

217/782-2113

FEDERALLY ENFORCEABLE STATE OPERATING PERMIT - RENEWAL

PERMITTEE

Metropolitan Water Reclamation  
District of Greater Chicago  
Calumet Water Reclamation Plant  
Attn: Chief of Maintenance and Operations  
100 East Erie Street  
Chicago, Illinois 60611

Application No.: 75050146

I.D. No.: 031600DQO

Applicant's Designation: CALUMET WRP

Date Received: February 22, 2001

Subject: Publicly Owned Treatment Works

Date Issued:

Expiration Date:

Location: 400 East 130th Street, Chicago, 60628

Permit is hereby granted to the above-designated Permittee to OPERATE emission source(s) and/or air pollution control equipment consisting of 3 ozonators, 2 storage tanks, plant boiler Nos. 1, 2, and 3, digester boiler Nos. 1, 2, 3, 4, 5, and 6, centrifuge boiler Nos. 1 and 2, Tarp boiler, 10 unit heaters, digester flare Nos. 1, 2, 3, 4, 5, 6, and 7, and machining operation as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

- 1a. This federally enforceable state operating permit is issued to limit the emissions of air pollutants from the source to less than the levels at which the source would be a major source, (i.e., 100 tons/yr for nitrogen oxide (NO<sub>x</sub>) and carbon monoxide (CO) and 25 tons/yr for volatile organic material (VOM)) as further described in Attachment A. As a result the source is excluded from the requirements to obtain a Clean Air Act Permit Program permit.
- b. Prior to issuance, a draft of this permit has undergone a public notice and comment period.
- c. This permit supersedes the current permit(s) issued for this location.
2. The emissions of Hazardous Air Pollutants (HAPs) as listed in Section 112(b) of the Clean Air Act shall not equal or exceed 10 tons per year of any single HAP or 25 tons per year of any combination of such HAPs, or such lesser quantity as USEPA may establish in rule which would require the Permittee to obtain a CAAPP permit from the Illinois EPA. As a result of this condition, this permit is issued based on the emissions of any HAP from this source not triggering the requirement to obtain a CAAPP permit from the Illinois EPA.
- 3a. Operation of the plant boiler Nos. 1, 2, and 3, digester boiler Nos. 1, 2, 3, 4, 5, and 6, centrifuge boiler Nos. 1 and 2, Tarp boiler, and 10 unit heaters shall not exceed the following limits:

Natural Gas Usage: 30.1 x 10<sup>6</sup> scf/month or 301 x 10<sup>6</sup> scf/year

- b. Operation of the plant boiler Nos. 1 and 2, and digester boiler Nos. 1, 2, 3, 4, 5, and 6 shall not exceed the following limits:

Digester Gas Usage: 156 x 10<sup>6</sup> scf/month or 1560 x 10<sup>6</sup> scf/year

- c. Operation of the digester flare Nos. 1, 2, 3, 4, 5, 6, and 7 shall not exceed the following limits:

Digester Gas Usage: 29.0 x 10<sup>6</sup> scf/month or 290 x 10<sup>6</sup> scf/year

- d. Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the proceeding 11 months.
  - e. Use of any other fuel then natural gas or digester gas requires a permit revision.
- 4a. Natural gas-fired fuel combustion emissions of nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), volatile organic material (VOM), sulfur dioxide (SO<sub>2</sub>), and particulate matter (PM) from the 6 digester boilers, 3 plant boilers, 2 centrifuge boilers, tarp boiler, and 10 unit heaters shall not exceed the following limits:

Pollutant	Fuel Usage		Emission Factor (lb/10 <sup>6</sup> scf)	Emissions	
	(10 <sup>6</sup> scf/Mo)	(10 <sup>6</sup> scf/yr)		(T/Mo)	(T/Yr)
NO <sub>x</sub>	30.1	301	100	1.51	15.05
CO	30.1	301	84	1.27	12.64
VOM	30.1	301	5.5	0.1	0.83
SO <sub>2</sub>	30.1	301	0.6	0.01	0.1
PM	30.1	301	7.6	0.12	1.14

- b. Digester gas-fired combustion emissions of nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), volatile organic material (VOM), sulfur dioxide (SO<sub>2</sub>), and particulate matter (PM) from the 6 digester boilers and plant boilers No. 1 and No. 2 shall not exceed the following limits:

Pollutant	Fuel Usage		Emission Factor (lb/mmscf)	Emissions	
	(mmscf/Mo)	(mmscf/yr)		(T/Mo)	(T/Yr)
NO <sub>x</sub>	156	1,560	60	4.7	46.8
CO	156	1,560	50.4	4.0	39.31
VOM	156	1,560	3.3	2.6	2.57
SO <sub>2</sub>	156	1,560	42	3.3	32.76
PM	156	1,560	4.6	0.4	3.56

- c. Digester gas-fired fuel combustion emission of nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), volatile organic material (VOM), sulfur dioxide

(SO<sub>2</sub>), and particulate matter (PM) from the 7 digester flares shall not exceed the following limits:

<u>Pollutant</u>	<u>Fuel Usage</u>		<u>Emission Factor</u> (lb/mmscf)	<u>Emissions</u>	
	(mmscf/Mo)	(mmscf/yr)		(T/Mo)	(T/Yr)
NO <sub>x</sub>	29	29	40.8	0.66	5.92
CO	29	29	330	4.8	47.9
VOM	29	29	84	1.3	12.2
SO <sub>2</sub>	29	29	42	0.61	6.1

This table defines the potential emissions of the equipment specified in Condition 3 and are based on the fuel fired, standard AP-42 emission factors for the equipment specified in Condition 3(a), standard AP-42 emission factors for equipment specified in Condition 3(b) at 600 Btu/scf except SO<sub>2</sub> which is based upon stack testing of similar equipment, and alternative emission factors for the equipment specified in Condition 3(c) except SO<sub>2</sub> which is based upon stack testing of similar equipment.

5. Emissions and operation of 3 ozonators shall not exceed the following limits:

<u>Item of Equipment</u>	<u>Ozone Produced</u>		<u>NO<sub>x</sub> Emissions</u>		<u>SO<sub>2</sub> Emissions</u>	
	(Lb/Mo)	(T/Yr)	(Lb/Mo)	(T/Yr)	(Lb/Mo)	(T/Yr)
3 Ozonators	3000	15.00	90	0.45	5,950	35.7

6. This permit is issued based on negligible emissions of volatile organic material from the 2 storage tanks. For this purpose emissions from each emission source, shall not exceed nominal emission rates of 0.1 lb/hour and 0.44 ton/yr from each emission unit.
7. This permit is issued based on negligible emissions of particulate matter from machining operation. For this purpose, emissions shall not exceed nominal emission rates of 0.1 lb/hour and 0.44 ton/year.
8. The Permittee shall maintain records of the following items:
- Ozone produced in the ozonators (lb/month and ton/year).
  - Natural gas usage (10<sup>6</sup> scf/month and 10<sup>6</sup> scf/year) for the equipment specified in Condition 3(a).
  - Digester gas usage (10<sup>6</sup> scf/month and 10<sup>6</sup> scf/year) for the equipment specified in Condition 3(b).
  - Digester gas usage (10<sup>6</sup> scf/month and 10<sup>6</sup> scf/year) for the equipment specified in Condition 3(c).
  - Detailed calculations of all emissions for the fuel combustion emissions units as calculated by the actual natural gas and

digester gas usage and the emission factors specified in Condition 4 (lb/month and ton/year).

- f. NO<sub>x</sub> and SO<sub>2</sub> emissions from the ozonators as calculated by the ozone produced and an emission factor of 0.03 pounds of NO<sub>x</sub> per pound of ozone produced (lb/month and ton/yr).
9. All records and logs required by this permit shall be retained at a readily accessible location at the source for at least three years from the date of entry and shall be made available for inspection and copying by the Illinois EPA upon request. Any records retained in an electronic format (e.g., computer) shall be capable of being retrieved and printed on paper during normal source office hours so as to be able to respond to an Illinois EPA request for records during the course of a source inspection.
10. If there is an exceedance of the requirements of this permit as determined by the records required by this permit, the Permittee shall submit a report within 30 days after the exceedance. The report shall include the emissions released in accordance with the recordkeeping requirements, a copy of the relevant records, and a description of the exceedance or violation and efforts to reduce emissions and future occurrences.
11. Two (2) copies of required reports and notifications concerning equipment operation or repairs, performance testing or a continuous monitoring system shall be sent to:

Illinois Environmental Protection Agency  
Division of Air Pollution Control  
Compliance Section (#40)  
P.O. Box 19276  
Springfield, Illinois 62794-9276

and one (1) copy shall be sent to the Illinois EPA's regional office at the following address unless otherwise indicated:

Illinois Environmental Protection Agency  
Division of Air Pollution Control  
9511 West Harrison  
Des Plaines, Illinois 60016

12. The Permittee shall submit the following additional information with the Annual Emissions Report, due May 1st of each year: natural gas usage, digester gas usage, and ozone produced from the prior calendar year. If there have been no exceedances during the prior calendar year the Annual Emissions Statement shall include a statement to that effect.

It should be noted that the two diesel storage tanks are exempt from state permit requirements, pursuant to 35 Ill. Adm. Code 201.146(n).

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It should be noted that this permit has been revised to reflect the change in AP-42 standard emission factors for fuel combustion sources.

If you have any questions on this, please call Tara T. Nguyen-Ede at 217/782-2113.

Donald E. Sutton, P.E.  
Manager, Permit Section  
Division of Air Pollution Control

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cc: IEPA Region 1  
CASM  
Lotus Notes

Attachment A - Emissions Summary

This attachment provides a summary of the maximum emissions from the water reclamation plant operating in compliance with the requirements of this federally enforceable permit. In preparing this summary, the Illinois EPA used the annual operating scenario which results in maximum emissions from such a plant. The resulting maximum emissions are well below the levels, e.g., 100 tons/yr for NO<sub>x</sub> and CO and 25 tons/yr for VOM at which this source would be considered a major source for purposes of the Clean Air Act Permit Program. Actual emissions from this source will be less than predicted in this summary to the extent that less material is handled and control measures are more effective than required in this permit.

- a. Natural gas-fired fuel combustion emissions of nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), volatile organic material (VOM), sulfur dioxide (SO<sub>2</sub>), and particulate matter (PM) from the 6 digester boilers, 3 plant boilers, 2 centrifuge boilers, tarp boiler, and 10 unit heaters shall not exceed the following limits:

<u>Pollutant</u>	<u>Fuel Usage</u>		<u>Emission Factor</u> (lb/10 <sup>6</sup> scf)	<u>Emissions</u>	
	(10 <sup>6</sup> scf/Mo)	(10 <sup>6</sup> scf/yr)		(T/Mo)	(T/Yr)
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SO <sub>2</sub>	30.1	301	0.6	0.01	0.1
PM	30.1	301	7.6	0.12	1.14

- b. Digester gas-fired combustion emissions of nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), volatile organic material (VOM), sulfur dioxide (SO<sub>2</sub>), and particulate matter (PM) from the 6 digester boilers and plant boilers No. 1 and No. 2 shall not exceed the following limits:

<u>Pollutant</u>	<u>Fuel Usage</u>		<u>Emission Factor</u> (lb/mmscf)	<u>Emissions</u>	
	(mmscf/Mo)	(mmscf/yr)		(T/Mo)	(T/Yr)
NO <sub>x</sub>	156	1,560	60	4.7	46.8
CO	156	1,560	50.4	4.0	39.31
VOM	156	1,560	3.3	2.6	2.57
SO <sub>2</sub>	156	1,560	42	3.3	32.76
PM	156	1,560	4.6	0.4	3.56

- c. Digester gas-fired fuel combustion emission of nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), volatile organic material (VOM), sulfur dioxide (SO<sub>2</sub>), and particulate matter (PM) from the 7 digester flares shall not exceed the following limits:

<u>Pollutant</u>	<u>Fuel Usage</u>		<u>Emission Factor</u> (lb/mmscf)	<u>Emissions</u>	
	(mmscf/Mo)	(mmscf/yr)		(T/Mo)	(T/Yr)
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2. Emissions and operation of 3 ozonators shall not exceed the following limits:

<u>Item of Equipment</u>	<u>Ozone Produced</u>		<u>NO<sub>x</sub> Emissions</u>		<u>SO<sub>2</sub> Emissions</u>	
	<u>(Lb/Mo)</u>	<u>(T/Yr)</u>	<u>(Lb/Mo)</u>	<u>(T/Yr)</u>	<u>(Lb/Mo)</u>	<u>(T/Yr)</u>
3 Ozonators	3000	15.00	90	0.45	5,950	35.7

3. This permit is issued based on negligible emissions of volatile organic material from the 2 storage tanks. For this purpose emissions from each emission source, shall not exceed nominal emission rates of 0.1 lb/hour and 0.44 ton/yr from each emission unit.
4. This permit is issued based on negligible emissions of particulate matter from machining operation. For this purpose, emissions shall not exceed nominal emission rates of 0.1 lb/hour and 0.44 ton/year.
5. The emissions of Hazardous Air Pollutants (HAP) as listed in Section 112(b) of the Clean Air Act shall be less than 10 tons/year of any single HAP and 25 tons/year of any combination of such HAPs. As a result of this condition, this permit is issued based on the emissions of all HAPs from this source not triggering the requirements to obtain a Clean Air Act Permit Program Permit (CAAPP), and Section 112(G) of the Clean Air Act.

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