NPDES Permit No. IL0000116
Notice No. MEL:13061209.bah

Public Notice Beginning Date: **August 25, 2013**

Public Notice and Post-Hearing Comment Period Ending Date: **November 8, 2013**

Public Hearing Date: **October 9, 2013**

National Pollutant Discharge Elimination System (NPDES)
Permit Program

Draft Modified NPDES Permit to Discharge into Waters of the State

Public Notice/Fact Sheet Issued By:

Illinois Environmental Protection Agency
Bureau of Water,
Division of Water Pollution Control
Permit Section
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276
217/782-0610

Name and Address of Discharger:
Ameren Energy Generating Company
1901 Chouteau Avenue
P.O. Box 66149, MC - 602
St. Louis, MO 63166

Name and Address of Facility:
Meredosia Energy Center
800 South Washington Street
Meredosia, Illinois 62665
(Morgan County)

The Illinois Environmental Protection Agency (IEPA) has made a tentative determination to issue a modified NPDES permit to discharge into the waters of the state and has prepared a draft permit and associated fact sheet for the above named discharger. The Public Notice period will begin and end on the dates indicated in the heading of this Public Notice/Fact Sheet.

A public hearing on this draft permit modification will be held on October 9, 2013 at 7:30 p.m. (following the air permit hearing) in the Meredosia-Chambersburg Junior-Senior High School gymnasium, 830 Main Street in Meredosia.

Interested persons are invited to submit written comments on the draft permit to the IEPA at:

Hearing Officer Dean Studer, Office of Community Relations
Re: Meredosia Energy Center NPDES
Illinois Environmental Protection Agency
1021 North Grand Avenue East, P. O. Box 19276
Springfield, IL 62794-9276

Comments may also be e-mailed to epa.publichearingcom@iilinois.gov and must specify either "Meredosia Energy Center NPDES" or "IL0000116" is the subject line. E-mail comments originating on third party systems or servers intended for submittal of multiple emails of the same or nearly the same content will not be accepted without prior approval from the hearing officer.

The application, engineer's review notes including load limit calculations, Public Notice/Fact Sheet, draft permit, comments received, and other documents are available for inspection and may be copied at the IEPA between 9:30 a.m. and 3:30 p.m. Monday through Friday when scheduled by the interested person.

Response to comments will be provided in a responsiveness summary which will be available at the time a final decision is made in this matter.

For further information on the draft permit, please call Mark E. Liska at 217/782-0610.

The applicant is engaged in the operation of a 168 MW steam electric generating station using an oxy-combustion boiler (SIC 4911). The station consists of three groups: a new Air Separation Unit (ASU) that supplies near-pure oxygen to the boiler for combustion, an oxy-combustion boiler and a Gas Quality Control System (GQCS) with a circulating dry scrubber, fabric filter, and a direct contact cooler

polishing system (DCCPS), and a Compression and Purification Unit (CPU) that separates carbon dioxide from the other flue gasses in preparation for pipeline transport. Plant operation results in an intermittent discharge of stormwater runoff from outfall 001, 10.3 MGD of Cooling Tower Blowdown, CPU, DCCPS, ASU, and other discharges from outfall 002, an intermittent discharge of stormwater runoff from the former Bottom Ash and Fly Ash Ponds which are no longer in use from outfalls 003 and 004, respectively, and 0.3 MGD of Intake Screen Backwash from Outfall 006.

The following modifications are proposed:
The steam electric generating station will use an oxy-combustion boiler. The condenser cooling water at outfall 001 will be discontinued. DCCPS wastewater treatment system discharge has been added to outfall 002. Coal pile runoff, coal yard service wastewater, contact stormwater, demineralization building sump water, ASU/CPU cooling tower blowdown, area oil/water separator wastewater, process condensate/steam loss water, strainer backwash, and U4 oil/water separator wastewater have all moved from outfalls 003 or 004 to outfall 002. The main cooling tower blowdown from outfall 002 has been lowered. Bottom ash and fly ash discharges to outfalls 003 and 004, respectively, will be discontinued and the only remaining discharges from these outfalls come from stormwater runoff. Outfall A03 will be discontinued.

Application is made for the existing discharge(s) which are located in Morgan County, Illinois. The following information identifies the discharge point, receiving stream and stream classifications:

Outfall	Receiving Stream	Latitude	Longitude	Stream Classification	Integrity Rating
001	Illinois River	39° 49' 25" North	90° 34' 05" West	General Use	Not Rated
002	Illinois River	39° 49' 25" North	90° 34' 05" West	General Use	Not Rated
003	Illinois River	39° 49' 15" North	90° 34' 25" West	General Use	Not Rated
004	Illinois River	39° 49' 00" North	90° 34' 35" West	General Use	Not Rated
006	Illinois River	39° 49' 25" North	90° 34' 05" West	General Use	Not Rated

To assist you further in identifying the location of the discharge please see the attached map.

The stream segment IL_D-32 receiving the discharge from outfall(s) 001, 002, 003, 004, and 006 is on the 2012 303 (d) list of impaired waters, and is not a biologically significant stream.

The following parameters have been identified as the pollutants causing impairment:

Pollutants	Potential Contributors
Primary Contact	Fecal coliform
Fish Consumption	Mercury, PCBs

The discharge(s) from the facility shall be monitored and limited at all times as follows:

	LOAD LIMITS lbs/day DAF (DMF)			CONCENTRATION LIMITS mg/L		
PARAMETER	30 DAY AVERAGE	DAILY MAXIMUM	REGULATION	30 DAY AVERAGE	DAILY MAXIMUM	REGULATION
Outfall: 001						
Non-Contact Stormwater Only – See BAT/BCT for Stormwater Discharge						
Outfall: 002						
Flow						35 IAC 309.146
Total Residual Chlorine		7.1	40 CFR 125.3		0.05	40 CFR 125.3
Total Chromium	17	28	40 CFR 423.15(j)	0.2	0.2	40 CFR 423.15(j)
Total Zinc	86	142	40 CFR 423.15(j)	1	1	40 CFR 423.15(j)
Total Phosphorus		142			1	35 IAC 304.123(g)(2)
Total Nitrogen					Monitor Only	35 IAC 309.146
Mercury					Monitor Only	35 IAC 309.146

PARAMETER	LOAD LIMITS lbs/day DAF (DMF) 30 DAY AVERAGE	DAILY MAXIMUM	REGULATION	CONCENTRATION LIMITS mg/L 30 DAY AVERAGE	DAILY MAXIMUM	REGULATION
Outfall: A02						
Flow						35 IAC 309.146
Outfall: B02						
Flow						35 IAC 309.146
pH					6.0-9.0	35 IAC 304.125
Total Suspended Solids	80	517	40 CFR 423.15(c)	30	100	40 CFR 423.15(c)
Oil and Grease	40	103	40 CFR 423.15(c)	15	20	40 CFR 423.15(c)
Total Chromium	0.53	1.03	40 CFR 423.15(j)	0.2	0.2	40 CFR 423.15(j)
Total Zinc	2.7	5.1	40 CFR 423.15(j)	1	1	40 CFR 423.15(j)
Outfall: C02						
Flow						35 IAC 309.146
pH					6.0-9.0	35 IAC 304.125
Total Suspended Solids					50	40 CFR 423.15(k)
Outfall: D02						
Flow						35 IAC 309.146
pH					6.0-9.0	35 IAC 304.125
Total Suspended Solids				15	30	35 IAC 304.124
Oil and Grease				15	30	35 IAC 304.124
Total Iron				2	4	35 IAC 304.124
Outfall: 003 and 004						
Flow						35 IAC 309.146
pH					6.0-9.0	35 IAC 304.125
Total Suspended Solids				30	100	40 CFR 423.12(b)(4)
Oil & Grease				15	20	40 CFR 423.12(b)(4)
Mercury				Monitor Only		35 IAC 309.146
Outfall: 006						
Total Residual Chlorine					0.05	40 CFR 125.3

Load Limit Calculations:

Load limit calculations for the following pollutant parameters were based on an average flow of 10.3 MGD and a maximum flow of 16.98 MGD and using the formula of average or maximum flow (MGD) X concentration limit (mg/l) X 8.34 = the average or maximum load limit (lbs/day): Total Residual Chlorine, Copper, Chromium, and Zinc for Outfall 002.

Load limit calculations for the following pollutant parameters were based on an average flow of 0.32 MGD and a maximum flow of 0.62 MGD and using the formula of average or maximum flow (MGD) X concentration limit (mg/l) X 8.34 = the average or maximum load limit (lbs/day): Total Suspended Solids, Oil & Grease, Chromium, and Zinc for Outfall B02.

Outfalls 001, A02, C02, 003, and 004 discharge intermittent amounts of stormwater only. Outfall D02 discharges intermittent amounts of hydrostatic test water. Load limits are not appropriate for intermittent discharges.

The load limits appearing in the permit will be the more stringent of the State and Federal Guidelines.

The following explain the conditions of the proposed permit:

The Special Conditions will require monthly DMR submission, explain mercury and total residual chlorine testing requirements, explain 316(a) and 316(b) requirements, require a Class K Operator, define metals testing, and define BAT/BCT stormwater requirements.

The previous cooling intake structure consisted of an intake of 392 MGD through an intake structure consisting of 5 bays with an intake velocity of approximately 0.5 ft/s using four 40,000 GPM pumps and two 56,000 GPM pumps. In the new intake arrangement, 1 bay will be used to intake approximately 12 MGD at a rate considerably lower than 0.5 ft/s using one 40,000 or 56,000 GPM pump. The once-through cooling water system of the previous configuration has ceased. The new configuration consists entirely of closed-cycle cooling. The closed-cycle cooling system meets the definition of Best Technology Available in accordance with part 316(b) of the Clean Water Act.

Ameren Energy Resources, in cooperation with the FutureGen Industrial Alliance, Inc., is proposing a modification to Electric Generating Unit 4 at the Meredosia Energy Center as part of FutureGen 2.0. FutureGen 2.0 would be a first-of-its-kind, near zero-emissions coal-fueled power plant capturing and sequestering carbon dioxide emissions.

In cooperation with the U.S. Department of Energy, the FutureGen 2.0 partners would shut down Units 1-3 and upgrade Electric Generating Unit 4 with an oxy-combustion boiler and other technology which would greatly lower both air and water pollution and allow the capture of carbon dioxide emissions. The oxy-combustion boiler combusts coal in a nearly pure oxygen environment to reduce air pollutant emissions and allow for CO_2 capture. While this facility does separate and compress carbon dioxide, the actual injection of carbon dioxide into the ground takes place off-site and is not part of this permit.

Almost all outfalls have changed. The next paragraphs will explain the changes to each outfall and internal discharge and whether an antidegradation assessment pursuant to 35 Ill. Adm. Code 302.105 is required.

Outfall 001: The condenser cooling water from Units 1, 2, and 3 have been removed. The only discharge left is non-contact stormwater from the Units 1, 2, and 3 roof drains and non-contact stormwater that was previously routed to outfall 003. These discharges were previously permitted and consist of only non-contact stormwater and are not subject to an antidegradation assessment.

Outfall 002 (in order as listed in the permit):

1. This is the main cooling tower for Unit 4 (U4), the oxy-combustion boiler. Much of the old Unit 4 cooling tower would be replaced. The discharge from this cooling tower would decrease from 12.3 MGD to 9.78 MGD. Because the new discharge is lower than it was previously, it is not subject to an antidegradation assessment.

2. The new DCCPS WWTS will have a cooling tower to reject waste heat from the DCCPS circulation water system. The wastewater will have some suspended solids and metals in it. This will operate as a conventional cooling tower despite it cooling process wastewater. It discharges 0.307 MGD would discharge to the DCCPS WWTS prior to outfall 002. An antidegradation assessment for this new discharge follows this section.

3. A new cooling tower to reject waste heat from the ASU and CPU islands. This will operate as a conventional non-contact cooling tower. 0.1 MGD would discharge to outfall 002. This discharge, combined with the main tower blowdown, in total is less than the blowdown in the previous arrangement, so the discharge is not subject to an antidegradation assessment.

4. Three new oil/water separators will be added around the ASU, CPU, and boiler islands. This is similar to the oil/water separators around the Units 1-4 which discharged to outfalls 003 and 004 in the previous arrangement. Since the discharge from this is equal to or less than the same type of discharge in the previous arrangement, the discharge is not subject to an antidegradation assessment.

5. Strainer backwash is the same as it was previously and is not subject to an antidegradation assessment.

6. The demineralizer regenerant waste discharged to outfall 004 under the previous arrangement and discharges less (0.029 vs 0.038 MGD) wastewater than under the previous arrangement. Because the discharge is lower, it is not subject to an antidegradation assessment.

7. Process condensate/steam loss discharged to outfalls 003 and 004 in the previous arrangement. Due to less steam being used overall, less condensate is formed. Since the discharge is lower than it was under the previous arrangement, the discharge is not subject to an antidegradation assessment.

8. The coal handling contact stormwater and coal pile runoff discharged to outfall 003 under the previous arrangement. It is now treated in the CHCR WWTS prior to discharge. Since there is no change in these discharges from the previous arrangement, the discharge is not subject to an antidegradation assessment.

9. The discharge from the unit 4 oil / water separator discharge to outfall 004 under the previous arrangement. This is treatment for wastewaters coming from the Units 1-4, the condensate polisher, and some makeup water discharge. Since the discharge is less than in the previous arrangement, the discharge is not subject to an antidegradation assessment.

10. This discharge consists of hydrostatic test water for testing new tankage at the facility. An antidegradation assessment for this new discharge follows this section.

Outfall A02:

This discharge consists of overflow of the Unit 4 cooling tower in an emergency. It is an intermittent discharge with no change. Since there is no change to this discharge, the discharge is not subject to an antidegradation assessment.

Outfall B02:

This internal outfall consists of the new DCCPS WWTS discharge before it mixes with other discharges listed in outfall 002. See Outfall 002 (2), for a description of the discharge.

Outfall C02:

This internal outfall consists of the CHCR WWTS discharge before it mixes with other discharges listed in outfall 002. See Outfall 002 (8), for a description of the discharge.

Outfall D02:

This internal outfall consists of hydrostatic test water for testing new tankage at the facility. See Outfall 002 (10), for a description of the discharge.

Outfalls 003 and 004:

Outfalls 003 and 004 are the discharge from the former bottom ash pond and fly ash pond, respectively. In the new arrangement, all of this discharge is being hauled off to a landfill. All of the previous ancillary discharges to these outfalls have been either rerouted to outfall 002 or have been eliminated. The only discharge left from each is from stormwater overflow. There are no process discharges of any type at these outfalls. Discharges from these outfalls are expected to be very intermittent. Since the discharge from these outfalls have been significantly decreased compared to the previous arrangement and consists of only stormwater runoff, the discharges are not subject to an antidegradation assessment. The dropping of load limits is due to the removal of process wastewater and is not considered anti-backsliding.

The interim effluent limits during cleanout are no longer required and will be eliminated from the permit.

Outfall 006:

This outfall consists of the main intake screen backwash. Illinois River water is used to wash traveling screens at the intake at periodic intervals. Since less cooling water is required in the new arrangement, the screen needs to be backwashed less often. The DAF has been lowered from 0.54 MGD to 0.3 MGD. Because the discharge is less than it was under the previous arrangement, the discharge is not subject to an antidegradation assessment.

The total discharge of phosphorus from outfall 002 will increase to a maximum discharge of 105.4 pounds per day (see antidegradation assessment below) with an average discharge that is far lower. The discharge meets the threshold pursuant to 35 Ill. Adm. Code 304.123(g)(2). A 1 mg/L concentration limit for phosphorus has been added to outfall 002.

FutureGen 2.0 Project Effects on the Intake and Outfall Flows		
	Previous Flows	FutureGen 2.0 Operation Flows
Object	(MGD)	(MGD)
River Water Intake	217.4	13.367
Well Water Intake	0.2	0.1
Total	217.6	13.467
Outfall 001	173.4	Intermittent
Outfall 002	12.3	10.3
Outfall 003	2.4	Intermittent
Outfall A03	0.3 MGY	Eliminated
Outfall 004	0.4	Intermittent
Outfall 006	0.5	0.3
Total	189.0	10.6

The modification to the Ameren – Meredosia Energy Center would results in approximately a 94% reduction in both total intake water and total discharge to the Illinois River compared to the previous arrangement.

FutureGen 2.0 Project Effects on Loads to the Illinois River

Constituents	Historical Meredosia Energy Center Load (lb/day)	FutureGen 2.0 Load (lb/day)	Energy Center Load Change (lb/day)	Energy Center Percent Reduction (%)
Total Suspended Solids	32,000	8,464	-23,536	73.6%
Nitrate-Nitrite	4,100	1,493	-2,607	63.6%
Phosphorus	570	105	-465	81.5%
Sulfate	100,000	15,672	-84,328	84.3%
Sulfite	1,000	4	-996	99.6%
Aluminum	3,300	134	-3,166	95.9%
Barium	100	14.4	-85.6	85.6%
Boron	300	13.8	-286.2	95.4%
Iron	5,200	214	-4,986	95.9%
Magnesium	40,000	3,174	-36,826	92.1%
Manganese	350	14.8	-335.2	95.8%
Titanium	56.4	4.0	-52.4	92.9%
Arsenic	10	1.3	-8.7	87.0%
Cadmium	1	0.1	-0.9	90.0%
Chromium	10	0.8	-9.2	92.0%
Copper	19	0.6	-18.4	96.8%
Lead	8	0.6	-7.4	92.5%
Mercury	No Data	*	N/A	N/A
Nickel	8	6.0	-2.0	25.0%
Selenium	10	1.4	-8.6	86.0%
Zinc	270	2.6	-267.4	99.0%
Total	187,312	29,320	-157,992	84.3%

The modification to the Ameren – Meredosia Energy Center would results in approximately an 84.4% reduction in total loading by lb/day to the Illinois River compared to the previous arrangement.

*Will meet the water quality standard of 12 ng/L.

Antidegradation Assessment for Ameren Energy Generating Company – FutureGen Industrial Alliance, Inc. Modification
NPDES Permit No. IL0000116 Morgan County

FutureGen Industrial Alliance Inc. in cooperation with Ameren Energy Resources intends to build an electric generation station on the site of the Ameren Meredosia Energy Center. The Ameren Meredosia plant has a current NPDES permit but the plant has been inactive since late 2011. Three coal fired generation units at the old plant will be removed for the FutureGen project. A fourth oil fired unit will be removed and replace with a coal fired unit with a unique carbon dioxide capturing apparatus. The carbon dioxide will be piped to a nearby underground injection site. The closure of the old plant results in a decrease of pollutant loading from the thermal and ash pond discharges to the Illinois River. Wastewater generated from the scrubbing of boiler flue gas at the new plant will contain several pollutants that will not be entirely be offset by the elimination of the old effluents. The applicant submitted an antidegradation assessment to IEPA contained in a document entitled National Pollution Discharge Elimination System (NPDES) Permit Modification, June 18, 2013 prepared by URS Corporation.

Identification and Characterization of the Affected Water Body.

Wastewater effluents will be discharged to the Illinois River, which has a 7Q10 flow of 3700 cfs. The Illinois River is a General Use water segment code D-32. The Illinois River is listed as impaired in the draft 2012 Illinois Integrated Water Quality Report and Section 303(d) List for fish consumption and primary contact uses. The causes of impairment for fish consumption use are given as mercury and PCBs and the cause of primary contact use impairment is given as fecal coliform bacteria. The Illinois River at this location is not listed as a biologically significant stream in the 2008 Illinois Department of Natural Resources Publication *Integrating Multiple Taxa in a Biological Stream Rating System*, nor is either given an integrity rating. The Illinois River is not designated as an enhanced water pursuant to the dissolved oxygen water quality standard.

The applicant has had conversations with the Illinois Department of Natural Resources concerning the presence of mussel beds in the Illinois River given that FutureGen will generate new quantities of pollutants. While thermal input to the river will drop dramatically, other effluent constituents will be present in increased quantities from the previous use of the site. IDNR identified a mussel bed on the opposite site of the river from the current and future discharges as the nearest pertinent resource. Allowed mixing granted to the FutureGen effluent will not impact the mussel bed.

Identification of Proposed Pollutant Load Increases or Potential Impacts on Uses.

Outfall 002 will consist of coal pile runoff and contact stormwater, Compression and Purification Unit (CPU) condensate and non-contact cooling water blowdown, Direct Contact Cooler – Polishing System (DCCPS) cooling tower blowdown (contact cooling water), main cooling tower blowdown, Air Separation Unit/CPU cooling tower blowdown, reverse osmosis reject water, hydrostatic testing water, demineralization building sumps, oily service water, boiler drains/sampling losses, process condensate/steam losses, coal handling dust suppression water, bottom ash handling water, strainer backwash water, boiler air heater washes, boiler fire side washes and fire protection water. The existing facility has coal pile runoff as a component of the wastewater streams as will the new plant. The main cooling tower blowdown for the new facility is offset by existing discharges, however, the chemical treatment additives will be reviewed under antidegradation as new additions.

The applicant summarized the loading of effluent constituents from the previous function of the site from sources other than once-through cooling water, and has compared this loading to the projected effluent constituents when the site operates as FutureGen. While the FutureGen configuration eliminates fly ash and bottom ash pond effluent, and minimizes thermal effluent, new processes will generate other pollutants, sometimes in larger quantities. Pollutants that will see an overall increase in loading are sulfate and phosphorus. The source of the additional sulfate is mainly the DCCPS. The source of additional phosphorus is mainly from the anti-corrosion additives to the DCCPS and CPU. Concentrations of sulfate in the effluent will meet the water quality standard of 1678 mg/L. The increase in sulfate loading is estimated to be 2,000 pounds per day. The phosphorus loading at the previous facility was 5.6 pounds per day. This load will increase to a total of 105.7 pounds per day. Since this load is more than that which requires regulation under 35 IAC 302.123, a permit limit for phosphorus of 1 mg/L and 142 lb/day will be imposed.

FutureGen provided a list of proposed water treatment additives to be utilized in the clarifier, reverse osmosis (RO) unit, boilers, cooling towers, coal storage/handling areas and wastewater treatment system. The majority of these products are bulk commodity materials that are required for treatment of makeup water or treatment of effluent for attainment of permit limitations. These include flocculants and coagulants (various formulations of anionic and cationic products), sodium hypochlorite (primary disinfectant) and sodium bisulfite/sodium metabisulfite (dechlorination), biological wastewater treatment aids (carbon sources for denitrification) and pH adjusters (sulfuric acid, lime, sodium hydroxide, ammonia, and sodium phosphate (maximum phosphorus discharge estimated at 0.3 lb/day as P)). The associated outfalls will have permit limits that protect against misuse of these products (e.g., pH, TRC, TSS, BOD). Use of these products is approved. A review of specialty products is provided below. Use of phosphorus-based antiscalants and corrosion inhibitors at this facility would result in a maximum total loading of approximately 105.7 lb/day of phosphorus (as P) into the receiving water and would therefore require a monthly average phosphorus limit of 1 mg/L (as P). Actual loading of phosphorus may prove to be lower once the facility begins operations and the anti-corrosion needs are fine-tuned.

Hypersperse MDC714: The product is a phosphonic acid-based product (3-7%) that would be applied at 2 ppm (0.5 gpd product/day) into the RO system, which is well below toxicity estimates for the product (48 hour *Daphnia magna* NOEC = 1,000 mg/L). The product would

be contained within the RO reject and therefore would not be discharged. Use of the product is approved.

Organosulfide - 15% TMT (trimercapto-s-triazine): The product is a metals precipitant that would be applied at 20 ppm into the wastewater treatment system, which is well below toxicity estimates for the product (Fish acute NOEC = 1,500 mg/L). The product would be primarily removed with precipitated metals and any residuals would be non-detectable in effluent. Use of the product is approved.

GenGard GN7300: The product is a corrosion inhibitor that would be applied at 5 ppm into the main cooling tower and ASU cooling tower (total of 49.5 gpd), which is well below toxicity estimates for the product (Fathead minnow/*Daphnia magna* acute NOEC = 2,100 mg/L). The product is composed of 60-100% phosphonic acid and is estimated to result in a maximum of 105.6 lb/day of phosphorus discharged from Outfall 002.

GenGard GN7007: The product is a corrosion inhibitor that would be applied with GN7300 at 5 ppm into the main cooling tower and ASU cooling tower (total of 49.5 gpd), which is well below toxicity estimates for the product (*Daphnia magna* acute NOEC = 1,950 mg/L). Use of the product is approved.

AQUCAR 545: The product is a microbiocide comprised of 45% glutaraldehyde that would be applied at 100 ppm once per day into the DCCPS cooling tower. The active ingredient (glutaraldehyde) would be primarily consumed within the cooling towers and any residuals would be rapidly degraded to non-detectable concentrations once received by the wastewater treatment system. Use of the product is approved.

Puroaldehyde 15: The product is a microbiocide comprised of 15% glutaraldehyde that would be applied at 100 ppm once per day into the DCCPS cooling tower. The active ingredient would be primarily consumed within the cooling tower and any residuals would be rapidly degraded to non-detectable concentrations once received by the wastewater treatment system. Use of the product is approved.

Bellacide 350: The product is a microbiocide comprised of 50% tributyl tetradecyl phosphonium chloride that would be applied at 20 ppm into the DCCPS cooling tower. The product is highly toxic (96 hour bluegill LC50 = 0.06 mg/L) but the active ingredient is rapidly biodegradable (>50% within 2 hours and 99% within 96 hours in the presence of activated sludge) and would be primarily consumed within the cooling tower. Any product residuals not consumed within the cooling tower would be rapidly degraded to non-detectable concentrations once received by the wastewater treatment system. Use of the product is approved.

BIOCHEK 20: The product is a microbiocide comprised of 15-25% 2,2-dibromo-3-nitrilopropionamide (DBNPA) that would be applied at 40 ppm into DCCPS cooling tower. The active ingredient (DBNPA) is highly toxic to aquatic life (48 hour *Daphnia magna* LC50 = 0.9 mg/L) but is rapidly biodegradable (half-life of DBNPA at pH 8 is approximately 1 hour) and would be primarily consumed within the cooling tower. Any product residuals not consumed in the cooling tower would be degraded to non-detectable concentrations once received by the wastewater treatment system. Use of the product is approved.

Biomate MBC 2881: The product is a microbiocide comprised of 20% 2,2-dibromo-3-nitrilopropionamide (DBNPA) that would be applied at 40 ppm into DCCPS cooling tower. The product is moderately toxic (96 hour rainbow trout LC50 = 2.3 mg/L) but the active ingredient is rapidly biodegradable (half-life of DBNPA at pH 8 is approximately 1 hour) and would be primarily consumed within the cooling tower. Any product residuals not consumed in the cooling tower would be degraded to non-detectable concentrations once received by the wastewater treatment system. Use of the product is approved.

Cortrol OS5607: The product is an oxygen scavenger/metal passivator composed of carbonic dihydrazide (5-10%) that would be applied at 0.75 ppm into the boiler feedwater. The product would be dosed at a non-toxic concentration according to product toxicity estimates (48 hour *Ceriodaphnia* LC50 = 160 ppm). Use of the product is approved.

Anodamine: The product is a corrosion inhibitor composed of a proprietary filming amine that would be applied at 0.5 ppm into the boiler feedwater. The product would be dosed at a non-toxic concentration according to product toxicity estimates (96 hour fathead minnow LC50 = 49,210 ppm). Use of the product is approved.

The new effluent is isolated from the mussel bed and therefore no adverse impact to mussels is anticipated. No adverse impact to the river biota is anticipated from sulfate or phosphorus, the two parameters expected to have an increase in loading compared to the previous discharge. The site will no longer have significant thermal discharges.

Fate and Effect of Parameters Proposed for Increased Loading.

Sulfate and phosphorus will continue to move downstream unless taken in by aquatic life in biological processes. After mixing, concentrations will be indistinguishable from those found upstream. No adverse impacts to the receiving stream will occur as all water quality standards will be met outside of a small area of allowed mixing.

Purpose and Social & Economic Benefits of the Proposed Activity.

FutureGen will be an important employer for the local community. Approximately 1,000 construction jobs will be created. The applicant reports that 125 to 160 supply train jobs will be added in the community as well as the estimated 108 to 136 full time employees that facility

would hire. In addition to direct economic benefits to the community, the facility will provide a demonstration for the capture and sequestration of carbon dioxide from a commercial scale coal-fired boiler.

Assessments of Alternatives for Less Increase in Loading or Minimal Environmental Degradation.

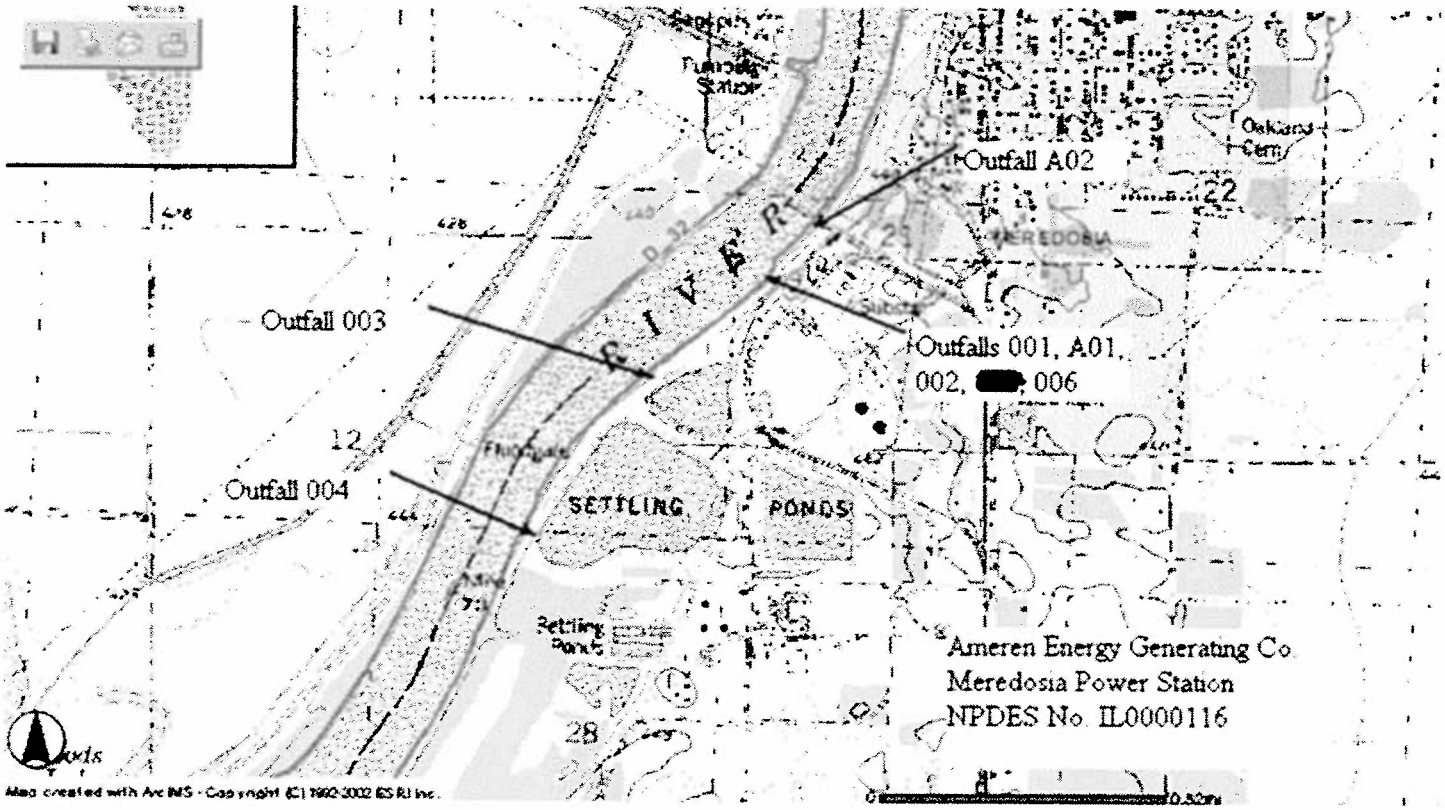
The design of FutureGen automatically eliminates water pollution sources normally associated with coal-fired power plants in that fly ash and bottom ash ponds are not utilized and no significant wastewaters result from ash handling. Preparation of the boiler gases for sequestration is an integral part of the process and the metals and other substances removed from the gases will be treated by chemical precipitation and biological treatment to reduce contaminants.

Summary Comments of the Illinois Department of Natural Resources, Regional Planning Commissions, Zoning Boards or Other Entities

The Illinois Department of Natural Resources was consulted on endangered species issues via the Eco-CAT system on April 30, 2013. Consultation was not terminated immediately because of two nearby INAI sites and the nearby presence of an endangered mussel, the ebonyshell. A May 3, 2013 letter terminating consultation was received by the applicant. In the letter IDNR indicates that protected resources in the vicinity of the proposed effluent discharge are unlikely to be adversely impacted.

Agency Conclusion.

This preliminary assessment was conducted pursuant to the Illinois Pollution Control Board regulation for Antidegradation found at 35 Ill. Adm. Code 302.105 (antidegradation standard) and was based on the information available to the Agency at the time the draft permit was written. We tentatively find that the proposed activity will result in the attainment of water quality standards; that all existing uses of the receiving stream will be maintained; that all technically and economically reasonable measures to avoid or minimize the extent of the proposed increase in pollutant loading have been incorporated into the proposed activity; and that this activity will benefit the community at large by creating jobs and the state and nation by developing energy resources that sequester carbon dioxide. Comments received during the NPDES permit public notice period will be evaluated before a final decision is made by the Agency.


Outfall A02
Outfall 003
Outfalls 001, A01, 002, [redacted] 006
Outfall 004
SETTLING PONDS
Ameren Energy Generating Co.
Meredosia Power Station
NPDES No. IL0000116

NPDES Permit No. IL0000116

Illinois Environmental Protection Agency

Division of Water Pollution Control

1021 North Grand Avenue East

Post Office Box 19276

Springfield, Illinois 62794-9276

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

Modified (NPDES) Permit

Expiration Date: October 31, 2016

Issue Date: September 30, 2011
Effective Date: November 1, 2011
Modification Date:

Name and Address of Permittee:
Ameren Energy Generating Company
1901 Chouteau Avenue
P.O. Box 66149, MC - 602
St. Louis, MO 63166

Facility Name and Address:
Meredosia Energy Center
800 South Washington Street
Meredosia, Illinois 62665
(Morgan County)

Discharge Number and Name:	Receiving Waters:
001 – Stormwater Runoff from Units 1, 2, and 3	Illinois River
002 – Main Cooling Tower Blowdown, CPU, DCCPS, and ASU Discharges, Misc. Discharges	Illinois River
A02 – Cooling Tower Emergency Overflow	Illinois River
B02 – Direct Contact Cooler Polishing System WWTS	Internal Outfall
C02 – Coal Handling Contact Stormwater WWTS	Internal Outfall
D02 – Hydrostatic Test Water	Internal Outfall
003 – Stormwater Runoff from Former Bottom Ash Pond	Illinois River
004 – Stormwater Runoff from Former Fly Ash Pond	Illinois River
006 – Intake Screen Backwash	Illinois River

In compliance with the provisions of the Illinois Environmental Protection Act, Title 35 of Ill. Adm. Code, Subtitle C and/or Subtitle D, Chapter 1, and the Clean Water Act (CWA), the above-named permittee is hereby authorized to discharge at the above location to the above-named receiving stream in accordance with the standard conditions and attachments herein.

Permittee is not authorized to discharge after the above expiration date. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit the proper application as required by the Illinois Environmental Protection Agency (IEPA) not later than 180 days prior to the expiration date.

Alan Keller, P.E.
Manager, Permit Section
Division of Water Pollution Control

SAK:MEL:13061209.bah

NPDES Permit No. IL0000116

Effluent Limitations and Monitoring

From the Modification date of this permit until the expiration date, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

PARAMETER	LOAD LIMITS lbs/day DAF (DMF) 30 DAY AVERAGE	LOAD LIMITS lbs/day DAF (DMF) DAILY MAXIMUM	CONCENTRATION LIMITS mg/L 30 DAY AVERAGE	CONCENTRATION LIMITS mg/L DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE

Outfall: 001 – Stormwater Runoff (Intermittent Discharge)
Stormwater from Unit 1, 2, and 3 Roof Drains (Intermittent Discharge)

See Special Condition 15 for BAT/BCT Stormwater Rules.

Outfall: 002 – 1. Main Cooling Tower Blowdown (9.78 MGD)

2. B02 - Direct Contact Cooler Polishing System (DCCPS) Wastewater Treatment System (0.32 MGD) which treats:
   A. Compression and Purification Unit (CPU) Wastewater Treatment Plant (0.015 MGD)
   B. DCCPS Cooling Tower Blowdown (0.307 MGD)

3. Air Separation Unit (ASU)/CPU Cooling Tower Blowdown (0.1 MGD)

4. Area Oil/Water Separators (0.017 MGD) which treats ASU, CPU, and Boiler Island Service Water

5. Strainer Backwash (0.011 MGD)

6. Demineralization Building Sumps (0.029 MGD)

7. Process Condensate/Steam Loss (0.0012 MGD)

8. C02 - Coal Handling Contact Stormwater (CHCS) Wastewater Treatment System (0.004 MGD + Intermittent) treating:
   A. Contact Stormwater (Intermittent Discharge)
   B. Stormwater Detention Pond containing Coal Pile Runoff and Coal Yard Service Wastewater (0.004 + Intermittent)

9. Unit 4 Oil / Water Separator (0.03 MGD) which treats:
   A. U4 Bearing Cooling Water Makeup (< 100 GPD)
   B. Condensate Polisher Waste (0.00086 MGD)
   C. U1, U2, U3, and U4 Sump Pumps (0.0288 MGD)

10. D02 - Hydrostatic Discharge (Intermittent Discharge)

Total Discharge = 10.3 MGD

Flow	See Special Condition 1				Continuous	24-Hour Total
Total Residual Chlorine*		7.1		0.05	1/Week	Grab
Total Chromium	17	28	0.2	0.2	1/Month	Composite
Total Zinc	86	142	1	1	1/Month	Composite
Total Phosphorus		142		1	1/Month	Grab
Total Nitrogen				Monitor Only	1/Quarter	Grab
Mercury**				Monitor Only	1/Month	Grab

* See Special Condition 7.
**See also Special Condition 6.

Modificaton Date:

NPDES Permit No. IL0000116

Effluent Limitations and Monitoring

From the Modification date of this permit until the expiration date, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

PARAMETER	LOAD LIMITS lbs/day DAF (DMF) 30 DAY AVERAGE	LOAD LIMITS lbs/day DAF (DMF) DAILY MAXIMUM	CONCENTRATION LIMITS mg/L 30 DAY AVERAGE	CONCENTRATION LIMITS mg/L DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE
Outfall A02 – Cooling Tower Emergency Overflow (Intermittent Discharge)						
Flow	See Special Condition 1				Daily When Discharging	24-Hour Total
Outfall B02 – Direct Contact Cooler Polishing System (DCCPS) Wastewater Treatment System (WWTS) (0.32 MGD) which treats: A. Compression and Purification Unit (CPU) Wastewater Treatment Plant (0.015 MGD) B. DCCPS Cooling Tower Blowdown (0.307 MGD)						
Flow	See Special Condition 1				Continuous	24-Hour Total
pH	See Special Condition 2				1/Month	Grab
Total Suspended Solids	80	517	30	100	1/Month	Grab
Oil and Grease	40	103	15	20	1/Month	Grab
Total Chromium	0.53	1.03	0.2	0.2	1/Month	Grab
Total Zinc	2.7	5.1	1	1	1/Month	Grab
Outfall C02 – Coal Handling Contact Stormwater (CHCS) Wastewater Treatment System (0.004 MGD + Intermittent) which treats: A. Contact Stormwater (Intermittent Discharge) B. Stormwater Detention Pond containing Coal Pile Runoff and Coal Yard Service Wastewater (0.004 + Intermittent)						
Flow	See Special Condition 1				Continuous	24-Hour Total
pH	See Special Condition 2				1/Month	Grab
Total Suspended Solids				50	1/Month	Grab

Modificaton Date:

NPDES Permit No. IL0000116

Effluent Limitations and Monitoring

From the Modification date of this permit until the expiration date, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

PARAMETER	LOAD LIMITS lbs/day DAF (DMF) 30 DAY AVERAGE	LOAD LIMITS lbs/day DAF (DMF) DAILY MAXIMUM	CONCENTRATION LIMITS mg/L 30 DAY AVERAGE	CONCENTRATION LIMITS mg/L DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE
Outfall D02 – Hydrostatic Test Water (Intermittent Discharge)						
Flow	See Special Condition 1				Continuous*	24-Hour Total
pH	See Special Condition 2				Daily*	Grab
Total Suspended Solids			15	30	Daily*	Grab
Oil and Grease			15	30	Daily*	Grab
Total Iron			2	4	Daily*	Grab

*Samples shall be on a daily basis when discharging.

If there is no discharge of hydrostatic test water during the calendar month, indicate "No Discharge" on the DMR form.

When test water is discharge to the same water body from which it was withdrawn, compliance with pH, total suspended solids, oil and grease, and iron is not required when effluent concentrations in excess of the standards result entirely from influent contamination, evaporation, and/or the incidental addition of trace materials not utilized or produced in the hydrostatic test activity that is the source of the waste.

Solid wastes such as straw used for filtering or erosion control shall be disposed of in accordance with state and federal law.

Outfall: 003* – Stormwater Runoff from Former Bottom Ash Pond (Intermittent Discharge)
Outfall: 004* – Stormwater Runoff from Former Fly Ash Pond (Intermittent Discharge)

				Measure When Monitoring	Single Reading
Flow	See Special Condition 1				
pH	See Special Condition 2			3/Week*	Grab
Total Suspended Solids		30	100	1/Week*	Composite
Oil & Grease		15	20	1/Week*	Composite
Mercury**			Monitor Only	1/Month*	Grab

* Monitoring shall occur only during a discharge. If the pond(s) do not discharge during a calendar month, report "No Discharge" on the DMR form. See also Special Condition 15 for BAT/BCT stormwater rules.
**See also Special Condition 6.

Outfall: 006 – Intake Screen Backwash (Discharge = 0.3 MGD)

Total Residual Chlorine*		0.05	2/Month	Grab

*See also Special Condition 7.

Special Conditions

SPECIAL CONDITION 1. Flow shall be measured in units of Million Gallons per Day and reported as a monthly average and a daily maximum on the monthly discharge monitoring report.

SPECIAL CONDITION 2. pH shall be in the range 6.0 to 9.0 and shall be reported as a daily maximum and a daily minimum.

SPECIAL CONDITION 3. This facility meets the allowed mixing criteria for thermal discharges at the edge of the mixing zone in the Illinois River, pursuant to 35 IAC 302.102. No reasonable potential exists for the discharge to cause exceedances of the thermal water quality standards in the Illinois River.

SPECIAL CONDITION 4. If an applicable effluent standard or limitation is promulgated under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the Clean Water Act and that effluent standard or limitation is more stringent than any effluent limitation in the permit or controls a pollutant not limited in the NPDES Permit, the Agency shall revise or modify the permit in accordance with the more stringent standard or prohibition and shall so notify the permittee.

SPECIAL CONDITION 5. The Permittee shall record monitoring results on Discharge Monitoring Report (DMR) Forms using on e such form for each outfall each month.

In the event that an outfall does not discharge during a monthly reporting period, the DMR Form shall be submitted with no discharge indicated.

The Permittee may choose to submit electronic DMRs (eDMRs) instead of mailing paper DMRs to the IEPA. More information, including registration information for the eDMR program, can be obtained on the IEPA website, http://www.epa.state.il.us/water/edmr/index.html.

The completed Discharge Monitoring Report forms shall be submitted to IEPA no later than the 28th day of the following month, unless specified by the permitting authority. Permittees not using eDMRs shall mail Discharge Monitoring Reports with an original signature to the IEPA at the following address:

Illinois Environmental Protection Agency
Division of Water Pollution Control
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

Attention: Compliance Assurance Section, Mail Code #19

SPECIAL CONDITION 6. All samples for mercury must be analyzed by EPA Method 1631E using the digestion procedure described in Section 11.1.1.2 of 1631E, which dictates that samples must be heated at 50°C for 6 hours in a bromine chloride (BrCl) solution in closed vessels.

SPECIAL CONDITION 7. All samples for Total Residual Chlorine shall be analyzed by an applicable method contained in 40 CFR 136, equivalent in accuracy to low-level amperometric titration. Any analytical variability of the method used shall be considered when determining the accuracy and precision of the results obtained.

SPECIAL CONDITION 8. There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

SPECIAL CONDITION 9. Ameren Energy Generating Company has complied with Section 302.211(f) of Title 35, Chapter 1, Subtitle C: Water Pollution Regulations by demonstrating that thermal discharge from the Meredosia Energy Center has not caused and cannot reasonably be expected to cause significant ecological damage to the Illinois River as approved by the IPCB in PCB 78-101 on November 16, 1978. Pursuant to 35 Ill. Adm. Code 302.211(g) no additional monitoring or modification is being required for reissuance of this NPDES permit.

Based on the arrangement prior to the modification, there is significantly less thermal loading to the Illinois River (10.3 MGD of non-contact cooling water versus over 200 MGD of non-contact cooling water in the previous arrangement).

SPECIAL CONDITION 10. Ameren Energy Generating Company's demonstration for the Meredosia Energy Center in accordance with Section 316(b) of the CWA was determined to meet BTA at the time of the demonstration, and was approved by this Agency by letter dated August 16, 1981.

SPECIAL CONDITION 11. Ameren Energy Generating Company design of the cooling water intake structure which consists of closed-cycle cooling affords Best Technology Available (BTA) in accordance with Section 316(b) of the CWA.

Special Conditions

SPECIAL CONDITION 12. If cooling tower maintenance chemicals contains chromium or zinc the cooling tower blowdown and cooling tower emergency overflow shall be monitored for these constituents once/week when discharge occurs by composite sample. The discharge of one hundred twenty-four priority pollutants (40 CFR 423 (Appendix A)) in cooling tower blowdown is prohibited if the pollutants come from cooling tower maintenance chemicals.

SPECIAL CONDITION 13. Any debris from the trash rack or intake screens shall not be returned to the river but shall be properly disposed of.

SPECIAL CONDITION 14. Samples taken in compliance with the effluent monitoring requirements shall be taken at a point representative of the discharge, but prior to entry into the receiving stream.

SPECIAL CONDITION 15. The Agency has determined that the effluent limitations in this permit constitute BAT/BCT for storm water which is treated in the existing treatment facilities for purposes of this permit reissuance, and no pollution prevention plan will be required for such storm water. In addition to the chemical specific monitoring required elsewhere in this permit, the permittee shall conduct an annual inspection of the facility site to identify areas contributing to a storm water discharge associated with industrial activity, and determine whether any facility modifications have occurred which result in previously-treated storm water discharges no longer receiving treatment. If any such discharges are identified the permittee shall request a modification of this permit within 30 days after the inspection. Records of the annual inspection shall be retained by the permittee for the term of this permit and be made available to the Agency on request.

SPECIAL CONDITION 16. The Permittee shall monitor the effluent from Outfalls 002, 003 and 004 for the following parameters on a 2/year basis. This Permit may be modified with public notice to establish effluent limitations if appropriate, based on information obtained through sampling. The sample shall be a 24-hour effluent composite except as otherwise specifically provided below and the results shall be submitted on the DMR's to IEPA. The parameters to be sampled and the minimum reporting limits to be attained are as follows:

STORET CODE	PARAMETER	Minimum reporting limit
10197	Antimony	5.0 ug/L
01002	Arsenic	0.05 mg/L
01007	Barium	0.5 mg/L
01027	Cadmium	0.001 mg/L
01032	Chromium (hexavalent) (grab)	0.01 mg/L
01034	Chromium (total)	0.05 mg/L
01042	Copper	0.005 mg/L
00718	Cyanide (weak acid dissociable) (grab)	5.0 ug/L
00720	Cyanide (total) (grab not to exceed 24-hour holding time)	5.0 ug/L
00951	Fluoride	0.1 mg/L
01045	Iron (total)	0.5 mg/L
01046	Iron (Dissolved)	0.5 mg/L
01051	Lead	0.05 mg/L
01055	Manganese	0.5 mg/L
01067	Nickel	0.005 mg/L
32730	Phenols (grab)	0.005 mg/L
01147	Selenium	0.005 mg/L
01077	Silver (total)	0.003 mg/L
10159	Thallium	5.0 ug/L
01092	Zinc	0.025 mg/L

In addition to the testing listed above, outfall 002 shall also be tested for ammonia, chloride, sulfate and sulfate at the same interval.

Unless otherwise indicated, concentrations refer to the total amount of the constituent present in all phases, whether solid, suspended or dissolved, elemental or combined, including all oxidation states.

SPECIAL CONDITION 17. There shall be no discharge of complexed metal bearing waste streams and associated rinses from chemical metal cleaning unless this permit has been modified, subject to public notice and opportunity for hearing, to allow the new discharge.

SPECIAL CONDITION 18. The use or operation of this facility shall be by or under the supervision of a Certified Class K operator.

SPECIAL CONDITION 19. Allowed mixing is recognized for silver at outfall 002.

SPECIAL CONDITION 20. The permittee shall conduct biomonitoring of the effluent from Outfall 002. The permittee shall conduct

biomonitoring of the effluent discharge within one year of the expiration date of this permit. The results shall be submitted with the permit renewal application.

Biomonitoring

1. Acute Toxicity - Standard definitive acute toxicity tests shall be run on at least two trophic levels of aquatic species (fish, invertebrate) representative of the aquatic community of the receiving stream. Except as noted here and in the IEPA document AEffluent Biomonitoring and Toxicity Assessment@, testing must be consistent with Methods for Measuring the Acute Toxicity of Effluents to Aquatic Organisms EPA-600/4-90-027. Unless substitute tests are pre-approved; the following tests are required:

   a. Fish - 96 hour static LC_{50} Bioassay using one to two week old fathead minnows (Pimephales promelas).

   b. Invertebrate 48-hour static LC_{50} Bioassay using Ceriodaphnia.

2. Testing Frequency - The above tests shall be conducted on a one time basis using 24-hour composite effluent samples unless otherwise authorized by the Agency. Results shall be reported according to EPA/600/4-90/027, Section 12, Report Preparation, and shall be submitted to IEPA with the renewal application.

3. Toxicity Assessment - Should the review of the results of the biomonitoring program identify toxicity, the Agency may require that the permittee prepare a plan for toxicity reduction evaluation and identification. This plan shall include an evaluation to determine which chemicals have a potential for being discharged in the plant wastewater, a monitoring program to determine their presence or absence and to identify other compounds which are not being removed by treatment, and other measures as appropriate.

   The Agency may modify this permit during its term to incorporate additional requirements or limitations based on the results of any biomonitoring. In addition, after review of the monitoring results, the Agency may modify this permit to include numerical limitations for specific toxic pollutants. Modifications under this condition shall follow public notice and opportunity for hearing.