Point Hauled Waste Receiving Station. The material may be discharged only by a hauler having a valid MSD identification number and presenting an original, completed Hauled Waste Receipt (form HWR-S). The annual allocation for radioactivity from the WSSRAP storage cell discharging at the MSD Bissell Point Hauled Waste Receiving Station is 0.15 milliCuries (0.15 mCi/year). This approval is valid for 5 years from the date of this letter. As a condition of this approval, you must notify us of any changes which would affect the characteristics of this discharge.

You must submit monthly self-monitoring reports, analyzing for the following parameters:

Total Uranium	Total suspended solids
Thorium-228	Volatile organic priority pollutants
Thorium-230	Arsenic
Thorium-232	Barium
Radium-226	Copper
Radium-228	Iron
- Americium-241	Lead
- Neptunium-237	Chromium
- Plutonium-238	Mercury
- Plutonium-239/240	Nickel
- Technetium-99	Selenium
Gross alpha	Silver
Chemical oxygen demand	Zinc

We will require that each batch of wastewater be analyzed for all the radionuclides listed above plus gross alpha. We will only require one batch of wastewater be analyzed per month for the remaining parameters. Self-monitoring reports are due 28 days after the end of each month. The frequency of the self-monitoring may be reduced in the future if the analytical results warrant.

A monthly sum of the ratios must be calculated for all radionuclides listed above, and the result must be less than 1.0 according to the Nuclear Regulatory Commission regulations in 10 CFR 20. These calculations must be included with the self-monitoring reports.

To demonstrate the solubility of the radioactive materials, as required by 10 CFR 20, you will need to provide the results of one filtered versus unfiltered test for total uranium using a 0.45 micrometer (0.45 micron) filter. This information must be included with the self-monitoring reports.

In addition to the monthly self-monitoring reports, the MSD Radioactive Materials Discharge Report (attached) must also be completed and certified. This report lists the total radioactivity discharged during the current calendar quarter to ensure compliance with the 0.15 milliCurie per year limit. These reports are due 28 days after the end of the calendar quarter.

This discharge has been approved based upon the information and sample analysis you provided, and is subject to the conditions stated above. This approval may be revoked by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational or maintenance problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, MK-Ferguson Corporation and the property owner, U.S. Department of Energy, will be considered responsible for damages.

If you have any questions, please call me at (314)436-8742.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT



Roland A. Biehl
Environmental Associate Engineer

bv

pc Bernie Rains
 Doug Mendoza
 Fabian Grabski
 Ed Cope
 Darin Lewis
 Paul Taylor
 Thomas M. Siegel, P.E. Chief, Permits and Engineering – MO DNR

File: SD, Weldon Springs Site Remedial Action Plan

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Appendix 3

Purge Water Approval Letter from MSD



**Metropolitan
St. Louis Sewer
District**

Office of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
(314) 436-8710
FAX (314) 436-8753

May 17, 2002

Steven D. Warren
MK-FERGUSON CORPORATION
7295 Highway 94 South
St. Charles, MO 63304

Dear Mr. Warren:

We have reviewed your application dated April 23, 2002 requesting approval to discharge up to 200 gallons of wastewater per month to the Metropolitan St. Louis Sewer District. This wastewater is monitoring well purge water at the Weldon Spring Site Remedial Action Project (WSSRAP) located at 7295 Highway 94 South, St. Charles, Missouri. We understand that the purge water is generated from the following monitoring wells related to the former TNT production and uranium processing at the site.

Monitoring well identification numbers:

1002	1015	OW05	2049	3028	4028
1004	1016	OW06	2050	3029	4029
1005	1027	2003	2051	3030	4030
1006	1032	2006	2052	3034	4039
1007	1048	2012	2053	3037	S004
1008	OW01	2013	2054	3038	
1009	OW02	2033	2055	3039	
1013	OW03	2045	3023	4001	
1014	OW04	2046	3024	4015	

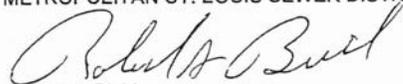
Based on the historical analytical results of samples collected from the above referenced monitoring wells, this material meets our criteria for acceptance as a hauled waste and is approved for discharge at the Bissell Point Hauled Waste Receiving Station. The material may be discharged only by a hauler having a valid MSD identification number and presenting an original, completed Hauled Waste Receipt (form HWR-S). We understand that the purge water will be included with the leachate which is currently approved for discharge at the Bissell Point Hauled Waste Receiving Station. The annual allocation for radioactivity from the WSSRAP leachate and monitoring well purge water discharging at the MSD Bissell Point Hauled Waste Receiving Station is 0.15 milliCuries (0.15 mCi/year). This approval will expire on December 21, 2006. As a condition of this approval, you must notify us of any changes which would affect the characteristics of this discharge.

Since the monitoring well purge water will be included with the leachate, we understand that future WSSRAP self-monitoring reports will include composite sample data representing both waste streams and will identify the volumes attributable to purge water and leachate. Based on this information, all self-monitoring conditions of the December 21, 2001 leachate special discharge will remain in effect and apply to the monitoring well purge water.

This discharge has been approved based upon the information and sample analysis you provided, and is subject to the conditions stated above. This approval may be revoked by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational, maintenance or other problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, MK-Ferguson Corporation and the property owner, U.S. Department of Energy, will be considered responsible for damages or mitigative actions.

If you have any questions, please call me at (314)436-8742.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT



Roland A. Biehl
Environmental Associate Engineer

bv

pc Bernie Rains
Darin Lewis
Paul Taylor

File: SD, Weldon Springs Site Remedial Action Plan



Metropolitan
St. Louis Sewer
District

Office of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
(314) 436-8710
FAX (314) 436-8753

June 28, 2002

Pamela Thompson
U.S. DEPARTMENT OF ENERGY
WELDON SPRING SITE REMEDIAL ACTION PROJECT OFFICE
7295 Highway 94 South
St. Charles, MO 63304

Dear Ms. Thompson:

We have reviewed your letter dated June 17, 2002 requesting approval to add seven monitoring wells (2014, 5303, 4006, 5304, 4031, 6301, and 4036) to the special discharge permit originally approved on May 17, 2002. The original approval was for monitoring well purge water at the Weldon Spring Site Remedial Action Project (WSSRAP) located at 7295 Highway 94 South, St. Charles, Missouri.

Based on the historical analytical results of samples collected from the above referenced monitoring wells, your request is granted. All other conditions of the original approval remain in effect.

If you have any questions, please call me at (314)436-8742.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT


Roland A. Biehl
Environmental Associate Engineer

FILE: SD, Weldon Spring Site Remedial Action Project (WSSRAP), 7295 Highway 94 South, St. Charles, Missouri

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Appendix 4

Leachate Characterization Data for 2002

Leachate Sump Data (DC10) from January 2002 to January 2003

PARAMETER	Units	MINIMUM	MAXIMUM	AVERAGE	NUMBER OF SAMPLES
ANIONS					
CHLORIDE	mg/L	31.10	38.80	33.80	6
FLUORIDE	mg/L	0.24	0.28	0.27	6
NITRATE-N	mg/L	ND (0.05)	3.80	0.68	6
SULFATE	mg/L	49.70	80.10	67.93	6
METALS					
ALUMINUM	µg/L	ND (16.5)	65.40	31.28	14
ANTIMONY	µg/L	ND (1.6)	ND (16.0)	NC	14
ARSENIC	µg/L	ND (1.2)	9.90	4.66	14
BARIUM	µg/L	509.00	1090.00	806.50	14
BERYLLIUM	µg/L	ND (0.19)	1.40	0.58	14
CADMIUM	µg/L	ND (0.31)	ND (2.0)	NC	14
CALCIUM	µg/L	144000.00	188000.00	165142.86	14
CHROMIUM	µg/L	ND (0.73)	ND (3.8)	NC	14
COBALT	µg/L	8.10	23.50	14.19	14
COPPER	µg/L	ND (1.4)	7.70	5.96	14
IRON	µg/L	4540.00	27900.00	15160.00	14
LEAD	µg/L	ND (0.93)	ND (2.1)	NC	14
LITHIUM	µg/L	ND (6.4)	23.90	10.87	14
MAGNESIUM	µg/L	51000.00	57800.00	55185.71	14
MANGANESE	µg/L	2360.00	6290.00	3904.29	14
MERCURY	µg/L	ND (0.01)	0.46	0.12	14
MOLYBDENUM	µg/L	ND (4.9)	7.40	6.55	14
NICKEL	µg/L	ND (6.9)	12.00	10.81	14
POTASSIUM	µg/L	3230.00	6960.00	5405.71	14
SELENIUM	µg/L	ND (1.2)	ND (2.4)	NC	14
SILVER	µg/L	ND (0.8)	ND (7.0)	NC	14
SODIUM	µg/L	62200.00	77100.00	70092.86	14
STRONTIUM	µg/L	599.00	719.00	653.79	14
THALLIUM	µg/L	ND (2.2)	4.90	3.03	14
VANADIUM	µg/L	ND (0.88)	2.30	1.96	14
ZINC	µg/L	3.50	27.70	13.96	14
MISCELLANEOUS					
ALKALINITY	mg/L	604.00	682.00	640.80	5
BIOCHEMICAL OXYGEN DEMAND	mg/L	ND (5.0)	10.00	6.00	5
CHEMICAL OXYGEN DEMAND	mg/L	15.00	36.00	27.43	14
CYANIDE, AMENABLE	mg/L	ND (5.0)	ND (5.0)	NC	5
CYANIDE, TOTAL	mg/L	ND (5.0)	6.10	5.22	5
PHOSPHORUS, TOTAL	mg/L	ND (0.03)	0.17	0.07	5
TOTAL DISSOLVED SOLIDS	mg/L	784.00	883.00	820.17	6
TOTAL ORGANIC CARBON	mg/L	8.40	11.20	9.60	6
TOTAL SUSPENDED SOLIDS	mg/L	12.00	68.00	37.64	14
NITROAROMATICS					
1,3,5-TRINITROBENZENE	µg/L	ND (0.03)	ND (0.06)	NC	6
1,3-DINITROBENZENE	µg/L	ND (0.05)	ND (0.18)	NC	6
2,4,6-TRINITROTOLUENE	µg/L	ND (0.03)	ND (0.08)	NC	6

Leachate Sump Data (DC10) from January 2002 to January 2003

PARAMETER	Units	MINIMUM	MAXIMUM	AVERAGE	NUMBER OF SAMPLES
2,4-DINITROTOLUENE	µg/L	ND (0.04)	ND (0.08)	NC	6
2,6-DINITROTOLUENE	µg/L	ND (0.06)	ND (0.12)	NC	6
NITROBENZENE	µg/L	ND (0.03)	ND (0.08)	NC	6
RADIOCHEMICAL					
GROSS ALPHA	pCi/L	16.80	66.70	43.98	14
GROSS BETA	pCi/L	13.20	30.80	19.80	6
RADIUM-226	pCi/L	ND (0.07)	0.51	0.32	14
RADIUM-228	pCi/L	ND (0.01)	1.81	0.65	14
THORIUM-228	pCi/L	ND (0.01)	0.43	0.15	14
THORIUM-230	pCi/L	ND (0.07)	0.78	0.32	14
THORIUM-232	pCi/L	ND (0.01)	0.38	0.14	14
URANIUM, TOTAL	pCi/L	16.00	57.30	37.88	14
AMERICIUM-241	pCi/L	ND (0.015)	0.749	0.28	13
NEPTUNIUM-237	pCi/L	ND (0.035)	1.010	0.34	13
PLUTONIUM-238	pCi/L	ND (0.007)	0.445	0.15	13
PLUTONIUM-239-240	pCi/L	ND (0.024)	0.975	0.18	13
TECHNETIUM-99	pCi/L	ND (0.122)	2.230	0.98	13
SEMI-VOLATILES					
1,2,4-TRICHLOROBENZENE	µg/L	ND (10.0)	ND (20.0)	NC	6
1,2-DICHLOROBENZENE	µg/L	ND (5.0)	ND (20.0)	NC	5
1,2-DIPHENYLHYDRAZINE	µg/L	ND (10.0)	ND (10.0)	NC	5
1,3-DICHLOROBENZENE	µg/L	ND (5.0)	ND (20.0)	NC	5
1,4-DICHLOROBENZENE	µg/L	ND (5.0)	ND (20.0)	NC	5
2,4,6-TRICHLOROPHENOL	µg/L	ND (10.0)	ND (20.0)	NC	6
2,4-DICHLOROPHENOL	µg/L	ND (10.0)	ND (20.0)	NC	6
2,4-DIMETHYLPHENOL	µg/L	ND (10.0)	ND (20.0)	NC	6
2,4-DINITROPHENOL	µg/L	ND (50.0)	ND (100)	NC	6
2,4-DINITROTOLUENE	µg/L	ND (10.0)	ND (20.0)	NC	6
2,6-DINITROTOLUENE	µg/L	ND (10.0)	ND (20.0)	NC	6
2-CHLORONAPHTHALENE	µg/L	ND (10.0)	ND (20.0)	NC	5
2-CHLOROPHENOL	µg/L	ND (10.0)	ND (20.0)	NC	6
2-NITROPHENOL	µg/L	ND (10.0)	ND (20.0)	NC	6
3,3'-DICHLORO BENZIDINE	µg/L	ND (50.0)	ND (100)	NC	6
4,6-DINITRO-2-METHYLPHENOL	µg/L	ND (50.0)	ND (100)	NC	6
4-BROMOPHENYL PHENYL ETHER	µg/L	ND (10.0)	ND (20.0)	NC	6
4-CHLORO-3-METHYL PHENOL	µg/L	ND (10.0)	ND (20.0)	NC	6
4-CHLOROPHENYL PHENYL ETHER	µg/L	ND (10.0)	ND (20.0)	NC	6
4-NITROPHENOL	µg/L	ND (50.0)	ND (100)	NC	6
ACENAPHTHENE	µg/L	ND (5.0)	ND (20.0)	NC	6
ACENAPHTHYLENE	µg/L	ND (5.0)	ND (20.0)	NC	6
ANTHRACENE	µg/L	ND (5.0)	ND (20.0)	NC	6
BENZIDINE	µg/L	ND (100)	ND (200)	NC	5
BENZO(A)ANTHRACENE	µg/L	ND (5.0)	ND (20.0)	NC	6
BENZO(A)PYRENE	µg/L	ND (5.0)	ND (20.0)	NC	6
BENZO(B)FLUORANTHENE	µg/L	ND (5.0)	ND (20.0)	NC	6
BENZO(G,H,I)PERYLENE	µg/L	ND (5.0)	ND (20.0)	NC	6
BENZO(K)FLUORANTHENE	µg/L	ND (5.0)	ND (20.0)	NC	6
BIS(2-CHLOROETHOXY)METHANE	µg/L	ND (10.0)	ND (20.0)	NC	6
BIS(2-CHLOROETHYL)ETHER	µg/L	ND (10.0)	ND (20.0)	NC	6
BIS(2-CHLOROISOPROPYL)ETHER	µg/L	ND (10.0)	ND (20.0)	NC	5

Leachate Sump Data (DC10) from January 2002 to January 2003

PARAMETER	Units	MINIMUM	MAXIMUM	AVERAGE	NUMBER OF SAMPLES
BIS(2-ETHYLHEXYL)PHTHALATE	µg/L	ND (10.0)	ND (20.0)	NC	6
BUTYLBENZYLPHthalATE	µg/L	ND (10.0)	ND (20.0)	NC	6
CHRYSENE	µg/L	ND (5.0)	ND (20.0)	NC	6
DIBENZO(A,H)ANTHRACENE	µg/L	ND (5.0)	ND (20.0)	NC	6
DIETHYLPHthalATE	µg/L	ND (10.0)	ND (20.0)	NC	6
DIMETHYLPHthalATE	µg/L	ND (10.0)	ND (20.0)	NC	6
DI-N-BUTYL PHTHALATE	µg/L	ND (10.0)	ND (20.0)	NC	6
DI-N-OCTYL PHTHALATE	µg/L	ND (10.0)	ND (20.0)	NC	6
FLUORANTHENE	µg/L	ND (5.0)	ND (20.0)	NC	6
FLUORENE	µg/L	ND (5.0)	ND (20.0)	NC	6
HEXACHLOROBENZENE	µg/L	ND (10.0)	ND (20.0)	NC	6
HEXACHLOROBUTADIENE	µg/L	ND (10.0)	ND (20.0)	NC	6
HEXACHLOROCYCLOPENTADIENE	µg/L	ND (50.0)	ND (100)	NC	6
HEXACHLOROETHANE	µg/L	ND (10.0)	ND (20.0)	NC	6
INDENO(1,2,3-CD)PYRENE	µg/L	ND (5.0)	ND (20.0)	NC	6
ISOPHORONE	µg/L	ND (10.0)	ND (20.0)	NC	6
NAPHTHALENE	µg/L	ND (5.0)	ND (20.0)	NC	6
NITROBENZENE	µg/L	ND (10.0)	ND (20.0)	NC	6
N-NITROSODIMETHYLAMINE	µg/L	ND (10.0)	ND (20.0)	NC	5
N-NITROSO-DI-N-PROPYLAMINE	µg/L	ND (10.0)	ND (20.0)	NC	6
N-NITROSODIPHENYLAMINE	µg/L	ND (10.0)	ND (20.0)	NC	6
PENTACHLOROPHENOL	µg/L	ND (50.0)	ND (100)	NC	6
PHENANTHRENE	µg/L	ND (5.0)	ND (20.0)	NC	6
PHENOL	µg/L	ND (10.0)	ND (20.0)	NC	6
PYRENE	µg/L	ND (5.0)	ND (20.0)	NC	6
VOLATILES					
1,1,1-TRICHLOROETHANE	µg/L	ND (5.0)	ND (5.0)	NC	14
1,1,2,2-TETRACHLOROETHANE	µg/L	ND (5.0)	ND (5.0)	NC	14
1,1,2-TRICHLOROETHANE	µg/L	ND (5.0)	ND (5.0)	NC	14
1,1-DICHLOROETHANE	µg/L	ND (5.0)	ND (5.0)	NC	14
1,1-DICHLOROETHENE	µg/L	ND (5.0)	ND (5.0)	NC	14
1,2-DICHLOROETHENE	µg/L	ND (5.0)	ND (5.0)	NC	5
1,2-DICHLOROETHANE	µg/L	ND (5.0)	ND (5.0)	NC	14
1,2-DICHLOROETHENE (TOTAL)	µg/L	ND (5.0)	ND (5.0)	NC	14
1,2-DICHLOROPROPANE	µg/L	ND (5.0)	ND (5.0)	NC	14
1,3-DICHLOROETHENE	µg/L	ND (5.0)	ND (5.0)	NC	5
1,4-DICHLOROETHENE	µg/L	ND (5.0)	ND (5.0)	NC	5
2-CHLOROETHYL VINYL ETHER	µg/L	ND (50.0)	ND (50.0)	NC	14
ACROLEIN	µg/L	ND (100)	ND (100)	NC	14
ACRYLONITRILE	µg/L	ND (5.0)	ND (5.0)	NC	14
BENZENE	µg/L	ND (5.0)	ND (5.0)	NC	14
BROMODICHLOROMETHANE	µg/L	ND (5.0)	ND (5.0)	NC	14
BROMOFORM	µg/L	ND (5.0)	ND (5.0)	NC	14
BROMOMETHANE	µg/L	ND (10.0)	ND (10.0)	NC	14
CARBON TETRACHLORIDE	µg/L	ND (5.0)	ND (5.0)	NC	14
CHLOROBENZENE	µg/L	ND (5.0)	ND (5.0)	NC	14
CHLOROETHANE	µg/L	ND (10.0)	ND (10.0)	NC	14
CHLOROFORM	µg/L	ND (5.0)	ND (5.0)	NC	14
CHLOROMETHANE	µg/L	0.67	ND (10.0)	NC	14
CIS-1,3-DICHLOROPROPENE	µg/L	ND (5.0)	ND (5.0)	NC	14

Leachate Sump Data (DC10) from January 2002 to January 2003

PARAMETER	Units	MINIMUM	MAXIMUM	AVERAGE	NUMBER OF SAMPLES
DIBROMOCHLOROMETHANE	µg/L	ND (5.0)	ND (5.0)	NC	14
ETHYL BENZENE	µg/L	ND (5.0)	ND (5.0)	NC	14
METHYLENE CHLORIDE	µg/L	1.30	6.90	3.76	14
TETRACHLOROETHENE	µg/L	ND (5.0)	ND (5.0)	NC	14
TOLUENE	µg/L	0.66	ND (5.0)	NC	14
TRANS-1,2-DICHLOROETHENE	µg/L	ND (5.0)	ND (5.0)	NC	6
TRANS-1,3-DICHLOROPROPENE	µg/L	ND (5.0)	ND (5.0)	NC	14
TRICHLOROETHENE	µg/L	ND (5.0)	ND (5.0)	NC	14
TRICHLOROFLUOROMETHANE	µg/L	ND (10.0)	ND (10.0)	NC	14
VINYL CHLORIDE	µg/L	ND (10.0)	ND (10.0)	NC	14
XYLENES, TOTAL	µg/L	ND (5.0)	ND (5.0)	NC	14
PESTICIDE/PCBS					
4,4'-DDD	µg/L	ND (0.05)	0.210	0.08	5
4,4'-DDE	µg/L	ND (0.05)	0.068	0.05	5
4,4'-DDT	µg/L	ND (0.025)	ND (0.05)	NC	5
ALDRIN	µg/L	ND (0.025)	ND (0.05)	NC	5
ALPHA-BHC	µg/L	ND (0.025)	ND (0.05)	NC	5
ALPHA-CHLORDANE	µg/L	ND (0.025)	ND (0.05)	NC	5
AROCLOR-1016	µg/L	ND (0.5)	ND (1.0)	NC	6
AROCLOR-1221	µg/L	ND (0.5)	ND (1.0)	NC	6
AROCLOR-1232	µg/L	ND (0.5)	ND (1.0)	NC	6
AROCLOR-1242	µg/L	ND (0.5)	ND (1.0)	NC	6
AROCLOR-1248	µg/L	ND (0.5)	ND (1.0)	NC	6
AROCLOR-1254	µg/L	ND (0.5)	ND (1.0)	NC	6
AROCLOR-1260	µg/L	ND (0.5)	ND (1.0)	NC	6
BETA-BHC	µg/L	0.10	0.150	0.08	5
DELTA-BHC	µg/L	0.035	0.061	0.05	5
DIELDRIN	µg/L	ND (0.025)	ND (0.05)	NC	5
ENDOSULFAN I	µg/L	ND (0.025)	ND (0.05)	NC	5
ENDOSULFAN II	µg/L	ND (0.025)	ND (0.05)	NC	5
ENDOSULFAN SULFATE	µg/L	ND (0.025)	ND (0.05)	NC	5
ENDRIN	µg/L	0.15	0.210	0.10	5
ENDRIN ALDEHYDE	µg/L	ND (0.025)	ND (0.05)	NC	5
GAMMA-BHC (LINDANE)	µg/L	ND (0.025)	0.062	0.05	5
GAMMA-CHLORDANE	µg/L	ND (0.025)	ND (0.05)	NC	5
HEPTACHLOR	µg/L	0.10	0.310	0.19	5
HEPTACHLOR EPOXIDE	µg/L	ND (0.05)	0.110	0.06	5
TOXAPHENE	µg/L	ND (0.5)	ND (2.0)	NC	5

NOTES:

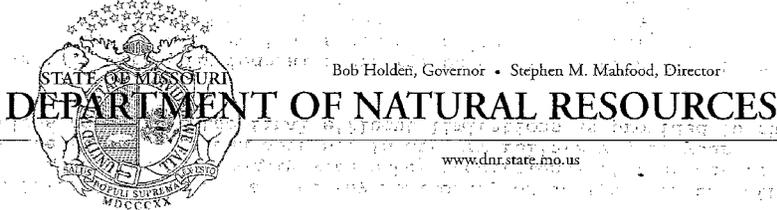
ND (Value) = Not Detected, Detection Limit given in parentheses

NC = Not Calculated. The average is calculated using all values. Where a ND value exists for both the minimum and maximum, an average could not be calculated

Appendix 5

NPDES Permit No. MO-0107701
Weldon Spring Site Chemical Plant Area

JSDCE, Weldon Spring Chemical Plant
MO-01107701, St. Charles County



March 5, 2004

US Department of Energy (USDOE)
7295 Highway 94 South
Weldon Spring, MO 63304

Dear Permittee:

State Operating Permit No. MO-0107701 originally issued on July 14, 2000 is hereby modified as per the enclosed. This modification is to remove Outfall #006, which is now permitted by Lindenwood University under State Operating Permit No. MO-0129917.

Please read your permit and attached Standard Conditions. They contain important information on monitoring requirements, effluent limitations, sampling frequencies and reporting requirements.

This modification does not affect any monitoring or analysis of the effluent that may be necessary to comply with other requirements of your permit or other state regulations and does not in any way relieve you of your obligations to achieve the final effluent limitations as provided in the permit.

This permit is both your federal discharge permit and your new state operating permit and replaces all previous state operating permits for this facility. In all future correspondence regarding this facility, please refer to your state operating permit number and facility name as shown on page one of the permit.

If you have any questions concerning this permit, please do not hesitate to contact our St. Louis Regional Office, 7545 South Lindbergh, Suite 210, St. Louis, MO 63125. (314) 416-2960.

Sincerely,

ST. LOUIS REGIONAL OFFICE

Mohamad Alhalabi, P.E.
Regional Director

MA:TAH
Enclosure

c: WPCP
Lindenwood University



Integrity and excellence in everything we do

Recycled Paper 026298

MAR - 8 2004

End of current text

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No.: MO-0107701
Owner: U.S. Department of Energy (USDOE)
Owner's Address: 7295 Highway 94 South, Weldon Spring, MO 63304
Continuing Authority: Same as above
Continuing Authority's Address: Same as above
Facility Name: USDOE, Weldon Spring Chemical Plant
Facility Address: 7295 Highway 94 South, Weldon Spring, MO 63304
Legal Description: All or parts of Sec. 31 projected, T46N, R3E, St. Charles County & SW $\frac{1}{4}$, NW $\frac{1}{4}$, Sec. 8, T45N, R3E, St. Charles County
Receiving Stream & Basin: See Page 2

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

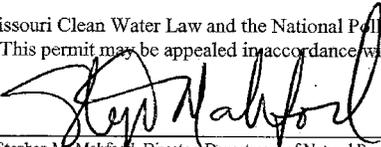
FACILITY DESCRIPTION

See Page 2

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

July 14, 2000 March 5, 2004
Effective Date Revised

July 13, 2005
Expiration Date
MO 780-0041 (10-93)


Stephen M. Mahford, Director, Department of Natural Resources
Executive Secretary, Clean Water Commission


Mohamad Alhalabi, P. E., Regional Director

FACILITY DESCRIPTION(continued)

Outfalls #001, #002 #003, #004, and #005 - These outfalls have been eliminated. Tributary areas have been stabilized.

Outfall #006 - this outfall is now permitted by State Operating Permit No. MO-0129917. (Lindenwood University)

Outfall #007 - Discharge of treated wastewater from personnel and equipment decontamination wastewaters, leachate from the disposal cell and contaminated storm water runoff from the disposal cell and other miscellaneous waters generated during remediation. One physical/chemical treatment system is provided. Design average flow is 0.432 million gallons per day.

Outfall #008 - Outfall has been eliminated. Area is stabilized.

Outfall #009 - Outfall has been eliminated. Area is stabilized.

RECEIVING STREAMS & BASINS

Outfall #007 - Missouri River via pipeline (Missouri River and Eastern Tributaries Basin) (10300200-10-00) (P)

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfall #007 (Note 1)						
Flow	MGD	*		*	once/week****	24 hr. total
Chemical Oxygen Demand	mg/L	90		60	once/week****	grab
Total Suspended Solids	mg/L	50		30	once/week****	grab
pH - Units	SU	***		***	once/week****	grab
Arsenic, Total Recoverable	mg/L	0.20		*	once/week****	grab
Aluminum, Total Recoverable	mg/L	7.5		*	once/week****	grab
Chromium, Total Recoverable	mg/L	0.40		*	once/week****	grab
Lead, Total Recoverable	mg/L	0.20		*	once/week****	grab
Manganese, Total Recoverable	mg/L	0.50		*	once/week****	grab
Mercury, Total Recoverable	mg/L	0.005		*	once/week****	grab
Selenium, Total Recoverable	mg/L	0.05		*	once/week****	grab
Cyanide (Amenable to chlorination)	µg/L	0.05		*	once/week****	grab
2-4 Dinitrotoluene	µg/L	1.1		*	once/week****	grab
Fluoride, Total	mg/L	12		*	once/week****	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE July 28, 2004. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Parts I & III STANDARD CONDITIONS DATED October 1, 1980 & August 15, 1994, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

MO 780-0010 (8/91)

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS				PAGE NUMBER 4 of 9		
				PERMIT NUMBER MO-0107701		
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfall #007 (Note 1) (continued)						
Nitrate and Nitrite as N	mg/L	100		*	once/week****	grab
Sulfate as SO ₄	mg/L	1000		*	once/week****	grab
Chloride	mg/L	*		*	once/week****	grab
Gross Alpha Activity	pCi/L	*		*	once/week****	grab
Gross Beta Activity	pCi/L	*		*	once/week****	grab
Uranium, Total Recoverable (Note 2)	mg/L	*		*	once/week****	grab
Radium-226	pCi/L	*		*	once/month	grab
Radium-228	pCi/L	*		*	once/month	grab
Thorium-230	pCi/L	*		*	once/month	grab
Thorium-232	pCi/L	*		*	once/month	grab
Whole Effluent Toxicity (WET) Test	% Survival	See Special Conditions			once/quarter**	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY, THE FIRST REPORT IS DUE July 28, 2004.						
Priority Pollutants (Note 3)	mg/L	*		*	once/year	grab
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE October 28, 2004. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
B. STANDARD CONDITIONS						
IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Parts I & III STANDARD CONDITIONS DATED October 1, 1980 & August 15, 1994, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.						

MO 780-0010 (8/91)

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

- * Monitoring requirement only.
- ** Once per quarter in the months of January, April, July and October.
- *** pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.0-9.0 pH units.
- **** Not to exceed once/batch.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

- Note 1 - The first quarterly report due date for this reissued permit is based on a complete calendar quarter monitoring period. Monitoring shall be reported once per quarter for the entire life of the permit. The permittee is still responsible for reporting for the preceding calendar quarter under the previous permit.
- Note 2 - The design of the treatment plant is based on achieving an average discharge of 30 pCi/L Uranium with the maximum never to exceed 100 pCi/L.
- Note 3 - Monitoring shall be conducted for the priority pollutants listed under 40 CFR 122.21, Appendix D, Tables II and III.

C. SPECIAL CONDITIONS

1. This permit may be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C), and (D), 304(b)(2) and 307(a)(2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
 - (a) Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
 - (b) Controls any pollutant not limited in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Act then applicable.

2. Changes in Discharges of Toxic Substances

The permittee shall notify the Director as soon as it knows or has reason to believe:

- a. That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
 - (1) One hundred micrograms per liter (100 ug/L);
 - (2) Two hundred micrograms per liter (200 ug/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
 - (3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;
 - (4) The level established in Part A of the permit by the Director.
 - b. That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.
3. Samples shall be representative of monitoring period discharges and if any discharge occurs during the monitoring period at least one sample per outfall must be collected and analyzed. (No Discharges shall be used only to indicate no releases during the entire reporting period).
 4. This permit may be reopened and modified or alternatively revoked and reissued, to incorporate new or modified effluent limitations or other conditions, if the result of a wasteload allocation study, toxicity test, or other information indicates changes are necessary to ensure compliance with Missouri's Water Quality Standards.
 5. Permittee shall comply with the requirements of 10 CSR 20-6.010(4)(D) regarding construction permits. A construction permit will be issued after approval of the engineering submittals. As-built plans and specifications will be provided to the Department upon completion of construction.

C. SPECIAL CONDITIONS (continued)

6. Sludge and Biosolids Use For Domestic Wastewater Treatment Facilities
 - (a) Permittee shall comply with the pollutant limitations, monitoring, reporting, and other requirements in accordance with the attached permit Standard Conditions.
7. Permittee will cease discharge by connection to areawide wastewater treatment system within 90 days of notice of its availability.
8. Report as no-discharge when a discharge does not occur during the report period.
9. There shall be no release of polychlorinated biphenyl compounds (PCBs) to waters of the state at or above the level of quantification currently defined as 0.5 ug/L or 0.5 ppb.
10. Discharge of wastewater from this facility must not alone or in combination with other sources cause the receiving stream to violate the following:
 - (a) Water temperatures and temperature differentials specified in Missouri Water Quality Standards shall be met.
11. Any pesticide discharge from any point source shall comply with the requirements of Federal Insecticide, Fungicide and Rodenticide Act, as amended (7 U.S.C. 136 et. seq.) and the use of such pesticides shall be in a manner consistent with its label.
12. Except for any untreated overflow from facilities designed, constructed and operated to treat the volume of material storage runoff and construction runoff which is associated with a 10-year, 24-hour rainfall event; discharges resulting from material storage runoff and construction runoff shall comply with the following limitations:
 - (a) Total suspended solids shall not exceed 50 mg/l at any time.
 - (b) The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units at any time.
13. Copies of the quarterly monitoring reports will be available for public review at the Weldon Spring site and sent to the St. Louis Regional Office where they will also be available for public review.
14. All outfalls must be clearly marked in the field.
15. Whole Effluent Toxicity (WET) tests will be conducted as follows:

SUMMARY OF WET TESTING FOR THIS PERMIT				
OUTFALL	A.E.C. %	FREQUENCY	SAMPLE TYPE	MONTH
#007	10%	QUARTERLY	Grab	January, April, July, & October

- a. Test Schedule and Follow-Up Requirements
 - (1) Perform a single-dilution test in the months and at the frequency specified above.

If the test passes the effluent limit do not repeat test until the next test period. Submit results with the annual report.
 If the test fails the effluent limit a multiple dilution test shall be performed within 30 days, and biweekly thereafter until one of the following conditions are met:

 - (a) THREE CONSECUTIVE MULTIPLE-DILUTION TESTS PASS. No further tests need to be performed until next regularly scheduled test period.
 - (b) A TOTAL OF THREE MULTIPLE-DILUTION TESTS FAIL.

C. SPECIAL CONDITIONS (continued)

15. Whole Effluent Toxicity (WET) tests (continued)

a. Test Schedule and Follow-Up Requirements (continued)

- (2) The permittee shall submit a summary of all test results for the test series to the Planning Section of the WPCP, DNR, Box 176, Jefferson City, MO within 14 days of the third failed test. DNR will contact the permittee with initial guidance on conducting a toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE). The permittee shall submit a plan for conducting a TIE or TRE to the Planning Section of the WPCP within 60 days of the date of DNR's letter. This plan must be approved by DNR before the TIE or TRE is begun. A schedule for completing the TIE or TRE shall be established in the plan approval.
- (3) Upon DNR's approval, the TIE/TRE schedule may be modified if toxicity is intermittent during the TIE/TRE investigations. A revised WET test schedule may be established by DNR for this period.
- (4) If a previously completed TIE has clearly identified the cause of toxicity, additional TIEs will not be required as long as effluent characteristics remain essentially unchanged and the permittee is proceeding according to a DNR approved schedule to complete a TRE and reduce toxicity. Regularly scheduled WET testing as required in part b. (1) will be required during this period.
- (5) In addition to the WET test summary report required in part (2), all failing test results shall be reported to DNR within 14 days of the availability of results.
- (6) All WET test results for the reporting period shall be summarized and submitted to DNR by the end of the following October. When WET test sampling is required to run over one DMR period, each DMR report shall contain information generated during the reporting period.

b. PASS/FAIL procedure and effluent limitations

- (1) To pass a single-dilution test, mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; $p = 0.05$) than that observed in the upstream receiving-water control. The appropriate statistical tests of significance will be those outlined in the most current USEPA acute toxicity manual or those specified by the MDNR.
- (2) To pass a multiple-dilution test:
 - (a) the computed percent effluent at the edge of the zone of initial dilution (AEC) must be less than three-tenths (0.3) of the LC_{50} concentration for the most sensitive of the test organisms, or,
 - (b) all dilutions equal to or greater than the AEC must be nontoxic. Failure of one multiple-dilution test is considered an effluent limit violation.

C. SPECIAL CONDITIONS (continued)

15. Whole Effluent Toxicity (WET) tests (continued)

c. Test Conditions

- (1) Test species: Ceriodaphnia dubia and fathead minnows, Pimephales promelas. Organisms used in WET testing should come from cultures reared for the purpose of conducting toxicity tests and should be cultured in a manner consistent with the most current USEPA guidelines. All test animals should be cultured as described in EPA-600/4-90/027.
- (2) Test period: 48 hours at the "Acceptable Effluent Concentration" (AEC) specified above.
- (3) When dilutions are required, upstream receiving stream water will be used as dilution water. If upstream water is unavailable or if mortality in the upstream water exceeds 10%, "reconstituted" water will be used. Procedures for generating reconstituted water will be supplied by the Department of Natural Resources (DNR).
- (4) Tests should be initiated immediately after the sample is collected, but tests must be initiated no later than 36 hours after collection.
- (5) Single-dilution tests will be run with:
 - (a) Effluent at the AEC concentration;
 - (b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
 - (c) reconstituted water.
- (6) Multiple-dilution tests will be run with:
 - (a) 100%, 50%, 25%, 12.5%, and 6.25% effluent, unless the AEC is less than 25% effluent, in which case dilutions will be 4 times the AEC, two times the AEC, AEC, 1/2 AEC and 1/4 AEC.
 - (b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
 - (c) reconstituted water.
- (7) If reconstituted-water control mortality for a test species exceeds 10%, the entire test will be rerun.

SUMMARY OF TEST METHODOLOGY FOR WHOLE-EFFLUENT TOXICITY TESTS

Whole-effluent-toxicity test required in NPDES permits shall use the following test conditions when performing single or multiple dilution methods. Any future changes in methodology will be supplied to the permittee by the Missouri Department of Natural Resources (MDNR). Unless otherwise specified by MDNR, procedures should be consistent with Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, EPA/600/4-90/027.

Test conditions for Ceriodaphnia dubia:

Test duration:	48 h
Temperature:	25 ± 2°C
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light, 8 h dark
Size of test vessel:	30 mL (minimum)
Volume of test solution:	15 mL (minimum)
Age of test organisms:	<24 h old
No. of animals/test vessel:	5
No. of replicates/concentration:	4
No. of organisms/concentration:	20 (minimum)
Feeding regime:	None (feed prior to test)
Aeration:	None
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Mortality (Statistically significant difference from upstream receiving water control at p# 0.05)
Test acceptability criterion:	90% or greater survival in controls

Test conditions for Pimephales promelas:

Test duration:	48 h
Temperature:	25 ± 2°C
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light/ 8 h dark
Size of test vessel:	250 mL (minimum)
Volume of test solution:	200 mL (minimum)
Age of test organisms:	1-14 days (all same age)
No. of animals/test vessel:	10
No. of replicates/concentration:	4 (minimum) single dilution method 2 (minimum) multiple dilution method
No. of organisms/concentration:	40 (minimum) single dilution method 20 (minimum) multiple dilution method
Feeding regime:	None (feed prior to test)
Aeration:	None, unless DO concentration falls below 4.0 mg/L; rate should not exceed 100 bubbles/min.
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Mortality (Statistically significant difference from upstream receiving water control at p# 0.05)
Test Acceptability criterion:	90% or greater survival in controls

End of current text

**STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION**

Revised
October 1, 1980

**PART I - GENERAL CONDITIONS
SECTION A - MONITORING AND REPORTING**

1. **Representative Sampling**
 - a. Samples and measurements taken as required herein shall be representative of the nature and volume, respectively, of the monitored discharge. All samples shall be taken at the outfall(s), and unless specified, before the effluent joins or is diluted by any other body of water or substance.
 - b. Monitoring results shall be recorded and reported on forms provided by the Department, postmarked no later than the 28th day of the month following the completed reporting period. Signed copies of these, and all other reports required herein, shall be submitted to the respective Department Regional Office, the Regional Office address is indicated in the cover letter transmitting the permit.
2. **Schedule of Compliance**

No later than fourteen (14) calendar days following each date identified in the "Schedule of Compliance", the permittee shall submit to the respective Department Regional Office as required therein, either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirements, or if there are no more scheduled requirements, when such noncompliance will be corrected. The Regional Office address is indicated in the cover letter transmitting the permit.
3. **Definitions**

Definitions as set forth in the Missouri Clean Water Law and Missouri Clean Water Commission Definition Regulation 10 CSR 20-2.010 shall apply to terms used herein.
4. **Test Procedures**

Test procedures for the analysis of pollutant shall be in accordance with the Missouri Clean Water Commission Effluent Regulation 10 CSR 20-7015.
5. **Recording of Results**
 - a. For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:
 - (i) the date, exact place, and time of sampling or measurements;
 - (ii) the individual(s) who performed the sampling or measurements;
 - (iii) the date(s) analyses were performed;
 - (iv) the individual(s) who performed the analyses;
 - (v) the analytical techniques or methods used; and
 - (vi) the results of such analyses.
 - b. The Federal Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than six (6) months per violation, or both.
 - c. Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.
6. **Additional Monitoring by Permittee**

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

7. **Records Retention**

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recording for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Department at any time.

SECTION B - MANAGEMENT REQUIREMENTS

1. **Change in Discharge**
 - a. All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant not authorized by this permit or any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit.
 - b. Any facility expansions, production increases, or process modifications which will result in new, different, or increased discharges of pollutants shall be reported by submission of a new NPDES application at least sixty (60) days before each such changes, or, if they will not violate the effluent limitations specified in the permit, by notice to the Department at least thirty (30) days before such changes.
2. **Noncompliance Notification**
 - a. If, for any reason, the permittee does not comply with or will be unable to comply with any daily maximum effluent limitation specified in this permit, the permittee shall provide the Department with the following information, in writing within five (5) days of becoming aware of such conditions:
 - (i) a description of the discharge and cause of noncompliance, and
 - (ii) the period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.
 - b. Twenty-four hour reporting. The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally with 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided with five (5) days of the time the permittee becomes aware of the circumstances. The Department may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.
3. **Facilities Operation**

Permittees shall operate and maintain facilities to comply with the Missouri Clean Water Law and applicable permit conditions. Operators or supervisors of operations at publicly owned or publicly regulated wastewater treatment facilities shall be certified in accordance with 10 CSR 209.020(2) and any other applicable law or regulation. Operators of other wastewater treatment facilities, water contaminant source or point sources, shall, upon request by the Department, demonstrate that wastewater treatment equipment and facilities are effectively operated and maintained by competent personnel.
4. **Adverse Impact**

The permittee shall take all necessary steps to minimize any adverse impact to waters of the state resulting from noncompliance with any effluent limitations specified in this permit or set forth in the Missouri Clean Water Law and Regulations (hereinafter the Law and Regulations), including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

5. **Bypassing**
 - a. Any bypass or shut down of a wastewater treatment facility and tributary sewer system or any part of such a facility and sewer system that results in a violation of permit limits or conditions is prohibited except:
 - (i) where unavoidable to prevent loss of life, personal injury, or severe property damages; and
 - (ii) where unavoidable excessive storm drainage or runoff would catastrophically damage any facilities or processes necessary for compliance with the effluent limitations and conditions of this permit;
 - (iii) where maintenance is necessary to ensure efficient operation and alternative measures have been taken to maintain effluent quality during the period of maintenance.
 - b. The permittee shall notify the Department in writing of all bypasses or shut down that result in a violation of permit limits or conditions. This section does not excuse any person from liability, unless such relief is otherwise provided by the statute.
6. **Removed Substances**
Solids, sludges, filter backwash, or any other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutants from entering waters of the state unless permitted by the Law, and a permanent record of the date and time, volume and methods of removal and disposal of such substances shall be maintained by the permittee.
7. **Power Failures**
In order to maintain compliance with the effluent limitations and other provisions of this permit, the permittee shall either:
 - a. in accordance with the "Schedule of Compliance", provide an alternative power source sufficient to operate the wastewater control facilities; or,
 - b. if such alternative power source is not in existence, and no date for its implementation appears in the Compliance Schedule, halt or otherwise control production and all discharges upon the reduction, loss, or failure of the primary source of power to the wastewater control facilities.
8. **Right of Entry**
For the purpose of inspecting, monitoring, or sampling the point source, water-contaminant source, or wastewater treatment facility for compliance with the Clean Water Law and these regulations, authorized representatives of the Department, shall be allowed by the permittee, upon presentation of credentials and at reasonable times;
 - a. to enter upon permittee's premises in which a point source, water contaminant source, or wastewater treatment facility is located or in which any records are required to be kept under terms and conditions of the permit;
 - b. to have access to, or copy, any records required to be kept under terms and conditions of the permit;
 - c. to inspect any monitoring equipment or method required in the permit;
 - d. to inspect any collection, treatment, or discharge facility covered under the permit; and
 - e. to sample any wastewater at any point in the collection system or treatment process.
9. **Permits Transferable**
 - a. Subject to Section (3) of 10 CSR 20-6.010 an operating permit may be transferred upon submission to the Department of an application to transfer signed by a new owner. Until such time as the permit is officially transferred, the original permittee remains responsible for complying with the terms and conditions of the existing permit.
 - b. The Department, within thirty (30) days of receipt of the application shall notify the new permittee of its intent to revoke and reissue or transfer the permit.
10. **Availability of Reports**
Except for data determined to be confidential under Section 308 of the Act, and the Law and Missouri Clean Water Commission Regulation for Public Participation, Hearings and Notice to Governmental Agencies 10 CSR 20-6.020, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Department. As required by statute, effluent data shall not be considered confidential. Knowingly making any false statement on any such report shall be subject to the imposition of criminal penalties as provided in Section 204.076 of the Law.
11. **Permit Modification**
 - a. Subject to compliance with statutory requirements of the Law and Regulations and applicable Court Order, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:
 - (i) violation of any terms or conditions of this permit or the Law;
 - (ii) having obtained this permit by misrepresentation or failure to disclose fully any relevant facts;
 - (iii) a change in any circumstances or conditions that requires either a temporary or permanent reduction or elimination of the authorized discharge, or
 - (iv) any reason set forth in the Law and Regulations.
 - b. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.
12. **Permit Modification - Less Stringent Requirements**
If any permit provisions are based on legal requirements which are lessened or removed, and should no other basis exist for such permit provisions, the permit shall be modified after notice and opportunity for a hearing.
13. **Civil and Criminal Liability**
Except as authorized by statute and provided in permit conditions on "Bypassing" (Standard Condition B-5) and "Power Failures" (Standard Condition B-7) nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.
14. **Oil and Hazardous Substance Liability**
Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 314 of the Act, and the Law and Regulations. Oil and hazardous materials discharges must be reported in compliance with the requirements of the Federal Clean Water Act.
15. **State Laws**
Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state statute or regulations.
16. **Property Rights**
The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, no does it authorize any injury to private property or any invasion of personal rights, nor any infringement of or violation of federal, state or local laws or regulations.
17. **Duty to Reapply**
If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for a new permit 180 days prior to expiration of this permit.
18. **Toxic Pollutants**
If a toxic effluent standard, prohibition, or schedule of compliance is established, under Section 307(a) of the Federal Clean Water Act for a toxic pollutant in the discharge of permittee's facility and such standard is more stringent than the limitations in the permit, then the more stringent standard, prohibition, or schedule shall be incorporated into the permit as one of its conditions, upon notice to the permittee.
19. **Signatory Requirement**
All reports, or information submitted to the Director shall be signed (see 40 CFR -122.6).
20. **Rights Not Affected**
Nothing in this permit shall affect the permittee's right to appeal or seek a variance from applicable laws or regulations as allowed by law.
21. **Severability**
The provisions of this permit are severable, and if any provisions of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.



MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY

NPDES MONITORING REPORT FOR NON-MUNICIPAL WASTEWATER DISCHARGES

INSTRUCTIONS:

1. Mail to: St. Louis Regional Office, 7545 S. Lindbergh, Suite 210, St. Louis, MO 63125.
2. Report must be signed by owner and by analyst. Report should be typed or neatly printed.
3. Part A of the permit specifies the parameters to be monitored, frequency of monitoring and frequency of reporting results. If quarterly reports are required, they are due on April 28, July 28, October 28, and January 28, each report covering the preceding 3-month period not including the reporting month. See the permit for reporting dates if other than quarterly.
4. Report results of all analyses, even if performed more frequently than required by Part A of the permit.
5. File a report even if discharge is intermittent and no discharge occurred during the monitoring period. Complete the identification section, write "ND" in the appropriate columns for the dates the facility was checked, and sign the report. NOTE: If a discharge occurs any time during the monitoring period, it must be reported.
6. Under "Sample Type" indicate whether sample analyzed was: (a) grab sample; (b) 24-hour composite sample; or (c) modified composite sample. NOTE: See permit for type of sample required for each parameter.
7. Under "Sample Type" for Flow indicate whether figures shown are based on (a) instantaneous measurements or (b) actual 24-hour measured flow. Figure recorded is to represent the total 24-hour flow for the date shown or a reasonable estimate.
8. Indicate whether samples were collected by owner or by personnel of the lab performing the analyses.

NOTE: This reporting form is a universal reporting form for non-municipal sewage treatment plants, industries, and other point-source discharges. Industries and individuals who have their own report forms designed for their specific needs are encouraged to substitute their forms. A suitable substitute must meet the following specifications.

(a) Form must be 8 1/2" x 11".

(b) Report must show all of the information indicated on this standard form.

FACILITY NAME		PERMIT NUMBER	COUNTY	OWNER	TYPE OF FACILITY
REQUIRED FREQUENCY OF MONITORING			THIS REPORT COVERS PERIOD		
DATES SAMPLED			, 19__ THROUGH __, 19__		
TIME OF DAY SAMPLED			<div style="background-color: #cccccc; padding: 5px; transform: rotate(-45deg); display: inline-block;"> SAMPLE TYPE (SEE NOTES 6 AND 7) </div>		
SAMPLES COLLECTED BY					
DATES OF ANALYSES					
PARAMETERS	PERMITTED FINAL LIMITS	RECORD ACTUAL RESULTS OF ANALYSIS — DO NOT AVERAGE		ANALYTICAL METHOD (BE SPECIFIC)	REMARKS AND COMMENTS
FLOW	GPD				
BOD	mg/l				
SUS. SOLIDS	mg/l				
pH	UNITS				
FECAL COLI.	/100 ml.				
ANALYSES PERFORMED BY				SIGNATURE OF ANALYST	
REPORT APPROVED BY OWNER				DATE	

MO 780-1296 (10-91)

WQP 109 Rev. 10/91

End of current text

Exhibits

Exhibit 1

Secondary Containment (Burrito) Water Transfer and Measurement Procedure

STEP	ACTION
1	Connect a peristaltic pump or other positive-displacement pump to the burrito dip tube. Do not select a pump that cannot run dry unless the pump will be closely monitored by personnel that can shut off the pump when the dip tube runs dry.
2	Set up the pumping system to measure the amount of water pumped out of the Burrito by placing a flow meter on the discharge side of the pump or by directing the water into a tank or other container that can be used to measure the amount of water pumped.
3	Record the volume removed from the burrito on the round sheet then discharge the quantified burrito water to the sup.

Exhibit 2

Leachate Hauling Procedure

Background: Water in the sump must be removed on a schedule that does not allow any equipment installed in the sump to be damaged or overflow of the sump causing a release to the environment. The water will be vacuumed from the sump using a vacuum truck and hauled to Metropolitan Sewer District Bissell Point Facility (MSD). The hauling is performed by a specialty subcontractor. Currently the leachate in the sump is hauled to MSD approximately once per month. However, the daily accumulation is expected to decrease over time thus decreasing the frequency of hauling to MSD.

CAUTION

The maximum level of water in the LCRS is 47 inches. If the level exceeds 53 inches, electrical equipment will be submerged and may be damaged.

NOTE: The maximum amount of water that can be hauled to MSD monthly is 15,000 gallons. This limit has been set by MSD.

The following steps shall be followed to transfer LCRS water to the MSD Bissell Point Facility.

Procedure

STEP	ACTION
1	Confirm the appropriate sections of the LCRS Sump Water Disposition form have been completed. Copy attached.
2	Record the reading indicated by Flowmeter (FI-1).
3	Record the water level indicated by LT 1 and LT 2 in the Operations Log Book. Record the level indicated by LT 1 on the LCRS Sump Water Disposition Form.
4	Place a watertight pan under the hose connection to catch water that will spill when the hose is disconnected.
5	Connect the vacuum truck suction line to the 3-inch camlock fitting on the south side of the Train 3 Building.
6	Direct the vacuum truck driver to begin pulling a vacuum on the sump dip tube.
7	Slowly open the sump dip tube valve V-102.
8	Monitor the flow at the flow meter FI-1.
9	Load the vacuum truck to near capacity. The density of the sump water can be assumed as 8.4 lbs. per gallon. Ensure that a water sample is taken from each load of water so it can be analyzed for MSD and reported under Step #22.
10	As the vacuum truck nears its capacity, slowly close the sump dip tube valve.
11	Close the inlet valve on the vacuum truck but maintain a vacuum within the tank truck.

STEP	ACTION
12	Loosen the Camlock fitting at the Train 3 Building connection.
13	Slowly pull the hose away from the Train 3 Building connection while opening the vacuum truck inlet valve. This allows most of the water in the hose and in the building piping to be vacuumed into the truck.
14	Close the vacuum truck inlet valve and shut off the vacuum truck vacuum pump.
15	Remove hose from the vacuum truck. Blind cap the vacuum truck inlet connection and the Train 3 Building connection.
16	Record the reading on flow meter FI-1 on the LCRS Sump Water Disposition Form.
17	Record the indication of LT 1 and LT 2 in the Operations Log Book and on the LCRS Sump Water Disposition Form.
18	Complete the shipping manifest required by MSD. Copy attached for reference only. Contact MSD for actual forms to be used.
19	Keep the generator copy of the shipping manifest and ensure the driver keeps the shipping manifest in the truck.
20	Repeat Steps 2 through 18 until the desired sump level has been reached.
21	File the LCRS Sump Water Disposition Form.

Exhibit 3

Discharge to Missouri River (NPDES Outfall 007) Procedure

NOTE: Before pumping water through the pipeline to the Missouri River, the NPDES permit must be reviewed to ensure that all criteria including sampling, notifications, and treatment requirements are met.

Background Information:

The pipeline to the Missouri River is an HDPE pipeline with a nominal maximum working pressure of 100 psi. The maximum flow rate through the pipe has been established as 400 gpm due to a 3 inch diameter constriction at a manhole located at Sta 9+75. See Drawing 0284D-CP-5112.

Notable features and facts on the pipeline are:

- 1) The pipeline is 4 inches in diameter from the Train 3 building to the gate valve located at the South end of the WSSRAP property. (See Drawing 0284D-CP-5124). At this location, the pipe diameter increases to 6 inches.
- 2) There is a gate valve that must be opened for the pipeline to flow. The valve is located at the South end of the WSSRAP Property. See Drawing 0284D-CP-5124.
- 3) The pipeline was placed on the surface of the ground and then covered with several feet of soil, as indicated on Drawing 0284D-CP-5123. The earth mound is located along the Hamburg Hike and Bike Trail. The pipeline was placed on the ground and covered at this location because the line crossed a wooden TNT wastewater line that was thought to be potentially explosive. The TNT line was removed from beneath the water line by the Army, as part of the Weldon Spring Ordnance Works remedial activities.
- 4) Within the earth mound a manhole containing a vacuum breaker was constructed. The vacuum breaker has been disabled, due to repeated problems. Therefore, it is imperative that vacuum relief be provided inside the Train 3 Building.
- 5) The 6-inch pipe reduces to a 3-inch pipe (see Drawing 0284D-CP-5112). This was to improve performance of a flow meter that has been removed. Debris that enters the line may bridge this constriction.
- 6) The outfall structure for the pipeline is located near the Hamburg quarry. The structure should be inspected for damage and vandalism before it is used. Signs indicating the purpose of the pipe are present and face the River.
- 7) A pressure versus flow rate curve was established for the pipeline in the year 2000. The chart is presented in the Appendix. Since the chart was established, several elbows and approximately 100 feet of 4-inch pipe were added to bring the line inside the Train 3 Building. Pipeline performance may be slightly below that indicated on the chart.

STEP	ACTION
1	Confirm that all NPDES requirements for discharge to the river have been met.
2	Open the gate Valve located at the south end of the WSSRAP property.
3	Check the vacuum breaker valve in the ant hill manhole to ensure that it is valved closed.
4	Walk or drive the line to ensure that excavations, vandalism and/or flooding have not affected the system.
5	Provide vacuum relief for the pipeline at the connection in the Northeast corner of the Train 3 Building.
6	Provide flow measuring capability at the pipeline connection in the Northeast corner of the Train 3 Building. (Vacuum relief should be downstream of the flow meter).
7	Connect the pumping system to the flowmeter.
8	Begin pumping to the river at a flow rate below 100 gpm.
9	Over a period of 10 minutes, the flow rate may be ramped up to the maximum rate of 400 gpm. However, the maximum working pressure of 100 psi must not be exceeded.
10	Walk or drive the line to check for problems.

Procedure for Shutting Down Flow to the Missouri River:

STEP	ACTION
1	Shut off the pumping system.
2	Record the final totalizer flow meter reading.

Procedure for Pneumatic Blow down of the Pipeline:

For long term shutdown of the pipeline, it may be desired that the line be blown dry with an air compressor.

The following steps have proven to be effective and successful in blowing down the pipeline.

STEP	ACTION
1	Follow all the steps to discharge water to the Missouri River listed in the section above.
2	Station an individual at the discharge to the river if the discharge is not covered with river water. This individual must be in radio or telephone contact with personnel in Train 3. He/she is responsible for keeping the public away from the connection during blow down and for ordering a shut down of the operation if the action at the river is too violent.
3	Connect a pressure-regulated airline to the pipeline flange fitting in Train 3.
4	Slowly apply pressurized air to the line until 25 psi is reached. Maintain this pressure for a minimum of 10 minutes.
5	Over a 10 minute period, increase air pressure at the head of the line to 50 psi. Reduce pressure if violent air or water surging occurs at the discharge to the river.
6	Maintain 50 psi air pressure at the head of the line until satisfied that the line is as clear as desired. A minimum of 20 minutes at 50 psi is recommended to clear the line of most of the water.

Exhibit 4

Calibration Procedure for LS-1/LT-1/LI-1

Allow the LCRS sump to fill to at least 40 inches, as measured manually, at the sump. The greater the depth of the water, the more accurate the calibration will be. However, do not allow the sump to exceed the maximum depth of 50 inches, as damage to instrumentation will result. The depth of the sump as measured from the top of the manway ring is 189.5 inches. Because the top of the manway ring is not perfectly level, measurements shall be taken at the North side of the ring, adjacent to the West ladder rail.

STEP	ACTION
1	Subtract the distance from the top of the manway ring to the sump water level from 189.5 inches to obtain the height of the water level in the sump. (189.5 inches – distance between top of manway ring and top of water).
2	Remove the cover from the LT 1 junction box by turning the cover counter clockwise. Once the cover is completely unscrewed, lift straight up on the cover to ensure that LT 1 is not damaged.
3	Follow the directions in the LT 1 O&M Manual to program the measurement taken in Step 2 into LT 1 as the new high level.
4	Pump the LCRS sump down to between 10 and 15 inches. This can be done over one or two days.
5	Measure the sump manually, as described above.
6	Program the value determined in Step 5 into LT 1 as the low point calibration.
7	Insert a loop calibrator into the LT 1 4-to-20 milliamp loop.
8	Follow the directions in the LT 1 O&M Manual to drive the loop from 4-to-20 milliamps.
9	Use the loop calibrator to check the current flow through the LT 1 4-to-20 milliamp loop. At 4 milliamps, the red LT 1 LED indicator should read 4.7, and at 20 milliamps, the LED indicator should read 53.0.
10	Likewise, at 4 milliamps, Chart Recorder CR 1 should read 4.7, and at 20 milliamps, Chart Recorder CR 2 should read 53.0.
11	Follow the O&M Manual directions to calibrate the LED indicator and Chart Recorder CR 1 so that these instruments match the LCD indication on LT 1.

NOTE: The accuracy of the sensor probe in the sump diminishes below 10 inches, so lower levels are not recommended. The minimum indication programmed into LT 1 is 4.7. Even if no water is in the sump, LT 1 will give this indication. This was done because a portion of the bottom portion of the probe must be covered before the probe can begin to give an indication

Exhibit 5
General Roundsheets for LCRS Facility

STEP	ACTION
1	Complete the LCRS weekly round sheets (See Exhibit 8 and 9).
2	Check the Methane J Vent for obstructions.
3	Check the sump manhole cover for integrity. Ensure that it is locked.
4	Open the sump manhole cover and look inside for any obvious problems.
5	Check for indications that the sump secondary solenoid valve is leaking. Listen for dripping water and look for rings on the surface of the water in the sump.
6	Record the reading on the sump for SF-1 hour meter HM-1. Operate unit for approximately 5 minutes.
7	Check the LCRS sump area for proper labeling, signs of vandalism, loose or missing bolts, no smoking signs, etc.
8	Enter the Train 3 Building.
9	Log the status of the building ventilators BV-1 and BV-2.
10	Open the LCRS monitoring cabinet.
11	Log the values indicated by LT 1 and secondary leachate counters Leachate Counter East (LCE) and Leachate Counter West (LCW).
12	If the level indicated by LT 1 is forty inches or greater, schedule an LCRS pump out as necessary to keep the water level in the sump from exceeding 47 inches.
13	Compare the indication on LT 1 with the measurement taken in step 7.
14	Take the memory card offline by touching the floppy disk icon on the touch screen.
15	Remove the memory card and insert a replacement card. NOTE: The card must be placed in the bottom PCI card slot if it is to constantly receive data from the recorder.
16	Ensure the new card is on line by following these steps on the CRX-2 touch screen:
	a) From the main menu, pick the OPERATOR'S HAND icon.
	b) Touch " DISK " on the menu, followed by the DOWN MENU icon.
	c) Select " LOG 2 ".
	d) Select the " UP MENU " icon several times, until the main menu is reached.
	e) If the top of the touch screen indicates an alarm and that the data was lost, clear the alarm by selecting pick the OPERATOR'S HAND icon.
	f) Touch " DISK " on the menu, followed by the DOWN MENU icon.
	g) Touch " CLR DISK ERROR " on the touch screen.
	h) Use the " UP MENU " icon on the touch screen to go back to the main menu.

STEP	ACTION
17	Open the inner door of the LCRS cabinet and check for signs of problems.
18	Check the breakers in the breaker panel and note any that are tripped or in the off position in the comments section of the round sheets (spare breakers excluded).
19	Close the breaker panel door, the inner door and the outer door of the LCRS monitoring cabinet.
20	Tour the building. Check for signs of electrical problems, leaks, storm damage, vandalism, animal intrusion and proper operation of the radiant heaters.

Exhibit 6

LCRS Roundsheet

Weldon Spring Site Leachate Collection and Recovery System (LCRS) Roundsheet															
Leachate Monitoring System															
Date	Sump Leachate Level (LI-1)		Leachate Flow Meter (FI-1)			Sump Leak Detection Level			East Secondary System			West Secondary System			Comments
	Sump Level Before Pumping	Sump Level After Pumping	Totalizer Reading Before Pumping	Totalizer Reading After Pumping	Total Pumped	Before Pumping	After Pumping	Total Pumped	Previous 403 Counter	Current 403 Counter	Flow (Number of Counts X 0.58)	Previous 401 Counter	Current 401 Counter	Flow (Number of Counts X 0.50)	
	Inches	Inches	Gallons	Gallons	Gallons	Inches	Inches	Gallons			Gallons			Gallons	

Appendix J
LCRS/Train 3 Treatment Contingency Plan

J1.0 Contingency Plan Overview

J1.1 Background

The disposal cell at the Weldon Spring Site currently (May 2003) generates approximately 250 gallons of leachate per day, and manganese concentrations in the leachate exceeds the permitted effluent limit. The LCRS sump capacity is approximately 11,000 gallons, or 40 days of storage at the current flow rate. The uranium activity is below the discharge goal stated in the NPDES permit and does not currently require treatment. This leachate is currently being hauled to the Metropolitan Sewer District (MSD) via commercial hauler for disposal and treatment under an approval granted to DOE on December 21, 2001, by the MSD. DOE had originally expected to treat the leachate on-site and discharge the treated leachate through a dedicated pipeline to an NPDES permitted outfall at the Missouri River. However, when MSD approved disposal of the leachate at their facility, construction was suspended on the Train 3 treatment facility. A metal industrial building was already under construction, and the major equipment required for the treatment process had already been purchased. DOE decided to complete the building construction and store or surplus the process equipment that remained. This plan was prepared as a contingency for treating the leachate in the event that the primary leachate management option (i.e., hauling to the MSD treatment facility) was no longer available. The objective was to use as much of the existing equipment as possible in a configuration that would support a rapid start-up, if needed.

J1.2 Current State

The LCRS Support Building is completed and operational. The building is heated, and roof-mounted ventilation fans are installed and operational. Telephone service is available and is currently used for the automated alarm call-out system. There is adequate electrical service to support all operational needs. No potable water is supplied to the building. The building currently houses electrical equipment used to support the LCRS operation, four fiberglass reinforced plastic (FRP) tanks (500, 4,500, 4,500, and 7,600 gallon), two ion exchange vessels, four cartridge filter housings, and miscellaneous related equipment. The tanks were anchored in their permanent locations during the building construction. The ion exchange vessels and filter cartridge housings were recovered from other treatment processes that were used at WSS and are in good condition. Ion exchange resin and filter cartridges are in the building. Two air-driven diaphragm pumps are in the building. There is no compressed air supply in the building.

The building was modified to facilitate haul truck loading of leachate by installing piping and a flowmeter that penetrates the south wall and is equipped with a quick disconnect fitting that is compatible with the leachate haulers' hoses. This piping connects the leachate influent piping located inside the building to the exterior of the building.

The building is used regularly by WSS staff to download instrument records from the instrument display cabinet in the building and for storage of supplies and equipment used for leachate sampling. Purge water generated from certain monitor wells is passed through granular activated carbon and stored in the 500-gallon FRP tank. The purge water is consolidated with the leachate and hauled to MSD for disposal as needed.

J1.3 Operational Philosophy

The original process was intended to be automated because it was planned to be a permanent activity. However, the current plan is a contingency and a less automated approach is appropriate. Leachate will be pumped from the sump and through the various processes using an air-driven diaphragm pump and a portable air compressor. The pump will be repositioned after each step of the process to convey the leachate to the next process. Heavy-duty rubber hoses with quick-disconnect fittings will be used for leachate transfer. These hoses are not currently on site and will have to be fabricated if the contingency plan is exercised. Manual addition of the dilute consumer-grade chlorine bleach to oxidize the manganese was in the original plan and remains unchanged. The ion exchange process equipment will not be used if uranium concentration is below the permit goal of 100 pCi/L.

J1.4 Process Overview

Leachate will be transferred to TK-100 via the air-driven pump. Commercially available household bleach (6 percent sodium hypochlorite by weight) will be added at a rate of 1.5 gallons bleach per 1,000 gallons leachate. TK-100 will be mixed for one hour using the air-driven pump connected in a loop. The TK-100 contents will be pumped with the air-driven pump through the cartridge filters for serial filtration through 10 micrometer (nominal) then 5 micrometer (nominal) cartridges to TK-300. The water will be sampled for the constituents described in the NPDES permit (MO-0107701) and discharged. If uranium concentration is above the permit goal of 100 pCi/L, anchoring, piping, and media loading will be required for the ion exchange system. Current uranium concentrations have been averaging approximately 50 pCi/L, and the manganese concentration has been decreasing (averaging approximately 4.5 mg/L) but is still above permit limit (0.5 mg/L) for discharge to the Missouri River. If the contingency plan is exercised after July 13, 2005, the expiration date of the current NPDES permit, it is anticipated that the new uranium drinking water standard of 20 µg/L (30 pCi/L) would be applicable and that the discharge goal would be revised to 10 times the drinking water standard (300 pCi/L), as were the discharge goals for the other pollutants identified in the permit.

J1.5 Process Start-Up

The equipment will require several actions prior to startup. Four heavy-duty rubber hoses with quick-disconnect fittings will require fabrication. The lengths of the hoses will be field determined. A portable compressed air supply capable of providing 50 cubic feet per minute at 50 pounds per square inch (psi) will be needed to operate the diaphragm pumps. The cartridge filters and ion exchange vessels (if required) must be field located and anchored, and the interconnecting piping must be completed in accordance with the drawings. Consumer grade bleach can be purchased at any supermarket. The piping used to load out the leachate haul trucks must be modified to provide a connection on the inside of the building.

J2.0 Train 3/LCRS Equipment Setup Procedure

The Train 3 Process equipment should be installed in accordance with the referenced drawings for WP-565A.

All major equipment items and supplies required to set up and operate the treatment process are, as of this writing, located in the Train 3 building, with the exception of the heavy-duty rubber hoses, compressed air supply, and miscellaneous piping materials and hardware that will be required for assembly.

Cartridge filter housings and ion exchange vessels will be loaded according to manufacturer recommendations.

If the uranium concentration exceeds the discharge goals, use of the ion exchange system will be necessary prior to discharge.

J2.1 Transfer of Leachate from LCRS Sump to TK-100

1. Align valves as follows (Caution: Open valves slowly to avoid equipment damage):

V-102	Closed
V-103	Closed
V-106	Closed
V-104	Closed
V-105	Closed

2. Connect hose line 2"-INF-1006-R1 from the tee fitting QD to the P-100 suction QD.
3. Connect hose line 2"-INF-1002-R1 between the P-100 discharge QD and the T-100 fill line QD.
4. Connect the air supply to P-100.
5. Align valves as follows (Caution: Open valves slowly to avoid equipment damage):

V-102	Open
V-103	Closed
V-106	Open
V-104	Open
V-105	Closed

6. Turn on compressed air supply to P-100 and adjust to 50 psi. Check hoses and pumps for leaks.
7. Verify flow and proper operation of P-100.

8. Fill TK-100 with 3,000 gallons of leachate (this will be approximately 8' of leachate in TK-100 and will leave 4' of freeboard). Use FI-1 or direct measurement of the height of liquid in TK-100 to determine the volume of leachate in TK-100.
9. Close V-106.
10. Approximately one minute after closing V-106, turn off compressed air supply.
11. Close V-104
12. Disconnect 2"-INF-1006-R1 from P-100 and cap end of hose. Use a drip pan to prevent spillage on floor.

J2.2 Manganese Treatment/Chemical Precipitation

1. Connect one end of 2"-REC-1005-R1 to TK-100 discharge nozzle and the other end to P-100.
2. Open V-104 and V-105.
3. Turn on compressed air supply and verify 50 psi output to P-100.
4. Verify recirculation flow in TK-100.
5. Add 4.5 gallons (1.5 gallons consumer grade bleach/1,000 gallons leachate) of bleach through the manhole (M1) located on top of TK-100.
6. Allow TK-100 contents to recirculate for one hour

NOTE: A bleach/chlorine odor may be observed in the building. This does not present any hazard.

7. Close V-105.
8. Approximately one minute after closing V-105, turn off compressed air supply to P-100.
9. Close V-104.
10. Disconnect 2"-INF-1002-R1. Use a drip pan to prevent spillage on floor.

J2.3 Filtration

1. Reposition P-100 closer to filter cartridge vessels. (It may be necessary to disconnect 2"-REC-1005-R1 in order to reposition P-100. If this is done, make sure 2"-REC-1005-R1 is reconnected after repositioning.)
2. Connect 2"-FIL-1004-R1 to P-100 and cartridge filter unit inlet QD.

3. Connect 2"-FEFF-2003-R1 to cartridge filter unit outlet and TK-300 QD.
4. Align valves as follows (Caution: Open valves slowly to avoid equipment damage):

V-105	Open	V-210	Closed	V-205	Closed	V-301	Open
V-201	Open	V-211	Closed	V-215	Open	V-302	Closed
V-202	Open	V-212	Open	V-217	Open		
V-207	Open	V-213	Open	V-216	Closed		
V-209	Open	V-214	Open	V-218	Closed		
V-204	Open	V-219	Open	V-220	Closed		
V-208	Closed	V-221	Open	V-222	Closed		
V-206	Open	V-203	Closed	V-223	Open		
5. Turn on compressed air supply to P-100.
6. Vent F-201, F-202, F-203, and F-204 by slowly opening V-203, V-205, V-216 and V-218, respectively.
7. Pump contents of TK-100 through the cartridge filter unit to TK-300.
8. When TK-100 is empty, close V-105.
9. Approximately one minute after closing V-105, turn off compressed air supply to P-100.
10. Close V-301.

NOTE: After final run, drain cartridge filters to building sump.

11. Disconnect 2"-REC-1005-R1 and 2"-FIL-1004-R1 from P-100 and cap ends of hose. Use a drip pan to prevent spillage on floor.

J2.4 Ion Exchange Treatment

NOTE: If ion exchange treatment is not required, go to Procedure J2.5.

1. Reposition P-100 between TK-300 and the ion exchange vessels (IX-401 and IX-402).
2. Connect 2"-IX-4001-R1 to suction side of P-100.
3. Connect 2"-IX-4002-R1 to discharge side of P-100 and ion exchange unit inlet QD.
4. Connect 2"-IX-4006-R1 to ion exchange outlet and TK-500 fill QD.

5. Align valves as follows (Caution: Open valves slowly to avoid equipment damage):

V-302	Open	V-409	Closed	V-403	Open
V-401	Open	V-407	Closed	V-404	Open
V-402	Open	V-408	Closed	V-411	Open
V-405	Closed	V-410	Closed	V-501	Closed
V-406	Closed				

6. Turn on compressed air supply to P-100.
7. When TK-300 is empty, close V-302.
8. Approximately one minute after closing V-302, turn off compressed air supply to P-100.
9. Close V-401, V-402, V-403, V-404 and V-411.

J2.5 Transfer Treated Leachate to the Missouri River 007 Outfall

1. Connect hose line 2"-EFF-5001-R1 between TK-500 discharge nozzle QD and P-500 Suction side QD. (Note: If the ion exchange system is not used, connect hose line 2"-IX-4001-R1 to P-500 suction QD instead of hose line 2"-EFF-5001-R1. Drain contents of TK-300 to Missouri River 007Outfall.)
2. Connect hose line 2"-EFF-5002-R1 between P-500 and effluent pipeline plant stub-out flange.
3. Connect compressed air supply to P-500.
4. Open V-501 and V-502.
5. Turn on compressed air supply to P-500.
6. When contents of TK-500 (or TK-300, if applicable) are empty close V-502 (or V-302, if TK-300 contents were emptied).
7. Approximately 5 minutes after closing V-502 (or V302, if appropriate), turn off air supply to P-500.
8. Drain and secure all equipment and hoses when complete.