PERMIT NO. GW1810162

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

GROUNDWATER DISCHARGE PERMIT

In compliance with the provisions of Michigan's Natural Resources and Environmental Protection Act, 1994 P.A. 451, as amended (NREPA), Part 31, Water Resources Protection, and Part 41, Sewerage Systems,

Eagle Mine LLC
(a Subsidiary of Lundin Mining Corporation)
Eagle Mine Waste Water Treatment Facility
4547 County Road 601
Champion, Michigan 49814

is authorized to discharge 504,000 gallons per day, 184,000,000 gallons per year of mine contact water, from the **Eagle Mine Waste Water Treatment Facility** located at

6510 Triple A Road
Michigamme, Michigan 49861

designated as **Eagle Mine WWTF**

to the groundwater of the State of Michigan in accordance with effluent limitations, monitoring requirements and other conditions set forth in this permit.

Rule Authorization:	**2218**
Wastewater Type:	**Mine Contact Water**
Wastewater Treatment Method:	**Hydrocarbon Removal, Degassification, Multiflo Clarifier (metals precipitation), Multimedia Filtration, Ion Exchange, Double Pass Reverse Osmosis, Final pH Adjustment, Solids Treatment: Filter Press, Evaporation/Crystallizer**
Wastewater Disposal Method:	**Rapid Infiltration Basins**

The issuance of this permit does not authorize violation of any federal, state or local laws or regulations, nor does it obviate the necessity of obtaining such permits, including any other Michigan Department of Environmental Quality (Department) permits, or approvals from other units of government as may be required by law.

This permit is based on a complete application submitted on July 6, 2012.

This permit takes effect on April 1, 2015. The provisions of this permit are severable. After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term in accordance with applicable laws and rules.

This permit and the authorization to discharge shall expire at midnight, April 1, 2018. In order to receive authorization to discharge beyond the date of expiration, the permittee shall submit an application which contains such information, forms, and fees as are required by the Department by October 3, 2017.

Issued March 25, 2015.

Rick D. Rusz, Chief
Groundwater Permits Unit
Permits Section, Water Resources Division

PERMIT FEE REQUIREMENTS

In accordance with Section 324.3122 of the NREPA, the permittee shall make payment of an annual permit fee to the Department for each December 15th the permit is in effect regardless of occurrence of discharge. The permittee shall submit the fee in response to the Department's annual notice. The fee shall be postmarked by March 1st for notices mailed by January 15th. The fee is due no later than 45 days after receiving the notice for notices mailed after January 15th.

CONTACT INFORMATION

Unless specified otherwise, all contact with the Department required by this permit shall be made to the Upper Peninsula District Supervisor of the Water Resources Division. The Upper Peninsula District Office is located at 1504 West Washington Street, Marquette, Michigan 49855, Telephone: 906-228-4853, Fax: 906-228-4939.

CONTESTED CASE INFORMATION

Any person who is aggrieved by this permit may file a sworn petition with the Michigan Administrative Hearing System of the Michigan Department of Licensing and Regulatory Affairs, setting forth the conditions of the permit which are being challenged and specifying the grounds for the challenge. The Department of Licensing and Regulatory Affairs may reject any petition filed more than 60 days after issuance as being untimely.

PART I

1. Effluent Limitations

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the Eagle Mine WWTF is authorized to discharge a maximum of 504,000 gallons per day, 184,000,000 gallons per year of mine contact water from the monitoring points listed below to the groundwater in the NW ¼ of the NE ¼, Section 12, T50N, R29W, Michigamme Township, Marquette County, Michigan. The discharge shall be limited and monitored by the permittee as specified below.

Parameter	Monthly Ave Limit	Maximum Daily Limit	Units	Frequency of Analysis*	Sample Type
REVERSE OSMOSIS INFLUENT: Monitoring Point IF-1					
Flow		Report	GPD	Daily	Report Total
Flow		Report	GPY	Annually	Calculation
Biochemical Oxygen Demand (BOD_5)		Report	mg/l	2x/month	24 hr composite
Dissolved Oxygen		Report	mg/l	2x/month	24 hr composite
Total Inorganic Nitrogen		Report	mg/l	2x/month	Calculation
Ammonia Nitrogen		Report	mg/l	2x/month	24 hr composite
Nitrate Nitrogen		Report	mg/l	2x/month	24 hr composite
Nitrite Nitrogen		Report	mg/l	2x/month	24 hr composite
pH (Minimum)		Report	S.U	2x/month	Grab
pH (Maximum)		Report	S.U	2x/month	Grab
Total Phosphorus		Report	mg/l	2x/month	24 hr composite
Total Chloride		Report	mg/l	2x/month	24 hr composite
Total Sodium		Report	mg/l	2x/month	24 hr composite
Specific Conductance		Report*	umhos/cm	2x/month	Measurement
Total Aluminum		Report	mg/l	2x/month	24 hr composite
Total Antimony		Report	ug/l	2x/month	24 hr composite
Total Arsenic		Report	ug/l	2x/month	24 hr composite
Total Barium		Report	ug/l	2x/month	24 hr composite
Total Beryllium		Report	ug/l	2x/month	24 hr composite
Total Boron		Report	ug/l	2x/month	24 hr composite
Total Cadmium		Report	ug/l	2x/month	24 hr composite
Total Chromium		Report	ug/l	2x/month	24 hr composite
Total Cobalt		Report	ug/l	2x/month	24 hr composite
Total Copper		Report	ug/l	2x/month	24 hr composite
Total Fluoride		Report	ug/l	2x/month	24 hr composite
Total Iron		Report	ug/l	2x/month	24 hr composite
Total Lead		Report	ug/l	2x/month	24 hr composite
Total Lithium		Report	ug/l	2x/month	24 hr composite
Total Manganese		Report	ug/l	2x/month	24 hr composite
Total Mercury		Report	ng/l	2x/month	Grab
Total Molybdenum		Report	ug/l	2x/month	24 hr composite
Total Nickel		Report	ug/l	2x/month	24 hr composite
Total Potassium		Report	ug/l	2x/month	24 hr composite
Total Selenium		Report	ug/l	2x/month	24 hr composite
Total Silver		Report	ug/l	2x/month	24 hr composite
Total Strontium		Report	ug/l	2x/month	24 hr composite
Total Sulfate		Report	ug/l	2x/month	24 hr composite
Total Thallium		Report	ug/l	2x/month	24 hr composite
Total Uranium		Report	ug/l	2x/month	24 hr composite
Total Vanadium		Report	ug/l	2x/month	24 hr composite
Total Zinc		Report	ug/l	2x/month	24 hr composite

PART I

Parameter	Monthly Ave Limit	Maximum Daily Limit	Units	Frequency of Analysis*	Sample Type
EFFLUENT: Monitoring Point EQ-1					
Flow		504,000	GPD	Daily	Report Total
Flow		184,000,000	GPY	Annually	Calculation
Biochemical Oxygen Demand (BOD_5)		Report	mg/l		24 hr composite
Dissolved Oxygen		Report	mg/l	Weekly	Grab
Total Inorganic Nitrogen		Report	mg/l	Weekly	Calculation
Ammonia Nitrogen		Report	mg/l	Weekly	24 hr composite
Nitrate Nitrogen		Report	mg/l	Weekly	24 hr composite
Nitrite Nitrogen		Report	mg/l	Weekly	24 hr composite
pH (Minimum)		6.5	S.U	Continuous	Grab
pH (Maximum)		9.0	S.U	Continuous	Grab
Total Phosphorus		Report	mg/l	Weekly	24 hr composite
Total Chloride		Report	mg/l	Weekly	24 hr composite
Total Sodium		Report	mg/l	Weekly	24 hr composite
Specific Conductance		Report*	umhos/cm	Continuous	Measurement
Total Aluminum		Report	mg/l	Weekly	24 hr composite
Total Antimony**		Report	ug/l	Weekly	24 hr composite
Total Arsenic**	6.0	10.0	ug/l	Weekly	24 hr composite
Total Barium**		Report	ug/l	Weekly	24 hr composite
Total Beryllium**		Report	ug/l	Weekly	24 hr composite
Total Boron**		285	ug/l	Weekly	24 hr composite
Total Cadmium**	3.0	5.0	ug/l	Weekly	24 hr composite
Total Chromium**		Report	ug/l	Weekly	24 hr composite
Total Cobalt**		Report	ug/l	Weekly	24 hr composite
Total Copper**	10.0	21.0	ug/l	Weekly	24 hr composite
Total Fluoride		Report	ug/l	Weekly	24 hr composite
Total Iron		300	ug/l	Weekly	24 hr composite
Total Lead**		Report	ug/l	Weekly	24 hr composite
Total Lithium**		Report	ug/l	Weekly	24 hr composite
Total Manganese**		Report	ug/l	Weekly	24 hr composite
Total Mercury	.0021***	Report	ug/l	Weekly	Grab
Total Molybdenum**		Report	ug/l	Weekly	24 hr composite
Total Nickel**		Report	ug/l	Weekly	24 hr composite
Total Potassium		Report	ug/l	Weekly	24 hr composite
Total Selenium**	5.0	25.0	ug/l	Weekly	24 hr composite
Total Silver**	0.4	17.0	ug/l	Weekly	24 hr composite
Total Strontium**		Report	ug/l	Weekly	24 hr composite
Total Sulfate		Report	ug/l	Weekly	24 hr composite
Total Thallium**		Report	ug/l	Weekly	24 hr composite
Total Uranium		Report	ug/l	Weekly	24 hr composite
Total Vanadium**		3.1	ug/l	Weekly	24 hr composite
Total Zinc**		Report	ug/l	Weekly	24 hr composite

LAND APPLICATION

Parameter	Limit	Units	Frequency of Analysis	Sample Type
Monitoring Point: RI1 through RI5				
Rapid Infiltration Basins: 1, 2, 3, 4, & 5				
Application Rate	10	gallons/sq ft	Daily	Calculation

PART I

***Specific Conductance**

a) The permittee must monitor specific conductance continuously, record the daily average and the daily maximum level and report the results to the Department via the Electronic Environmental Discharge Monitoring Reporting (e2-DMR) system. The permittee must calibrate the specific conductance meter weekly, and keep an on-site log of the calibration results. The log must contain the calibration results, date of calibration and the person that performed the calibration. The log shall be made immediately available to the Department upon request.

b) Quarterly, the permittee shall use the formula specified in Attachment I to determine the allowable operating range. A summary of the first quarterly calculation of the AOR will be due July 20, 2015. Subsequent AOR calculation summaries must be submitted by the twentieth of every third month following the first submittal.

c) The AOR determined according to the formula listed in Attachment I, will remain in effect until the AOR is recalculated for the following quarter. The permittee shall submit the calculations showing amount of influent flow that would cause a permit violation if it does not get treated by RO membrane, for each substance limited by the permit and the AOR determined with their monthly operating report for each recalculation of the AOR.

d) If specific conductance levels fall outside the Allowable Operational Range, (AOR), ***the permittee shall immediately cease the discharge.*** The permittee must notify the Department within 24 hours of levels being outside the Allowable Operational Range. The permittee shall also submit a report within seven days, indicating the source of the results and steps taken to bring specific conductance back within the Allowable Operational Range. No discharge shall occur until specific conductance levels are returned within the AOR for a period of 24 hours. Within one day of commencing the discharge, the permittee must also collect effluent quality samples daily for a minimum of five days, to demonstrate compliance with all the limitations in Part I, Section 1 of this permit.

****Method Quantification Level**

e) The appropriate Method Quantification Levels and Methodology are listed in Attachment III unless a higher level is appropriate because of sample matrix interference. Justification for higher quantification levels shall be submitted to the Department within 30 days of such determination. Upon approval of the Department, the permittee may use alternate analytical methods.

*****Mercury**

f) Compliance with the Total Mercury Effluent Limit (TMEL) shall be determined as a 12-month rolling average. The 12-month rolling average shall be determined by adding the present monthly average result to the preceding 11 monthly average results then dividing the sum by 12. The monthly average is the sum of the results of all data obtained in a given month divided by the total number of samples taken. If the 12-month rolling average for any month is less than the TMEL the permittee will be considered to be in compliance for total mercury for that month.

g) The permittee may request a reduction in the monitoring frequency if the data indicate that the 12-month rolling average mercury concentration is less than the TMEL. This request shall contain an explanation as to why the reduced monitoring is appropriate and shall be submitted to the Department. Upon receipt of written approval and consistent with such approval, the permittee may reduce the monitoring frequency for total mercury indicated in Section1 of this permit. The Department may revoke the approval for reduced monitoring at any time upon notification to the permittee.

Total Mercury Testing and Reporting Requirements

h) The analytical protocol for total mercury shall be in accordance with EPA Method 1631, Revision E, “Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescence Spectrometry.” The quantification level for total mercury shall be 0.5 ng/l, unless a higher level is appropriate because of sample matrix interference. Justification for higher quantification levels shall be submitted to the Department <u>within 30 days</u> of such determination.

PART I

The use of clean technique sampling procedures is required unless the permittee can demonstrate to the Department that an alternative sampling procedure is representative of the discharge. Guidance for clean technique sampling is contained in: EPA Method 1669, *Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels (Sampling Guidance)*, EPA-821-R96-001, July 1996. Information and data documenting the permittee's sampling and analytical protocols and data acceptability shall be submitted to the Department upon request.

In order to demonstrate compliance with EPA Method 1631E and EPA Method 1669, the permittee shall report, on the daily sheet, the analytical results of all field blanks and field duplicates collected in conjunction with each sampling event, as well as laboratory method blanks when used for blank correction. The permittee shall collect at least one (1) field blank and at least one (1) field duplicate per sampling event. If more than ten (10) samples are collected during a sampling event, the permittee shall collect at least one (1) additional field blank AND field duplicate for every ten (10) samples collected. Only field blanks or laboratory method blanks may be used to calculate a concentration lower than the actual sample analytical results (i.e. a blank correction). Only one (1) blank (field OR laboratory method) may be used for blank correction of a given sample result, and only if the blank meets the quality control acceptance criteria. The field duplicate is for quality control purposes only; its analytical result shall not be averaged with the sample result.

i) **Reduction in Monitoring Frequency**
At any time after six months from the effective date of this permit the permittee may request, in writing, Department approval of a reduction in monitoring frequency for parameters other than flow, pH, specific conductance and mercury. This request shall contain an explanation as to why the reduced monitoring is appropriate. Upon receipt of written approval and consistent with such approval, the permittee may reduce the monitoring frequency indicated in Part I, Section 1 of this permit. The monitoring frequency for parameters other than mercury shall not be reduced to less than monthly. The Department may revoke the approval for reduced monitoring at any time upon notification to the permittee.

j) **Total Inorganic Nitrogen**
The daily maximum value for total inorganic nitrogen shall be reported as the sum of the daily maximum values for ammonia nitrogen, nitrate nitrogen, and nitrite nitrogen.

k) **Sampling Locations**
Influent and effluent flow shall be measured in accordance with the approved Sampling and Analysis Plan. The location and method of collecting and analyzing effluent samples shall be in accordance with the approved Sampling and Analysis Plan. The Department may approve alternate sampling locations which are demonstrated by the permittee to be representative.

PART I

2. Groundwater Monitoring and Limitations (Upgradient/Side Gradient)

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittee shall sample the groundwater from the hydraulically upgradient/side gradient groundwater monitor wells: **QAL026A, QAL026D, QAL029A, QAL029D, QAL053A, QAL055A, QAL056A** and **MW-X** as described below:

Parameter	Maximum Daily Limit	Units	Frequency of Analysis	Sample Type
Static Water Elevation	Report	USGS-Ft	Quarterly	Measured
Bicarbonate	Report	mg/l	Quarterly	Grab
Dissolved Oxygen	Report	mg/l	Quarterly	Grab
Total Inorganic Nitrogen	Report	mg/l	Quarterly	Calculation
Ammonia Nitrogen	Report	mg/l	Quarterly	Grab
Nitrate Nitrogen	Report	mg/l	Quarterly	Grab
Nitrite Nitrogen	Report	mg/l	Quarterly	Grab
pH	Report	S.U.	Quarterly	Grab
Total Phosphorus	Report	mg/l	Quarterly	Grab
Specific Conductance	Report	umhos/cm	Quarterly	Grab
Sulfate	Report	mg/l	Quarterly	Grab
Chloride	Report	mg/l	Quarterly	Grab
Sodium	Report	mg/l	Quarterly	Grab
Aluminum	Report	ug/l	Quarterly	Grab
Antimony	Report	ug/l	Quarterly	Grab
Arsenic	Report	ug/l	Quarterly	Grab
Barium	Report	ug/l	Quarterly	Grab
Beryllium	Report	ug/l	Quarterly	Grab
Boron	Report	ug/l	Quarterly	Grab
Cadmium	Report	ug/l	Quarterly	Grab
Calcium	Report	mg/l	Quarterly	Grab
Chromium	Report	ug/l	Quarterly	Grab
Cobalt	Report	ug/l	Quarterly	Grab
Copper	Report	ug/l	Quarterly	Grab
Fluoride	Report	ug/l	Quarterly	Grab
Iron	Report	ug/l	Quarterly	Grab
Lead	Report	ug/l	Quarterly	Grab
Lithium	Report	ug/l	Quarterly	Grab
Magnesium	Report	mg/l	Quarterly	Grab
Manganese	Report	ug/l	Quarterly	Grab
Mercury	Report	ug/l	Quarterly	Grab
Molybdenum	Report	ug/l	Quarterly	Grab
Nickel	Report	ug/l	Quarterly	Grab
Potassium	Report	mg/l	Quarterly	Grab
Selenium	Report	ug/l	Quarterly	Grab
Silver	Report	ug/l	Quarterly	Grab
Strontium	Report	ug/l	Quarterly	Grab
Thallium	Report	ug/l	Quarterly	Grab
Uranium	Report	ug/l	Quarterly	Grab
Vanadium	Report	ug/l	Quarterly	Grab
Zinc	Report	ug/l	Quarterly	Grab

Sampling Locations

a) Unless an alternative monitoring schedule is approved in the Sampling and Analysis Plan, quarterly sampling shall be in the months of February, May, August and November. Groundwater samples shall be collected and analyzed from each of the specified monitoring wells in accordance with the methods approved by the Department in the Sampling and Analysis Plan. The Department may approve alternate sampling locations which are demonstrated by the permittee to be representative.

PART I

Total Inorganic Nitrogen at Groundwater Monitoring Points

b) The value for total inorganic nitrogen shall be reported as the sum of the values for ammonia nitrogen, nitrate nitrogen, and nitrite nitrogen.

Total Mercury Testing and Reporting Requirements

c) The analytical protocol for total mercury shall be in accordance with EPA Method 1631, Revision E, "Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescence Spectrometry." The quantification level for total mercury shall be 0.5 ng/l, unless a higher level is appropriate because of sample matrix interference. Justification for higher quantification levels shall be submitted to the Department within 30 days of such determination.

The use of clean technique sampling procedures is required unless the permittee can demonstrate to the Department that an alternative sampling procedure is representative of the discharge. Guidance for clean technique sampling is contained in: EPA Method 1669, *Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels (Sampling Guidance)*, EPA-821-R96-001, July 1996. Information and data documenting the permittee's sampling and analytical protocols and data acceptability shall be submitted to the Department upon request.

In order to demonstrate compliance with EPA Method 1631E and EPA Method 1669, the permittee shall report, on the daily sheet, the analytical results of all field blanks and field duplicates collected in conjunction with each sampling event, as well as laboratory method blanks when used for blank correction. The permittee shall collect at least one (1) field blank and at least one (1) field duplicate per sampling event. If more than ten (10) samples are collected during a sampling event, the permittee shall collect at least one (1) additional field blank AND field duplicate for every ten (10) samples collected. Only field blanks or laboratory method blanks may be used to calculate a concentration lower than the actual sample analytical results (i.e. a blank correction). Only one (1) blank (field OR laboratory method) may be used for blank correction of a given sample result, and only if the blank meets the quality control acceptance criteria. The field duplicate is for quality control purposes only; its analytical result shall not be averaged with the sample result.

3. Groundwater Monitoring and Limitations (Downgradient)

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittee shall sample the groundwater from hydraulically downgradient groundwater monitor wells. The discharge of treated wastewater shall not cause the groundwater in monitor wells: **QAL008A, QAL008D, QAL050A, QAL051A, QAL051D, QAL052A, QAL057A, QAL057D, QAL075A** and **QAL075D** to exceed the limitations below.

Parameter	Maximum Daily Limit	Units	Frequency of Analysis	Sample Type
Static Water Elevation	Report	USGS-Ft	Quarterly	Measured
Bicarbonate	Report	mg/l	Quarterly	Grab
Dissolved Oxygen	Report	mg/l	Quarterly	Grab
Total Inorganic Nitrogen	10.0	mg/l	Quarterly	Calculation
Ammonia Nitrogen	10.0	mg/l	Quarterly	Grab
Nitrate Nitrogen	10.0	mg/l	Quarterly	Grab
Nitrite Nitrogen	Report	mg/l	Quarterly	Grab
pH (Minimum)	6.5	S.U.	Quarterly	Grab
pH (Maximum)	9.7	S.U.	Quarterly	Grab
Total Phosphorus	Report	mg/l	Quarterly	Grab
Specific Conductance	Report	umhos/cm	Quarterly	Grab
Sulfate	250	mg/l	Quarterly	Grab
Chloride*	Report	mg/l	Quarterly	Grab
Sodium*	Report	mg/l	Quarterly	Grab
Aluminum	150	ug/l	Quarterly	Grab
Antimony	5.0	ug/l	Quarterly	Grab
Arsenic	6.0	ug/l	Quarterly	Grab

(continued on following page)

PART I

Parameter	Maximum Daily Limit	Units	Frequency of Analysis	Sample Type
Barium	1,000	ug/l	Quarterly	Grab
Beryllium	3	ug/l	Quarterly	Grab
Boron	285	ug/l	Quarterly	Grab
Cadmium	3.0	ug/l	Quarterly	Grab
Calcium	Report	mg/l	Quarterly	Grab
Chromium	52	ug/l	Quarterly	Grab
Cobalt	23	ug/l	Quarterly	Grab
Copper	10	ug/l	Quarterly	Grab
Total Fluoride	1,000	ug/l	Quarterly	Grab
Iron	Report	ug/l	Quarterly	Grab
Lead	3.0	ug/l	Quarterly	Grab
Lithium	88	ug/l	Quarterly	Grab
Magnesium	Report	mg/l	Quarterly	Grab
Manganese	50	ug/l	Quarterly	Grab
Mercury	Report	ug/l	Quarterly	Grab
Molybdenum	22	ug/l	Quarterly	Grab
Nickel	57	ug/l	Quarterly	Grab
Potassium	Report	mg/l	Quarterly	Grab
Selenium	5.0	ug/l	Quarterly	Grab
Silver	0.4	ug/l	Quarterly	Grab
Strontium	2,300	ug/l	Quarterly	Grab
Thallium	1.0	ug/l	Quarterly	Grab
Uranium	Report	ug/l	Quarterly	Grab
Vanadium	3.1**	ug/l	Quarterly	Grab
Zinc	1,200	ug/l	Quarterly	Grab

*The permittee shall comply with the conditions of Part I, Section 11(f) and (g) of this permit if sodium and/or chloride exceeds the specified level.

**MWs QAL008A, QAL051A are report only for vanadium

Sampling Locations

a) Unless an alternative monitoring schedule is approved in the Sampling and Analysis Plan, quarterly sampling shall be in the months of February, May, August and November. Groundwater samples shall be collected and analyzed from each of the specified monitoring wells in accordance with the methods approved by the Department in the Sampling and Analysis Plan. The Department may approve alternate sampling locations which are demonstrated by the permittee to be representative.

Total Inorganic Nitrogen at Groundwater Monitoring Points

b) The daily maximum value for total inorganic nitrogen shall be reported as the sum of the daily maximum values for ammonia nitrogen, nitrate nitrogen, and nitrite nitrogen.

Total Mercury Testing and Reporting Requirements

c) The analytical protocol for total mercury shall be in accordance with EPA Method 1631, Revision E, “Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescence Spectrometry.” The quantification level for total mercury shall be 0.5 ng/l, unless a higher level is appropriate because of sample matrix interference. Justification for higher quantification levels shall be submitted to the Department within 30 days of such determination.

The use of clean technique sampling procedures is required unless the permittee can demonstrate to the Department that an alternative sampling procedure is representative of the discharge. Guidance for clean technique sampling is contained in: EPA Method 1669, *Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels (Sampling Guidance)*, EPA-821-R96-001, July 1996. Information and data documenting the permittee's sampling and analytical protocols and data acceptability shall be submitted to the Department upon request.

PART I

In order to demonstrate compliance with EPA Method 1631E and EPA Method 1669, the permittee shall report, on the daily sheet, the analytical results of all field blanks and field duplicates collected in conjunction with each sampling event, as well as laboratory method blanks when used for blank correction. The permittee shall collect at least one (1) field blank and at least one (1) field duplicate per sampling event. If more than ten (10) samples are collected during a sampling event, the permittee shall collect at least one (1) additional field blank AND field duplicate for every ten (10) samples collected. Only field blanks or laboratory method blanks may be used to calculate a concentration lower than the actual sample analytical results (i.e. a blank correction). Only one (1) blank (field OR laboratory method) may be used for blank correction of a given sample result, and only if the blank meets the quality control acceptance criteria. The field duplicate is for quality control purposes only; its analytical result shall not be averaged with the sample result.

4. Schedule of Compliance

The permittee shall comply with the following schedule. Submittals shall comply with Rule 323.2281 which may be obtained via the internet at http://www.deq.state.mi.us/documents/deq-wmd-part22.pdf. All submittals shall be to the Department.*

a) On or before **May 1, 2015**, the permittee shall submit for review and approval an updated Sampling and Analysis Plan that includes both effluent and groundwater sampling requirements pursuant to Rule 323.2223.

b) On or before **May 1, 2015**, the permittee shall submit for review and approval a work plan for the installation of a monitoring well cluster (QAL075A/D) downgradient of MW QAL008A. The work plan shall also include a proposed new upgradient monitoring well, or alternatively, identify an additional existing upgradient well(s) (MW-X) to include in the groundwater monitoring program.

c) On or before **June 1, 2015**, the permittee shall install the monitoring well cluster downgradient from MW QAL008A and if necessary, the new upgradient monitoring well, in accordance with the approved work plan.

d) On or before **July 15, 2015**, the permittee shall submit for review and approval a final report of monitor well installation and sampling results for background water quality.

e) On or before **September 1, 2015**, the permittee shall submit for review and approval a work plan to address elevated vanadium concentrations in groundwater. The work plan willl include, as appropriate, 1) proposed treatment upgrades designed to prevent further increases in vanadium concentrations in groundwater; 2) proposed response activities to comply with the provisions of Part 201; and 3) a schedule for implementation and completion of all proposed work.

f) Upon receipt of written approval of the work plan required in subsection e, above, the permittee shall implement the work plan in accordance with the approved implementation schedule.

*If any document required to be submitted under this section is disapproved by the Department, the permittee shall, within 30 days of receiving written disapproval, submit a revised document addressing the deficiencies.

5. Operator Certification

The permittee shall have the waste treatment facilities under direct supervision of an operator certified at the appropriate level for the facility certification by the Department, as required by Sections 3110 and 4104 of the NREPA.

6. Submittal Requirements for Self-Monitoring Data

Part 31 of Act 451 of 1994, as amended, specifically Section 324.3110(3) and Rule 323.2155(2) of Part 21 allows the department to specify the forms to be utilized for reporting the required self-monitoring data. Unless instructed on the effluent limitations page to conduct “Retained Self Monitoring” the permittee shall submit self-monitoring data via the Department’s Electronic Environmental Discharge Monitoring Reporting (e2-DMR) system.

PART I

The permittee shall utilize the information provided on the e2-Reporting website @ **https://secure1.state.mi.us/e2rs/** to access and submit the electronic forms. Both monthly summary and daily data shall be submitted to the department no later than the **20th day of the month** following each month of the authorized discharge period(s). The permittee may be allowed to submit the electronic forms after this date if the Department has granted an extension to the submittal date.

For Required Notification:

Upper Peninsula District Office
DEQ-Water Resources Division
1504 West Washington Street
Marquette, Michigan 49855

7. Facility Operation and Maintenance

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittee shall comply with the inspection, operation and maintenance program requirements specified below. If the two-foot minimum freeboard is exceeded, the permittee shall 1) notify the Upper Peninsula District Supervisor of the Water Resources Division within 24 hours of the determination; 2) take immediate measures to reduce flows where possible; and 3) if necessary, prepare to implement the Part 632 required contingency plan.

Location	Condition	Measurement Frequency	Sample Type
Contact Water Basins	Freeboard -2 foot minimum*	Weekly	Visual Observation
	Control Structures	Weekly	Visual Observation
	Dike Integrity	Weekly	Visual Observation
	Vegetation Control	Weekly	Visual Observation
	Nuisance Animals	Weekly	Visual Observation
	Odors	Weekly	Olfactory Observation
Rapid Infiltration Beds	Vegetation Control	Weekly	Visual Observation

*Freeboard means the distance between the highest level of the wastewater and the top of the lagoon.

a) Contact Water Basin Inspection
These inspections shall include:
(1) the area around the lagoon for vegetative growth, erosion, slumping, animal burrowing or breakthrough;
(2) the depth of the water in each cell and the freeboard with a minimum two (2) feet of freeboard* being maintained at all times;
(3) the control structures and pump stations to assure that valves, gates and alarms are set correctly and properly functioning;
(4) the lagoon security fence and warning signs.

b) Contact Water Basin Maintenance
The permittee shall implement a Contact Water Basin Maintenance Program that incorporates the following management practices unless otherwise authorized by the Department.
(1) Vegetation shall be maintained at a height not more than six (6) inches above the ground on lagoon dikes.
(2) Not more than 10 percent of the water surface shall be covered by floating vegetation and not more than 10 percent of the water perimeter may have emergent rooted aquatic plants.
(3) Dike damage caused by erosion, slumping or animal burrowing shall be corrected immediately and steps taken to prevent occurrences in the future.
(4) The integrity of the lagoon liner shall be protected. Liner damages shall be corrected immediately and steps taken to prevent future occurrences.

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(5) A schedule for the inspection and maintenance of the collection system, lift stations, mechanical and electrical systems, transfer stations, and control structures shall be developed and implemented.

c) Contact Water Basin Drawdown Conditions
The permittee shall observe the following conditions when drawing down a cell for transfer or discharge unless otherwise authorized by the Department.
(1) Water discharged shall be removed from the cell at a rate of less than 500 GPM.
(2) The permittee shall maintain a minimum of two feet of freeboard in all cells at all times. Upon written notification, the Department may require a minimum of three feet of freeboard for larger systems.
(3) The permittee shall maintain a minimum of two feet of water in all cells at all times, except with the approval of the DEQ.

8. General Conditions

a) The discharge shall not be, or not be likely to become, injurious to the protected uses of the waters of the state.

b) The discharge shall not cause runoff to, ponding on, or flooding of adjacent property, shall not cause erosion, and shall not cause nuisance conditions.

c) The point of discharge shall be located not less than 100 feet inside the boundary of the property where the discharge occurs, unless a lesser distance is specifically authorized in writing by the Department.

d) The discharge shall not create a facility as defined in Part 201, Environmental Remediation, of the NREPA.

9. Other Conditions

a) **Basis of Design** - The discharge shall be treated in accordance with the approved basis of design pursuant to Rule 323.2218(2).

b) **Wastewater Characterization** - The wastewater being treated shall be of the same chemical, biological, and physical characteristics as described in the characterization required pursuant to Rule 323.2220.

c) **Land Application:**
Rapid Infiltration
(1) The system shall consist of two (2) or more cells or absorption areas that can be alternately loaded and rested or consist of one (1) cell or absorption area preceded by an effluent storage or stabilization pond system. If only one (1) cell or absorption area is provided, then the storage or stabilization pond shall be operated on a fill and draw basis and have sufficient capacity to allow intermittent loading of the cell or absorption area.
(2) For a system that has more than one (1) cell or absorption area, an individual cell or absorption area of the system shall be capable of being taken out of service without disrupting application to other cells or absorption areas of the system.
(3) An appropriate hydraulic loading cycle shall be developed and implemented to maximize long-term infiltration rates and allow for periodic maintenance.

d) **Notification of Changes in Discharge** – If any chemical listed in Attachment II is detected in the effluent monitoring at concentrations greater than 5 times the Expected Effluent Quality specified in Attachment II, the permittee shall notify the Department, in writing, within 10 days of receiving such analytical results. The Department will evaluate the data and notify the permittee in writing if additional monitoring, treatment or other corrective actions are necessary.

e) **Boron Notification** - Should boron levels in the effluent or groundwater reach or exceed 285 ug/l, the permittee must notify the department within 24 hours, and within 7 days submit a report indicating the source of the results and describe the steps taken to bring boron levels back into compliance with this permit.

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f) **Uranium Notification -** Should uranium levels in the effluent reach or exceed 5 ug/l, the permittee must notify the Department within 24 hours, and within seven days submit a report indicating the source of the uranium and describe the steps taken or to be taken to reduce or eliminate the source. The Department may modify the uranium monitoring requirements of this permit, and may require additional activities to address any exceedance of applicable standards for uranium.

g) **Sampling Frequency Reduction** - Pursuant to Rule 323.2223(1), the Department may modify the effluent or groundwater monitoring parameters or frequency requirements of this permit, or they may be modified upon the request of the permittee with adequate supporting documentation.

10. Discharge Management Plan (DMP)

a) A land treatment system shall be designed, constructed, and operated as follows:
   (1) The system shall be designed and constructed to prevent surface runoff from either entering or exiting the system.
   (2) The system shall be designed and constructed to provide even distribution of wastewater during application. A header ditch, where used, shall be designed and constructed to allow for complete drainage after each wastewater loading or shall be lined to prevent seepage.
   (3) If vegetative cover is utilized and is considered part of the overall treatment system, then the design and construction of the system shall allow for the mechanical harvesting of vegetative cover.
   (4) The system shall be designed, constructed, and operated to allow an appropriate loading cycle. An appropriate loading cycle allows time between loadings for all of the following:
      (a) Soil organisms to biologically decompose organic constituents in the wastewater.
      (b) Organic solids on the soil surface to decompose.
      (c) The soil to become aerated.
      (d) Vegetative cover to utilize available nutrients provided through the application of the wastewater.
      (e) Soil conditions to become unsaturated and aerobic.
      (f) Harvesting operations to occur at appropriate times.

b) The design hydraulic loading or application rate, whether daily, monthly, or annual, shall not be more than one of the following:
   (1) Three percent of the permeability of the most restrictive soil layer within the solum over the area of the discharge when determined by either the cylinder infiltration method or air entry permeameter test method.
   (2) Seven percent of the permeability of the most restrictive soil layer within the solum over the area of the discharge as determined by the saturated hydraulic conductivity method.
   (3) Twelve percent of the permeability of the most restrictive soil layer within the solum over the area of the discharge as determined by the basin infiltration method.
   (4) If published information is utilized, the discharger shall determine the methodology used to measure the reported hydraulic conductivity. If the hydraulic conductivity is given as a range of expected values, then a discharger shall use the minimum value given the most restrictive soil layer within the solum when calculating the hydraulic loading or application rate.

c) The system shall be designed, constructed, and operated so as to prevent the development of sodic conditions within the solum of the discharge area. Sodic conditions are considered to exist in the solum when the exchangeable sodium percentage, which is the percentage of the cation exchange capacity of a soil occupied by sodium, is more than 15 percent.

d) All of the following operation and maintenance requirements shall be met:
   (1) Portions of the wastewater distribution system shall be capable of being taken out of service for maintenance and other operational activities and to provide rest to portions of the irrigation area without disrupting applications to other areas of the system.
   (2) All areas within a system shall be accessible for maintenance equipment.
   (3) For slow rate and overland flow treatment systems, the pH of the plow layer within the discharge area shall be maintained between 6.0 and 7.5 standard units.

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e) The discharge to a land treatment system shall be limited so that the discharge volume combined with the precipitation from a 10-year frequency, 24-hour duration rainfall event does not overflow the designed discharge area.

f) If any modifications are made to the management practices or specifications for the land application of wastewater, including but not limited to changes in crops grown, yield goal for those crops, or supplemental fertilization provided by the permittee or a third party, the permittee shall submit a revised DMP on or before November 30 of the year prior to making the proposed change. Based on this submittal, the Department may modify this permit in accordance with applicable rules and laws.

11. Compliance Requirements

Compliance with *all applicable requirements* set forth in Parts 31 and 41 of the NREPA, and related regulations and rules is required. All instances of noncompliance with concentration limitations of effluent or groundwater shall be reported as follows.

a) The permittee shall notify the Department of all instances of noncompliance within 24 hours of making a determination that a limit has been exceeded; and shall include all of the following: 1) the name of the substance(s) for which a limit was exceeded; 2) the concentration at which the substance was found; and 3) the location(s) at which the limit was exceeded.

b) From the time the permittee becomes aware of the noncompliance, the permittee shall resample the monitoring point at which the limit was exceeded for the substance for which a limit was exceeded as follows: within 24 hours for the effluent and within 48 hours for monitoring wells.

c) Within 7 days of resampling, the permittee shall submit a written report that shall include all of the following: 1) the results of the confirmation sampling; 2) an evaluation of the cause for the limit being exceeded and the impact of that event to the groundwater; and 3) a proposal detailing steps taken or to be taken to prevent recurrence.

d) In accordance with applicable rules, the Department may require additional activities including, but not limited, to the following:
   (1) Change the monitoring program, including increasing the frequency of effluent monitoring or groundwater sampling, or both.
   (2) Develop and implement a groundwater monitoring program if one is not in place.
   (3) If the discharge is in a designated wellhead protection area, assess the affects of the discharge on the public water supply system.
   (4) Review the operational or treatment procedures, or both, at the facility.
   (5) Define the extent to which groundwater quality exceeds the applicable criteria that would designate the site as a facility under Part 201.
   (6) Revise the operational procedures at the facility.
   (7) Change the design or construction of the wastewater operations at the facility.
   (8) Initiate an alternative method of waste treatment or disposal.
   (9) If the standard is established by Rule 323.2222(5), reduce or eliminate use of the substance.
   (10) Close the facility or end the discharge that resulted in the applicable standard being exceeded.
   (11) Remediate contamination to comply with the terms of Part 201, if applicable.

e) If the Department determines there is a change in groundwater quality from a normal operating baseline that indicates the concentration of a substance in groundwater may exceed an applicable limit, then the discharger shall take the following actions if required by the Department:
   (1) Change the monitoring program, including increasing the frequency of effluent sampling or groundwater sampling, or both.
   (2) Review the operational or treatment procedures, or both, at the facility.

f) The conditions set forth in subsection g, below shall apply if the discharge from the facility is otherwise in compliance with the sodium and chloride limitations specified in Section 324.3109e(1) of the NREPA and Part 1, Section 1, Effluent Limitations of this permit. In accordance with Section 324.3109e(4) of the NREPA, if the permittee complies with these conditions, the permittee shall not be subject to response activities under Part 201 with respect to the discharge of sodium and chloride.

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g) If the permittee discharges sodium or chloride, or both, into groundwater that migrates off of the property on which the discharge was made and that discharge directly causes the groundwater concentration of sodium or chloride, or both, to exceed the levels of 230 mg/l and 250 mg/l, respectively, provided under Section 324.3109(e)(2) of the NREPA, the permittee shall do all of the following:
   (1) Initiate a sampling program approved by the department to monitor downgradient water supply wells for the levels of sodium or chloride, or both, in the water supply.
   (2) If the concentration of sodium in a downgradient water supply exceeds the level provided under Section 324.3109(e)(2), the permittee shall provide and maintain, for each affected downgradient water supply, free of charge, a point-of-use treatment system approved by the department that will remove sodium from the water supply so as to be in compliance with the level provided under Section 324.3109(e)(2).
   (3) If the concentration of chloride in a downgradient water supply exceeds the level provided under Section 324.3109(e)(2), provide to each affected water supply owner a notice of aesthetic impact with respect to chloride levels.

12. Request for Discharge of Water Treatment Additives

In the event a permittee proposes to discharge water treatment additives (WTAs) to groundwater, the permittee shall submit a request to discharge WTAs to the Department for approval. Such requests shall be sent to the Permits Section, Water Resources Division, Department of Environmental Quality, P.O. Box 30458, Lansing, Michigan 48909, with a copy to the Department contact listed on the cover page of this permit. Instructions to submit a request electronically may be obtained via the internet (http://www.michigan.gov/deqnpdes; then click on Applicable Rules and Regulations, which is under the Information banner and then click on Water Treatment Additive Discharge Application Instructions). Written approval from the Department to discharge such WTAs at specified levels shall be obtained prior to discharge by the permittee. Failure to obtain approval prior to discharging any WTA is a violation of this permit. Additional monitoring and reporting may be required as a condition for the approval to discharge the WTA. WTAs include such chemicals as herbicides used to kill weeds and grasses as part of lagoon maintenance.

A request to discharge WTAs to groundwater shall include all of the following:

a) product Information:
   (1) name of the product;
   (2) Material Safety Data Sheet;
   (3) product function (i.e. microbiocide, flocculants, etc.);
   (4) specific gravity if the product is a liquid; and
   (5) annual product use rate (liquids in gallons per year and solids in pounds per year);

b) ingredient information:
   (1) name of each ingredient;
   (2) CAS number for each ingredient; and
   (3) fractional content by weight for each product;

c) the monitoring point from which the WTA is to be discharged;

d) the proposed WTA discharge concentration;

e) the discharge frequency (i.e., number of hours per day and number of days per year);

f) the type of removal treatment, if any, that the WTA receives prior to discharge;

g) relevant mammalian toxicity studies for the product or all of its constituents (if product toxicity data are submitted, the applicant shall provide information showing that the product tested has the same composition as the product listed under Item “a” above. Preferred studies are subchronic or chronic in duration, use the oral route of exposure, examine a wide array of endpoints and identify a no-observable-adverse-effect-level. Applicants are strongly encouraged to provide the preferred data. If preferred data are not available, then the minimum information needed is an oral rat LD50 study. In addition, an environmental fate analysis that predicts the mobility of the product/ingredients and their potential to migrate to groundwater may be provided.

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h) If the discharge of the WTA to groundwater is within 1,000 feet of a surface water body, the following information shall also be provided:
   (1) a 48-hour LC50 or EC50 for a North American freshwater planktonic crustacean (either Ceriodaphnia sp., Daphnia sp., or Simocephalus sp.); and
   (2) the results of a toxicity test for one other North American freshwater aquatic species (other than a planktonic crustacean) that meets a minimum requirement of Rule 323.1057(2) of the Water Quality Standards.

Prior to submitting the request, the permittee may contact the Permits Section by telephone at 517-284-5568 or via the internet at the address given above to determine if the Department has the product toxicity data required by Item “g” above. If the Department has the data, the permittee will not need to submit product toxicity data.

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Definitions

This list of definitions may include terms not applicable to this permit.

Annual Monitoring Frequency refers to a calendar year beginning on January 1 and ending on December 31. When required by this permit, an analytical result, reading, value or observation must be reported for that period if a discharge occurs during that period.

Biosolids are the solid, semisolid, or liquid residues generated during the treatment of sanitary sewage or domestic sewage in a treatment works. This includes, but is not limited to, scum or solids removed in primary, secondary, or advanced wastewater treatment processes and a derivative of the removed scum or solids.

Bulk Biosolids means biosolids that are not sold or given away in a bag or other container for application to a lawn or home garden.

By-Pass means any diversion from or bypass of facilities necessary to maintain compliance with the terms and conditions of this permit.

Class B Biosolids refers to material that has met the Class B pathogen reduction requirements or equivalent treatment by a Process to Significantly Reduce Pathogens (PSRP) in accordance with the Part 24 Rules. Processes include aerobic digestion, composting, anaerobic digestion, lime stabilization and air drying.

Daily Concentration is the sum of the concentrations of the individual samples of a parameter divided by the number of samples taken during any calendar day. If the parameter concentration in any sample is less than the quantification limit, regard that value as zero when calculating the daily concentration.
For pH, report the maximum value of any individual sample taken during the month and the minimum value of any individual sample taken during the month.

Department means the Michigan Department of Environmental Quality.

Detection Level means the lowest concentration or amount of the target analyte that can be determined to be different from zero by a single measurement at a stated level of probability.

Flow Proportioned sample is a composite sample with the sample volume proportional to the effluent flow.

Furrow Stream is the volume, in gallons per unit time, usually per minute, of wastewater discharged into the furrow.

GPD means gallons per day.

GPY means gallons per year.

Grab Sample is a single sample taken at neither a set time nor flow.

MGD means million gallons per day.

Mg/l is a unit of measurement and means milligrams per liter.

Mine Contact Water means mine dewatering water, contact storm water from the main operations area, water from the temporary development rock storage area; truck wash water and water from the coarse ore storage area (COSA).

Monthly Monitoring Frequency refers to a calendar month. When required by this permit, an analytical result, reading, value or observation must be reported for that period if a discharge occurs during that period.

POTW is a publicly owned treatment works.

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Quantification Level means the measurement of the concentration of a contaminant obtained by using a specified laboratory procedure calculated at a specified concentration above the detection level. It is considered the lowest concentration at which a particular contaminant can be quantitatively measured using a specified laboratory procedure for monitoring of the contaminant.

Quarterly Monitoring Frequency refers to a three month period, defined as January through March, April through June, July through September, and October through December. When required by this permit, an analytical result, reading, value or observation must be reported for that period if a discharge occurs during that period.

Report means there is no limit associated with the individual substance for the medium that is being sampled, that the permittee must only report the result of the laboratory analysis.

Weekly Monitoring Frequency refers to a calendar week which begins on Sunday and ends on Saturday. When required by this permit, an analytical result, reading, value or observation must be reported for that period if a discharge occurs during that period.

24-Hour Composite sample is a flow proportioned composite sample consisting of hourly or more frequent portions that are taken over a 24-hour period.

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As Applicable

1. Start-up Notification

If the permittee will not discharge during the first 60 days following the effective date of this permit, the permittee shall notify the Department within 14 days following the effective date of this permit, and then 60 days prior to the commencement of the discharge.

2. Compliance Dates Notification

Within 14 days of every compliance date specified in this permit, the permittee shall submit a written notification to the Department indicating whether or not the particular requirement was accomplished. If the requirement was not accomplished, the notification shall include an explanation of the failure to accomplish the requirement, actions taken or planned by the permittee to correct the situation, and an estimate of when the requirement will be accomplished. If a written report is required to be submitted by a specified date and the permittee accomplishes this, a separate written notification is not required.

3. Notification of Changes in Discharge, Treatment or Facility Operations

If proposing to modify the quantity or effluent characteristics of the discharge or the treatment process for the discharge, the permittee shall notify the Department of the proposed modification prior to its occurrence. Significant modifications require the permittee to submit an application. A permit modification shall be processed in accordance with applicable rules and laws prior to implementation of the modification.

4. Transfer of Ownership or Control

In the event of any change in control or ownership of facilities from which the authorized discharge emanates, the permittee shall submit to the Department 30 days prior to the actual transfer of ownership or control a written agreement between the current permittee and the new permittee containing: 1) the legal name and address of the new owner; 2) a specific date for the effective transfer of permit responsibility, coverage and liability; and 3) a certification of the continuity of or any changes in operations, wastewater discharge, or wastewater treatment.

If the new permittee is proposing changes in operations, wastewater discharge, or wastewater treatment, the Department may propose modification of this permit in accordance with applicable laws and rules.

5. Electronic Reporting

Upon notice by the Department that electronic reporting tools are available for specific reports or notifications, the permittee shall submit all such reports or notifications as required by this permit, electronically.

6. Representative Samples

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. Guidance on how to collect representative samples is contained in Guidesheet III, “Characterization of Wastewater”, which is available via the internet at http://www.deq.state.mi.us/documents/deq-wmd-gwp-P22GuidshtIII.pdf.

7. Test Procedures

Test procedures for the analysis of pollutants shall conform to regulations promulgated pursuant to Section 304(h) of the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq), 40 CFR Part 136 - Guidelines Establishing Test Procedures for the Analysis of Pollutants, unless specified otherwise in this permit. Requests to use test procedures not defined here shall be submitted to the Department for review and approval. The permittee shall periodically calibrate and perform maintenance procedures on all analytical instrumentation at intervals to ensure accuracy of measurements. The calibration and maintenance shall be performed as part of the permittee’s laboratory Quality Control/Quality Assurance program.

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8. Instrumentation

The permittee shall periodically calibrate and perform maintenance procedures on all monitoring instrumentation at intervals to ensure accuracy of measurements.

9. Recording Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information: 1) the exact place, date, and time of measurement or sampling; 2) the person(s) who performed the measurement or sample collection; 3) the dates the analyses were performed; 4) the person(s) who performed the analyses; 5) the analytical techniques or methods used; 6) the date of and person responsible for equipment calibration; and 7) the results of all required analyses.

10. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation and recordings from continuous monitoring instrumentation shall be retained for a minimum of three (3) years, or longer if requested by the Department.

11. 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 Compliance Monitoring Report. Such increased frequency shall also be indicated.

Monitoring required pursuant to Part 41 of the NREPA or Rule 35 of the Mobile Home Park Commission Act (1987 PA 96) for assurance of proper facility operation shall be submitted as required by the Department.

12. Permit Monitoring Requirements

Pursuant to Rule 323.2223(1), the Department may modify the effluent or groundwater monitoring parameters or frequency requirements of this permit. The permittee may request a modification of the parameters of frequency of monitoring of this permit with adequate supporting documentation.

13. Spill Notification

The permittee shall immediately report any release of any polluting material which occurs to the surface waters or groundwater of the state, unless the permittee has determined that the release is not in excess of the threshold reporting quantities specified in the Part 5 Rules (Rules 324.2001 through 324.2009 of the Michigan Administrative Code), by calling the Department at the number indicated on the first page of this permit, or if the notice is provided after regular working hours call the Department's 24-hour Pollution Emergency Alerting System telephone number, 1-800-292-4706 (calls from out-of-state dial 1-517-373-7660).

Within ten (10) days of the release, the permittee shall submit to the Department a full written explanation as to the cause of the release, the discovery of the release, response (clean-up and/or recovery) measures taken, and preventative measures taken or a schedule for completion of measures to be taken to prevent reoccurrence of similar releases.

14. Upset Noncompliance Notification

If a process "upset" (defined as an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee) has occurred, the permittee who wishes to establish the affirmative defense of upset, shall notify the Department by telephone within 24-hours of becoming aware of such conditions; and within five (5) days, provide in writing, the following information:

a) that an upset occurred and that the permittee can identify the specific cause(s) of the upset;

b) that the permitted wastewater treatment facility was, at the time, being properly operated; and

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c) that the permittee has specified and taken action on all responsible steps to minimize or correct any adverse impact in the environment resulting from noncompliance with this permit.

In any enforcement proceedings, the permittee, seeking to establish the occurrence of an upset, has the burden of proof.

15. Bypass Prohibition and Notification

a) Bypass Prohibition - Bypass is prohibited unless:
   (1) bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
   (2) there were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass; and
   (3) the permittee submitted notices as required under 15.b) or 15.c) below.

b) Notice of Anticipated Bypass - If the permittee knows in advance of the need for a bypass, it shall submit prior notice to the Department, if possible at least ten (10) days before the date of the bypass, and provide information about the anticipated bypass as required by the Department. The Department may approve an anticipated bypass, after considering its adverse effects, if it will meet the three (3) conditions listed in 15.a) above.

c) Notice of Unanticipated Bypass - The permittee shall submit notice to the Department of an unanticipated bypass by calling the Department at the number indicated on the first page of this permit (if the notice is provided after regular working hours, use the following number: 1-800-292-4706) as soon as possible, but no later than 24 hours from the time the permittee becomes aware of the circumstances.

d) Written Report of Bypass - A written submission shall be provided within five (5) working days of commencing any bypass to the Department, and at additional times as directed by the Department. The written submission shall contain a description of the bypass and its cause; the period of bypass, including exact dates and times, and if the bypass has not been corrected, the anticipated time it is expected to continue; steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass; and other information as required by the Department.

e) Bypass Not Exceeding Limitations - The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of 15.a), 15.b), 15.c), and 15.d), above. This provision does not relieve the permittee of any notification responsibilities under Part II, Section 13 of this permit.

f) Definitions
   (1) Bypass means the intentional diversion of waste streams from any portion of a treatment facility.
   (2) Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

16. Facilities Operation

The permittee shall, at all times, properly operate and maintain all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes adequate laboratory controls and appropriate quality assurance procedures.

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17. Power Failures

In order to maintain compliance with the effluent limitations of this permit and prevent unauthorized discharges, the permittee shall either:

a) provide an alternative power source sufficient to operate facilities utilized by the permittee to maintain compliance with the effluent limitations and conditions of this permit; or

b) upon the reduction, loss, or failure of one or more of the primary sources of power to facilities utilized by the permittee to maintain compliance with the effluent limitations and conditions of this permit, the permittee shall halt, reduce or otherwise control production and/or all discharge in order to maintain compliance with the effluent limitations and conditions of this permit.

18. Containment Facilities

The permittee shall provide facilities for containment of any accidental losses of polluting materials in accordance with the requirements of the Part 5 Rules (Rules 324.2001 through 324.2009 of the Michigan Administrative Code). For a Publicly Owned Treatment Work (POTW), these facilities shall be approved under Part 41 of the NREPA.

19. Waste Treatment Residues

Residuals (i.e. solids, sludges, biosolids, filter backwash, scrubber water, ash, grit or other pollutants) removed from or resulting from treatment or control of wastewaters, shall be disposed of in an environmentally compatible manner and according to applicable laws and rules. These laws may include, but are not limited to, the NREPA, Part 31, Water Resources Protection; Part 55, Air Pollution Control; Part 111, Hazardous Waste Management; Part 115, Solid Waste Management; Part 121, Liquid Industrial Wastes; Part 301, Inland Lakes and Streams; and Part 303, Wetland Protection. Such disposal shall not result in any unlawful pollution of the air, surface waters or groundwater of the state.

20. Treatment System Closure

a) In the event that discharges from a treatment system are planned to be eliminated, the permittee shall do the following:
   (1) Eliminate all physical threats associated with discharge related facilities not later than five (5) days after use of the facility has ceased.
   (2) Not less than 75 days before cessation of discharge related activities, characterize any wastewater, sediments and sludges related to the discharge, pursuant to Rule 323.2226(4)(a)(i-iii).

b) Within 30 days of completing the characterization, the discharger shall submit a closure plan to the Department for review and approval that describes how the wastewater, sediments and sludges associated with the discharge will be handled in accordance with Part 31, Part 115, Part 111, or Part 201, as appropriate.

c) Closure activities must be initiated within 30 days of Department approval of the Closure Plan, and must be completed within one (1) year of approval of the Closure Plan.

d) If the groundwater exceeds a standard established by the Department that would result in the site qualifying as a facility under Part 201, then the discharger shall comply with the requirements of Part 201.

e) The Department may require post closure monitoring activities to evaluate the effectiveness of the closure activities. Any wastewater or residual disposal inconsistent with the approved plan shall be considered a violation of this permit. After proper closure of the treatment system, this permit may be terminated.

f) The discharger must certify completion of the approved closure plan. Certification shall be by a qualified person described as follows:
   (1) An engineer licensed under Act No. 299 of the Public Acts of 1980, as amended, being §339.101 et seq. Of the Michigan Compiled Laws, and known as the occupational code.
   (2) A professional geologist certified by the American Institute of Professional Geologists, 7828 Vance Drive, Suite 103, Arvada, Colorado 80003.

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(3) A professional hydrologist certified by the American Institute of Hydrology, 2499 Rice Street, Suite 135, St. Paul, Minnesota 55113.
(4) A groundwater professional certified by the National Ground Water Association, Association of Groundwater Scientists and Engineers Division, 601 Dempsey Road, Westerville, Ohio 43081.
(5) Another groundwater professional certified by an organization approved by the Department.

21. Right of Entry

The permittee shall allow the Department or any agent appointed by the Department, upon the presentation of credentials:

a) to enter upon the permittee's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this permit; and

b) at reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect process facilities, treatment works, monitoring methods and equipment regulated or required under this permit; and to sample any effluent discharge, discharge of pollutants, and groundwater monitoring wells and soils associated with the discharge.

22. Untreated or Partially Treated Sewage Discharge Requirements

In accordance with Section 324.3112a of the Michigan Act, if untreated sewage, including sanitary sewer overflows (SSO) and combined sewer overflows (CSO), or partially treated sewage is directly or indirectly discharged from a sewer system onto land or into the waters of the state, the entity responsible for the sewer system shall immediately, but not more than 24 hours after the discharge begins, notify, by telephone, the Department, local health departments, a daily newspaper of general circulation in the county in which the permittee is located, and a daily newspaper of general circulation in the county or counties in which the municipalities whose waters may be affected by the discharge are located that the discharge is occurring.

At the conclusion of the discharge, written notification shall be submitted in accordance with and on the "CSO/SSO Reporting Form" available via the internet at: http://www.michigan.gov/deq/0,1607,7-135-3313_3682_3715---,00.html, or, alternatively for combined sewer overflow discharges, in accordance with notification procedures approved by the Department.

In addition, in accordance with Section 324.3112a of the Michigan Act, each time a discharge of untreated sewage or partially treated sewage occurs, the permittee shall test the affected waters for *Escherichia coli* to assess the risk to the public health as a result of the discharge and shall provide the test results to the affected local county health departments and to the Department. The testing shall be done at locations specified by each affected local county health department but shall not exceed 10 tests for each separate discharge event. The affected local county health department may waive this testing requirement, if it determines that such testing is not needed to assess the risk to the public health as a result of the discharge event. The results of this testing shall be submitted with the written notification required above, or, if the results are not yet available, submit them as soon as they become available. This testing is not required, if the testing has been waived by the local health department, or if the discharge(s) did not affect surface waters.

Permittees accepting sanitary or municipal sewage from other sewage collection systems are encouraged to notify the owners of those systems of the above reporting and testing requirements.

23. Availability of Reports

Except for data determined to be confidential under Rule 323.2128 of the Michigan Administrative Code, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Department. Effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Sections 3112, 3115, 4106 and 4110 of the NREPA.

PART II

24. Construction Certification

On or before 30 days following completion of construction of any new wastewater treatment facilities after issuance of this permit, pursuant to Rule 323.2218(4)(a), the permittee shall submit a certification that a quality control and quality assurance program was utilized and the facilities constructed were built consistent with standard construction practices to comply with the permit and the NREPA. This certification shall be by an engineer licensed under Act 299 of the Public Acts of 1980.

25. Termination

This permit shall remain in full force and effect until terminated by a written Termination Notice (TN) issued by the Department. Prior to issuance of a written TN, the Permittee shall submit a written request to the Department for termination of this permit.

PART III

1. Discharge to the Surface Waters

This permit does not authorize any discharge to the surface waters. The permittee is responsible for obtaining any permits required by federal or state laws or local ordinances.

2. 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 law or regulation.

3. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize violation of any federal, state or local laws or regulations, nor does it obviate the necessity of obtaining such permits or approvals as may be required by law.

4. Duty to Comply

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of 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.

It is the duty of the permittee to comply with all the terms and conditions of this permit. Any noncompliance with the Effluent Limitations, Conditions, or terms of this permit constitutes a violation of the NREPA and constitutes grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of an application for permit renewal.

5. Civil and Criminal Liability

Nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance, whether or not such noncompliance is due to factors beyond the permittee's control, such as accidents, equipment breakdowns, or labor disputes.

ATTACHMENT I

Formula for Determining the Allowable Operating Range (AOR)

The permittee shall use the following formula to determine the allowable operating range.

AOR = [(Qumin)(Condi) + (Qe – Qumin)(Conde)] / Qe

Where

Qe - effluent flow (authorized flow, 504,000 gpd)

Qu – influent flow that does not get treated by RO membrane

Qumin - lowest Qu at which all effluent limits are met

Condi - average conductivity in wastewater influent over the previous 3 months

Conde - average conductivity in the effluent over the previous 3 months

AOR (maximum allowable conductivity) - conductivity at which all effluent limits are met

Qumin shall be determined by solving the following equation for Qu for every substance with effluent limits in Part I 1. of this permit.

Qe (CL – Ce) / (Ci – Ce) = Qu

The lowest of Qu determined is Qumin.

Ce - effluent concentration for a substance over the previous 3 months

Qe - effluent flow (authorized flow, 504,000 gpd)

CL - effluent limit for a substance

Qu – influent flow that does not get treated by RO membrane

Ci - influent concentration for a substance over the previous 3 months

ATTACHMENT II

EAGLE MINE

Expected Effluent Quality*

PARAMETER	EXPECTED EFFLUENT QUALITY (µg/L)
Aluminum	1.9
Antimony	1
Barium	1.4
Beryllium	0.05
Chloride	44000
Chromium	0.5
Cobalt	9.2
Fluoride	41
Iron	10
Lead	0.5
Lithium	4.2
Manganese	2.4
Molybdenum	1.1
Nickel	4.9
Nitrogen, Ammonia	2328
Nitrate	168
Phosphorus	34
Potassium	7,193
Sodium	30000
Strontium	95
Sulfate	1700
Thallium	0.4
Vanadium	0.4
Zinc	18

The values listed in Attachment II, Expected Effluent Quality, are all below discharge standards specified in Rule 323.2222 of the Part 22 Rules. The values are the effluent quality that the permittee has indicated can be achieved by the treatment process approved pursuant to the Basis of Design required in Rule 323.2218(2).

Under Section 8.d) of the permit, if any parameter exceeds the expected effluent quality by five times, the permittee must notify the Department. The Department will then evaluate the data and determine if additional sampling, corrective action or treatment are needed.

ATTACHMENT III

EAGLE MINE

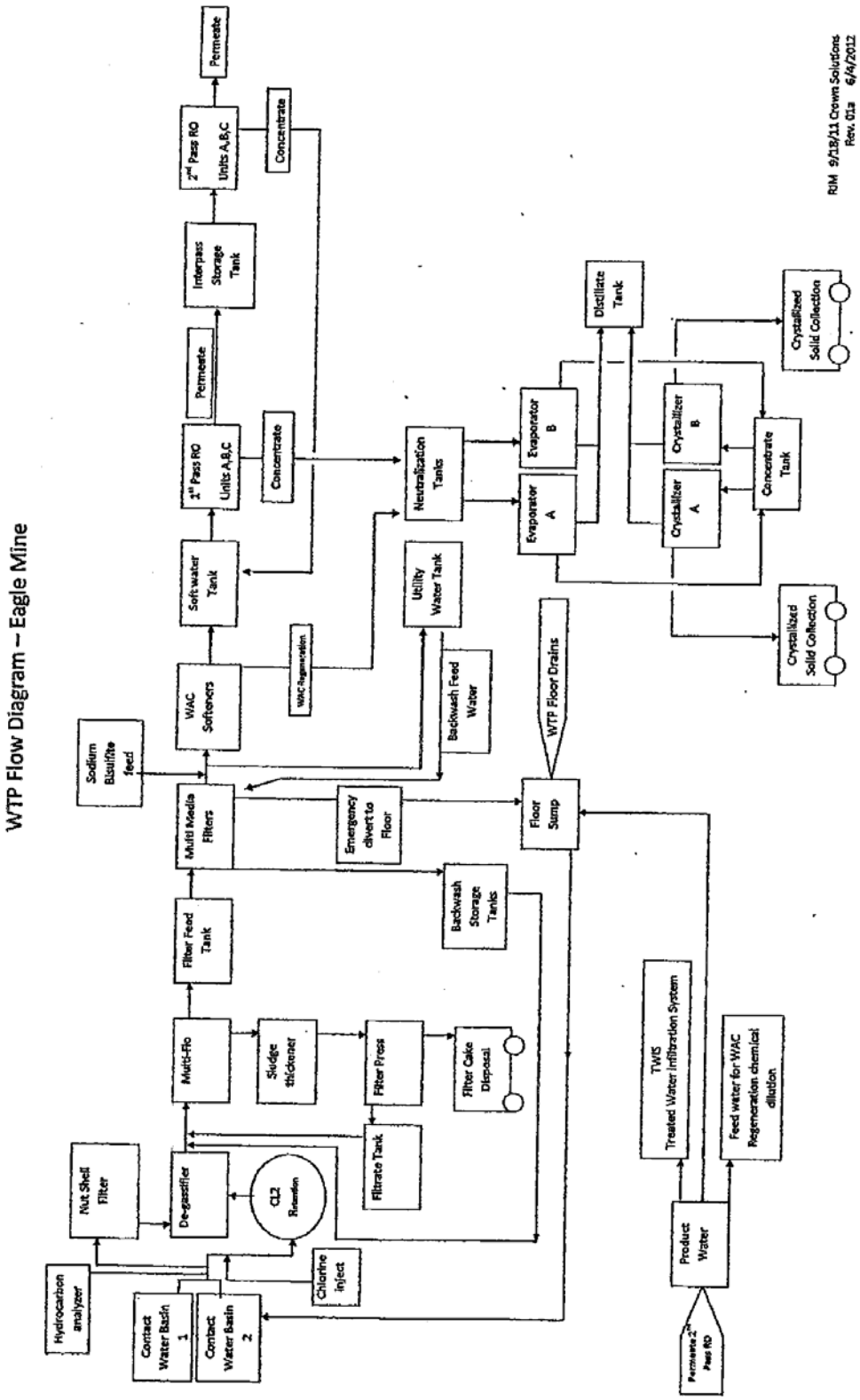
Maximum Method Quantification Levels* for comparison with Michigan's Water Quality Standards**

Pollutant	Analytical Methods USEPA/SW-846	QL (µg/L)
Antimony	200.8/6020	1
Arsenic	200.8/6020	1
Barium	200.8/6020	5
Beryllium	200.8/6020	1
Boron	200.8/6020	20
Cadmium	200.8/6020	0.2
Chromium	200.8/6020	1
Copper	200.8/6020	1
Cobalt	200.8/6020	15
Lead	200.8/6020	1
Lithium	200.8/6020	8
Manganese	200.8/6020	5
Molybdenum	200.8/6020	5
Nickel	200.8/6020	2
Selenium	200.8/6020	1
Silver	200.8/6020	0.2
Strontium	200.8/6020	5
Thallium	200.8/6020	2
Vanadium	200.8/6020	2
Zinc	200.8/6020	10

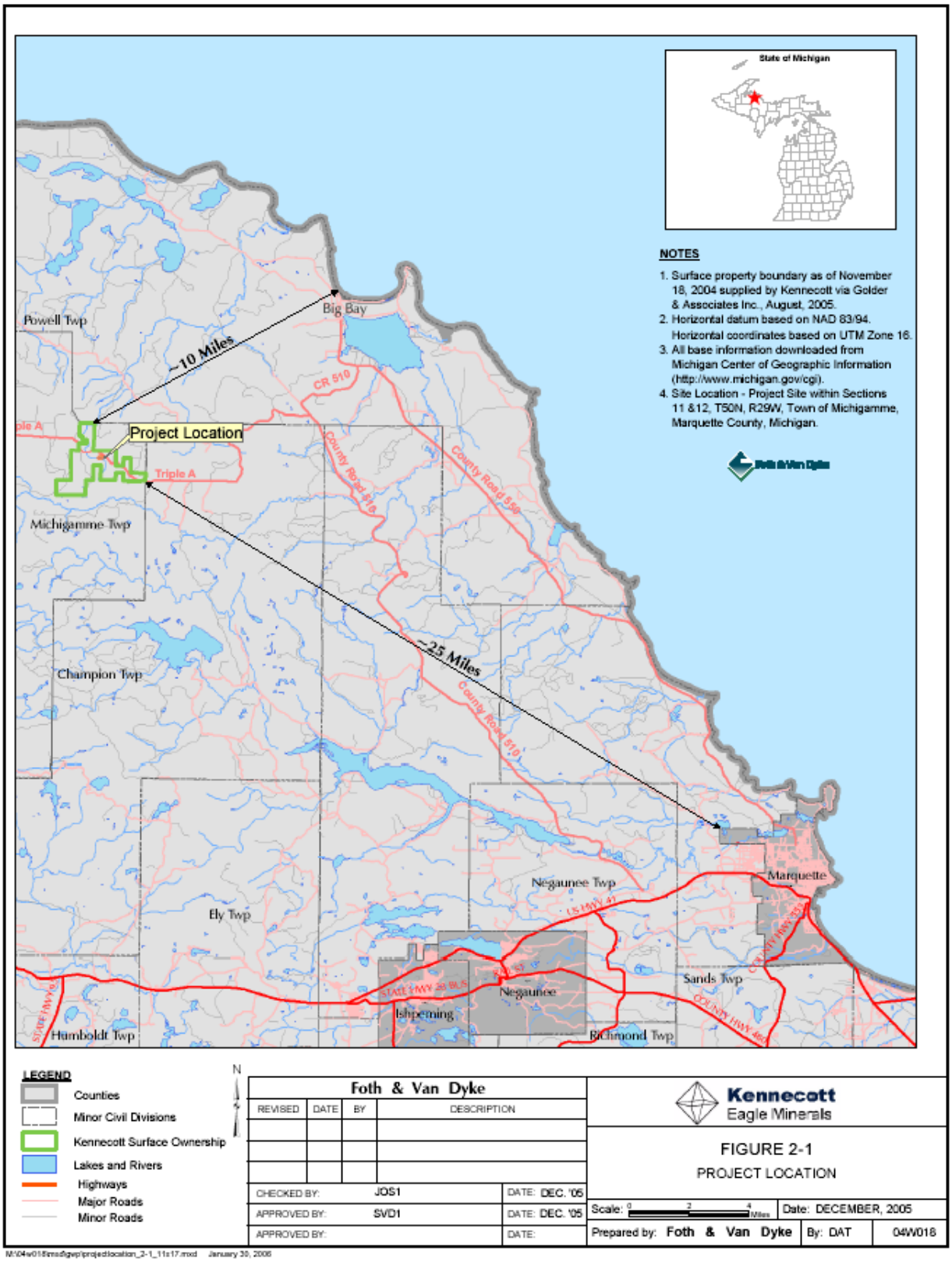
* **Quantification level** means the measurement of the concentration of a contaminant obtained by using a specified laboratory procedure calculated at a specified concentration above the detection level. It is considered the lowest concentration at which a particular contaminant can be quantitatively measured using a specified laboratory procedure for monitoring of the contaminant.

****Water Quality Standards** means the Part 4 Water Quality Standards promulgated pursuant to Part 31 of Act No. 451 of the Public Acts of 1994, as amended, being Rules 323.1041 through 323.1117 of the Michigan Administrative Code.

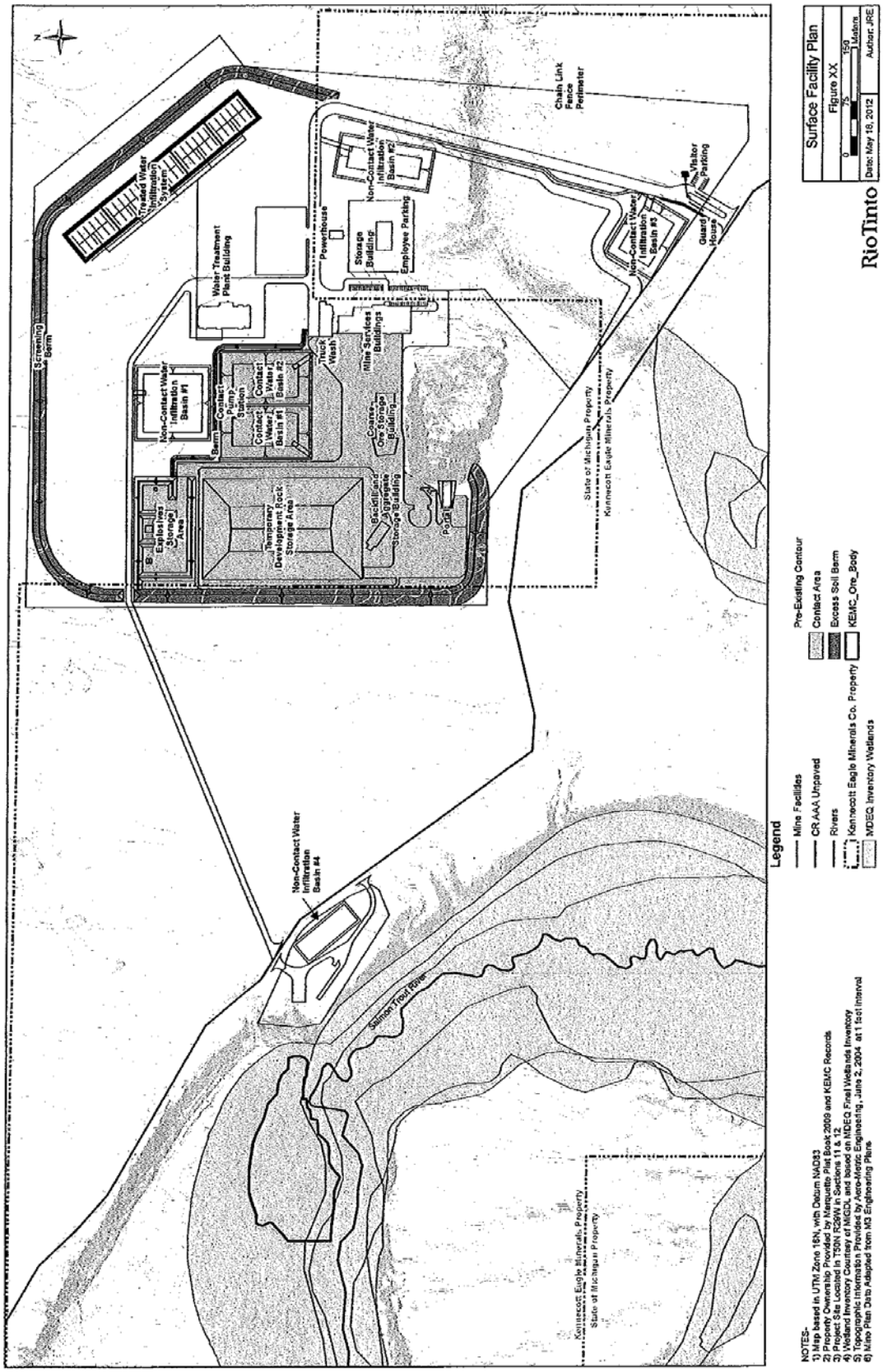
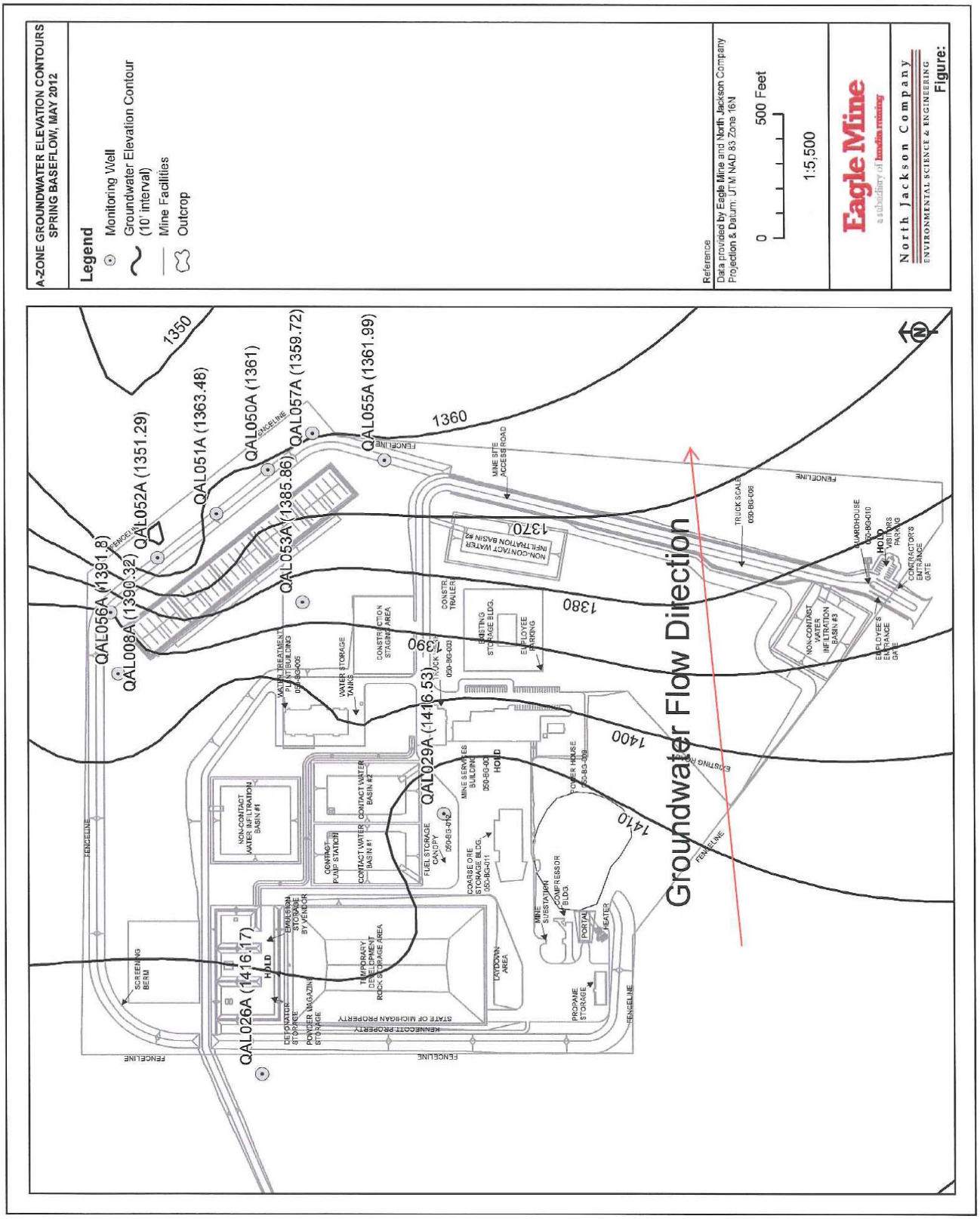
ATTACHMENT IV



ATTACHMENT V



ATTACHMENT VI



ATTACHMENT VII