

From: Beggs, Tauren R - DNR
To: "[Henderson, Dave](#)"
Cc: [GravelPit \(GravelPit@manitowoc.org\)](#); [Moen, Trevor J - DNR](#)
Subject: RE: Newton Gravel Pit - Plan and Spec Submittal
Date: Friday, March 03, 2017 2:43:00 PM
Attachments: [46566_fs.pdf](#)

Hi Dave,

I talked to Trevor Moen, the DNR industrial wastewater plan reviewer for this site, to get you some clarification on the wastewater system approval request. After discussion with Trevor, the treatment pond would fall under the industrial treatment plant for type of project on Form 3400-205, *Wastewater System Approval Request*. The treatment pond would be considered a wastewater treatment system which discharges to surface water, so per Wis. Stat. § 281.41, it's required that DNR review and approve of wastewater treatment plans and specifications in addition to the issuance of coverage for the general WPDES permit. Trevor did also mention that this is outlined in the attached fact sheet: *Informational Document for WPDES General Permit for Discharge of Contaminated Groundwater from Remedial Action Operations* on page 2 under the section titled Requirements for All Dischargers.

There will be two separate approvals from the wastewater program:

- 1) Issuance of Coverage for General Permit, which will be issued by Dave Haas
- 2) Conditional Approval of Plans and Specs, which will be issued by Trevor Moen

These are separate approvals that need to be issued prior to construction of the pond.

Looking at Trevor's questions below, these are specifically geared towards the wastewater program's requirements under Wis. Stat. ch. 281 and Wis. Admin. ch. NR 108. It looks like many of these questions can either be answered from the Chapter 30 permit that was already issued and/or from what you have planned to include in an operation and maintenance (O&M) plan for the site. In order for wastewater to do their plan review, final design documentation is needed. Trevor said an email response to his questions would be satisfactory.

I hope this clarifies your couple questions you had. If not, please follow up with Trevor as this is not my expertise. I have cc'd him on this email.

Sincerely,

We are committed to service excellence.

Visit our survey at <http://dnr.wi.gov/customersurvey> to evaluate how I did.

Tauren R. Beggs

Phone: (920) 662-5178

Tauren.Beggs@wisconsin.gov

From: Henderson, Dave [mailto:Dave.Henderson@aecom.com]
Sent: Thursday, March 02, 2017 5:32 PM
To: Beggs, Tauren R - DNR

Cc: GravelPit (GravelPit@manitowoc.org)
Subject: FW: Newton Gravel Pit - Plan and Spec Submittal

Tauren,

I received the following email this afternoon.

This is in relationship to the 'request for additional information' that came from Dave Haas (the WPDES permit contact) a couple of weeks ago. I believe I copied you on it.

This is the first time I've had an NR700 remediation system reviewed by the WDNR wastewater engineer. As such I'd like to ask a couple of questions about why they are requiring this review and what "approval" we can expect from their review. When I asked, Dave Haas did not know why they are doing it.

By reading the questions below, you can see the broad nature of their inquiry.

I'm out of the office tomorrow, but driving most of the day – so I may give you a call. Otherwise I'll follow up on Monday.

Thanks
dsh

David Henderson, P.E.
Senior Project Manager/Director, Environment
D 414-944-6190
M 414-429-8304
dave.henderson@aecom.com

AECOM
1555 N. RiverCenter Drive, Suite 214
Milwaukee, WI 53212, USA
T 414-944-6080
aecom.com

Built to deliver a better world

[LinkedIn](#) [Twitter](#) [Facebook](#) [Instagram](#)

From: Moen, Trevor J - DNR [<mailto:Trevor.Moen@wisconsin.gov>]
Sent: Thursday, March 02, 2017 3:36 PM
To: Henderson, Dave
Cc: Haas, David J - DNR; O'Connor, Kelley S - DNR
Subject: Newton Gravel Pit - Plan and Spec Submittal

Hello Mr. Henderson:

The Department has received your plan and specifications submittal on February 17, 2017 for the Newton Gravel Pit groundwater remediation system project in the Town of Newton, WI. This review is required under s. 281.41, Wis. Stats. and ch. NR 108, Wis. Adm. Code. This plan review is

not to be construed as a Department determination on the issuance of coverage under a WPDES permit. Issuance of coverage under the WPDES general permit will be handled separately by Dave Haas. The purpose of this email is that the Department has a few questions and comments on the plan submittal. The answers to these comments or questions can be addressed via email or by a revision to the design report.

1. The Department requires final plans and specifications for wastewater treatment projects. Many of the plans state "conceptual". Please forward to me by email PDF copies of the final P.E. stamped plans and design report. These final plans should provide plan and profile drawings of the pond, any specifications of the phyto-remediation trees, and indicate the various zones of phyto-remediation, and other important features. Please do not include the "Request for Coverage" documents as these are not required for plan submittals.
2. Please provide maps indicating wetlands and the floodway.
3. Please indicate the setbacks of the pond from the road, any private or public water supply wells, or inhabited dwellings.
4. Please explain the results of any Ch. 30 permit determinations made by the Department.
5. Will the project disturb more than one acre? If so, have you applied for coverage under the construction site storm discharge general permit?
6. Please explain the disposal plan of the phyto-remediation trees.
7. Please explain the back-up plan if the floating solar power circulation mixers fail? How will this impact the discharge concentrations?
8. Please explain how upsets, bypasses, overflows or malfunctions of the proposed treatment will be detected and handled.
9. Please explain the method of disposal of solids generated by the proposed treatment system? How will solids be removed to maintain groundwater capture in the pond?
10. Please explain the security of the site to prevent public entry?
11. Please explain how the outfall backflow conditions will impact the discharge concentrations or limits?
12. What is anticipated effluent pollutant concentrations?

FYI for future reviewable GW remediation system projects, the plan submittals should be mailed to:

Jason Knutson
Wastewater Section Chief
Wisconsin DNR
Bureau of Water Quality
PO Box 7921
Madison WI 53707-7921

The plan submittal should contain the following:

Transmittal Letter
1 Form 3400-205
1 Set of plan on paper in the half-size format (11" x 17")
1 Set of specifications on paper

1 copy of an engineering report (if necessary)

1 CD containing PDF files of the PE stamped plans, specifications, and engineering report

For more information please visit our webpage here:

<http://dnr.wi.gov/topic/wastewater/AdequateSubmittal.html>.

Please contact me if you have any questions.

Thank you,

Trevor Moen

Trevor J. Moen, E.I.T.

Wastewater Engineer – Bureau of Water Quality/Division of Environmental Management

Wisconsin Department of Natural Resources

101 S. Webster St.

PO Box 7921

Madison, WI 53707-7921

Phone: (608) 266-3906

Fax: (608)267-2800

Trevor.Moen@Wisconsin.gov

We are committed to service excellence.

Visit our survey at <http://dnr.wi.gov/customersurvey> to evaluate how I did.



dnr.wi.gov



**Informational Document for WPDES General Permit for Discharge of
Contaminated Groundwater from Remedial Action Operations**

Permit No. WI-0046566-6

May 2012

The Department has developed Generalized WPDES Permits (GP) that are designed to cover discharges from a class of facilities or industries whose wastewater discharges are similar in character. When a GP is issued, many facilities meeting its requirements may be covered under the same general permit. GP's currently exist for non-contact cooling water, groundwater remediations, non-metallic mining operations, landspreading of food processing wastewaters and eighteen other types of industrial or commercial operations.

The permittee should retain the coverage letter from the Department originally authorizing the entity to discharge wastewater under the remedial action operations general permit. Due to the complexity of contaminants covered under this permit and the variety of potential water quality limits for these contaminants at a discharge site, Department involvement is essential to authorize a remedial action pollutant discharge under this general permit. If a facility wishes to have coverage for a remediation wastewater discharge, the Department has a form on the WPDES general permits internet site that can be used to characterize the proposed pollutant discharge to the environment. The website address is: <http://dnr.wi.gov/org/water/wm/ww/gpindex/gpinfo.htm>

GENERAL DESCRIPTION OF OPERATIONS COVERED

The remedial action general permit is being reissued to continue to provide a streamlined mechanism to regulate wastewater discharges from soil or groundwater remediation projects. Contaminated sites can pose a threat to public health or welfare. The Department continues to receive requests each year to discharge remediation wastewaters with minimal to significant contamination. In some cases, the requests are for a short duration discharge to verify the extent of contamination. In other cases, the requests are for long term discharges to control plume migration or to remove contaminants from aquifers. These requests are often received with short lead times not conducive to the normal 180 day WPDES permit issuance process. In most cases, the goal is to remove pollutants from soils or aquifers to prevent migration.

SUMMARY OF MAJOR CHANGES FROM PREVIOUS PERMITS

Very few changes are proposed from the expired remedial action general permit (issuance -05 expires June 30, 2012). For more detail on these changes and information on other less significant changes refer to the topic specific section later in this informational document.

Requirements for discharges to impaired waters and TMDL allocated waters – Part 2.14 was added to the permit to require the permittee to determine whether the wastewater discharge is to an 303(d) impaired water or to an impaired water with a Total Maximum Daily Load (TMDL) allocation. Voluntary minimization is recommended for a discharge of a pollutant of concern to an impaired water. Existing GP holders need to comply with a state and EPA approved TMDL in effect when the general permit is issued.

Since Method 8020 was deleted by the EPA it has been removed from the permit. Also the test method requirements were consolidated in part 8.9 of the permit.

Updated Limit for Seepage of Wastewater - For seepage discharges, the toluene limit in part 5.5 of the permit was revised from 200 ug/L to 160 ug/L to be consistent with current ch. NR 140 Wisconsin Adm. Code.

PERMIT APPLICABILITY CRITERIA

Activities Covered - This permit is applicable to discharges from remedial action operations where the extracted contaminated groundwater is treated for pollutant removal and the discharge will not have significant impacts on receiving surface or groundwaters. Discharges to exceptional resource waters are allowed because these projects are actions to cleanup an existing groundwater contamination problem, and they are often undertaken to correct a water supply public health problem as required in Ch. NR 207.03(2).

Activities Excluded - Discharges to "outstanding resource waters" listed in NR 102.10 or public water supply sources listed in NR 104, such as Lake Superior, Lake Michigan and Lake Winnebago, are not authorized under this GP. These waters have more restrictive water quality criteria. Regulation of discharges to outstanding resource waters and water supply sources requires an specifically drafted permit which provides the oversight and discharge limitations necessary to protect these drinking water sources.

Activities Excluded - Discharges are not covered under this permit if they do not meet the wetland protection requirements of ch. NR 103, Wis. Adm. Code. For discharges that impact wetlands, a facility will need to submit information that allows the Department to determine if a discharge meets NR 103 code requirements.

Activities Excluded - Discharges are not eligible for this GP if pollutant discharge quantities have a reasonable potential (as specified in s. NR 106.05, Wis. Adm. Code) to exceed criteria and limitations designed to prevent harm to aquatic life, wildlife and human health. Remedial action discharges will be evaluated by comparing the pollutant concentrations in the extracted and treated groundwater with water quality criteria for fish and aquatic life acute or chronic effects, wildlife effects, human threshold effects and human cancer effects. This evaluation for compliance with chapters NR 102, NR 105, NR 106, NR 207, and NR 217 Wisconsin Administrative Codes, is performed with the help of a worksheet. For a simple hydrocarbon remediation wastewater with no detectable lead, the worksheet will make sure the discharge is not to an outstanding resource water or water supply source. For more complex cases, the worksheet will be filled in with assistance of a water quality specialist. This general permit shall only be used when the worksheet assisted water quality evaluation confirms that the limits contained in the general permit are sufficiently restrictive to protect the receiving water quality. If detected contaminants are not specifically limited in the permit, the provisions of NR 106.05 shall be used to judge the reasonable potential for the contaminant to exceed any site specific water quality criteria. A separate WPDES permit shall be drafted on a case-by-case basis when a discharge contaminant level triggers a need for an additional limit or a limit that is more restrictive than that contained in the general permit. Acrylonitrile is a good example of the type of contaminant whose discharge should not be authorized under this permit. Acrylonitrile has very low water quality criteria, there are major problems treating/removing the compound, and it is very difficult to obtaining adequately low analysis detection limits. A discharge containing acrylonitrile should be regulated by a WPDES permit specially drafted for the discharge.

Phosphorus and Thermal - Since wastewater discharges from groundwater remediation activities do not normally contain phosphorus or heat from the permittee's activities, the Department believes it is not appropriate to include total phosphorus or temperature limits in this general permit. When a remedial action permittee utilizes phosphorus containing additives or adds significant amounts of heat to the wastewater discharge, the Department would evaluate the discharge level of these pollutants to determine the reasonable potential for total phosphorus or temperature to exceed surface water quality criteria in NR 105, Wisconsin Administrative Code. A site specific individual permit would be needed if the remedial action discharge needs water quality based limitations as specified in NR 102, NR 106 and NR 217, Wis. Adm. Code.

REQUIREMENTS FOR ALL DISCHARGERS

Wastewater Treatment - Wastewater treatment for pollutant removal is required for all discharges of contaminated groundwater, including pump test wastewaters. This treatment requirement is consistent with section 301(b)(2) of the Clean Water Act and the section 283.13 (2)(b) of the Wis. Statutes. The level of treatment shall be adequate to assure compliance with water quality standards or shall be equivalent to Best Available Treatment Economically Achievable (BAT), which ever is more restrictive. Section 281.41, Wis. Stats. requires Department review and approval of wastewater treatment plans and specifications. When treatment units for contaminated groundwater are supplier furnished package units, a minimum plan submittal is a diagram, a summary of the design, and unit sizing calculations.

Discharge Management Plan - The permit continues the requirement that the permittee submit a discharge management plan. The primary purpose of the management plan is to specify the contaminants that will be tested in the wastewater. The Department must conditionally approve, approve or reject the proposed discharge management plan. To comply with the permit, the facility must monitor the remediation discharges consistent with a Department approved discharge management plan.

Compounds to be tested under the management plan come from three main areas: (1) those limited in the GP, (2) those designated to show effective pollutant removal, and (3) other contaminants detected at low levels in the impacted groundwater. A large group of contaminants are directly limited in the permit; it is unlikely that any remediation project would have all of those contaminants. Through the management plan, the permittee can propose to eliminate monitoring for parameters limited in the permit if they have not been detected in the groundwater monitoring wells. The second need for monitoring is to document that the treatment system is effectively removing contaminants. Often treatment effectiveness can be demonstrated by monitoring contaminants limited in the permit. However, there are cases when the primary remediation contaminants are not limited in the permit (for example, 1,1 Dichloroethane). In that case monitoring for those contaminants shall be included in the management plan. The third need for monitoring data occurs when, in the site characterization, there are confirmed detects of other contaminants with water quality criteria listed in NR 105, Tables 1 through 9 or NR 140, Tables 1 through 3. To qualify to discharge under this permit, the levels of these compounds in the discharge must be low enough (as specified in NR 106.05) that no site specific water quality limits are required. However, monitoring should be specified to confirm that these pollutants will not exceed any surface or groundwater levels of concern.

Other components of the Discharge Management Plan would include details on sampling procedures, selected analysis methods, procedures for disposing of tower cleaning wastewaters, or proposals to establish alternate effluent limitations for wastewater infiltration discharges. Alternate groundwater limits are discussed further in the groundwater discharge section of this briefing memo.

Monitoring Frequency - The sampling frequency requirements are weekly monitoring for the first 6 weeks followed by monthly sampling. This is the same as the previous permit. The permit also allows an option that the Department can approve, in the discharge management plan approval, a sample frequency reduction to quarterly if after the discharge has been monitored for at least one year, at least 16 sample results have been generated, no analysis results have exceeded 60% of any permit discharge limitation, and there is little chance that a high pollutant level may abruptly pass through the treatment unit. Quarterly sampling may be appropriate for stable remediation projects where there is a certainty that compliance with effluent limits will be maintained. The permit also contains a specific sampling frequency for in-situ remediation projects (quarterly or semi-annually) and agri-chemical remediation wastewater land application systems (weekly or monthly).

Other Permits - Other permits or approvals may be required for the project. The facility is responsible for obtaining other necessary Federal, State or local approvals or permits. For example, any work performed below, or within 500 feet of the ordinary high water mark of navigable waters, in wetland areas, or within areas subject to local floodplain and shore land regulations, must conform to all such county or local ordinances. Also, other applicable state permits and/or contracts required by Chapters 30, 31, and 87 Wis. Statutes would need to be obtained. The emission of Volatile Organic Contaminants from air stripping of contaminated groundwater shall be either approved, exempted from, or in compliance with a DNR air emission permit. It is the responsibility of the permittee to obtain the other necessary permits.

Treatment Equipment and Maintenance - Considering the type of pollutants that may be regulated under this permit, it is necessary that treatment equipment be in place and maintained to mitigate possible variations in discharge and effluent quality. All removed substances shall be disposed of in accordance with NR 205.07(3)a). Documentation records of the disposal operation shall be maintained on site for the life of the

permit.

Pond Overflow or Leakage - The integrity of the containment area must be maintained. Overflows or leakage through dikes or berms may cause sloughing or washouts.

Total Residual Chlorine - Occasionally, air-stripping towers or activated carbon treatment units may become clogged from the growth of micro-organisms. This is especially true when there are nitrogen and phosphorus nutrients in the water. The oxygen rich, warm and wet environment in the treatment unit provides favorable conditions for bacteria or fungi to grow. As the treatment unit becomes clogged, the treatment capacity decreases until low amounts of water will flow through the unit. Then it must be cleaned to restore treatment efficiency. Acids, bases or biocides, such as chlorine, may be used to clean the micro-organisms out of the treatment system. The recommended system would be to clean the treatment unit when it is out of service, and then capture the cleaning wastewater for acceptable off-site disposal, such as a sanitary sewer.

Alternatively, if the pH is between 6 and 9 S.U. and the biocide is chlorine only, the cleaning wastewater may be treated for removal of suspended solids (to less than 40 mg/L), and then discharged under this permit. The discharge of chlorinated water to surface waters shall not contain detectable amounts of Total Residual Chlorine using Standard Methods #408B, D or E (DPD titration or colorimetric), or by using an ion specific electrode approved in Ch. NR 219. The acute limit for total chlorine residual is 37 ug/L and the chronic criteria is 7 ug/L. Since both of these limits are lower than the detection limits for the methods listed above, the permit requires no detect of chlorine residual using the appropriate analysis method. Chlorine is the only biocide that can be discharged under this permit.

Other Water Treatment Additives - Water treatment additives vary from innocuous to highly toxic. This permit allows the use water treatment compounds that will not impact aquatic life or human health. Many water treatment additives are used to control corrosion or prevent deposition of scale forming materials and do not exhibit residual toxic effects on receiving waters.

Only additives that have been reviewed and approved in writing by the Department may be discharged under this permit. Facilities are required to submit information regarding the toxicity of the additive and the proposed treatment regime so that the Department can determine if it is allowable and won't negatively impact aquatic life or groundwater. For surface water dischargers, the toxological information needed is at least one 48-hour LC₅₀ or EC₅₀ value for daphnia magna or ceriodaphnia dubia, and at least one 96-hour LC₅₀ or EC₅₀ value for either fathead minnow, rainbow trout or bluegill. This toxicity information can be found by checking the Material Safety Data Sheet (MSDS) or contacting the additive manufacturer.

In some cases, chemical manufacturers provide LC₅₀ or EC₅₀ values only for the active ingredient or a component of the product. It is not possible for the Department to ascertain the toxicity of the whole product on the basis of LC₅₀ or EC₅₀ values for product constituents. This is because of the potential for synergistic effects of the other constituents of the product to affect the whole product toxicity. If the facility is unable to provide the whole product toxicity, and the Department's additive database does not have the toxicity information, the additive will not be approved for discharge under the general permit.

The Department must also approve changes in the types or quantities of additives discharged. Changes in additive use can change the wastewater discharge characteristics and could impact aquatic life or groundwater. The discharge of all other biocide water treatment additives (with the exception of chlorine) requires regulation by a site specific individual permit due to the toxic effectiveness of the biocides.

Total Daily Maximum Load Compliance. Facilities discharging under this general permit shall meet the requirements of any State and Federally Approved Total Daily Maximum Load TMDL allocation in effect on

the start date of this permit. As of June 30, 2012, all Wisconsin and EPA approved TMDL allocations have been for sediment or phosphorus pollutants of concern. Since remedial action wastewater discharges start as groundwater from wells or infiltration systems, the levels of suspended solids and phosphorus are normally very low or non-detectable. Remedial action groundwater is also required to be treated (often with air stripping or activated carbon) prior to discharge. Therefore, the treated remedial action discharges covered under this permit are expected to be consistent with the baseline allocation granted to Wisconsin General Permit dischargers in all State and EPA approved TMDL's in effect on the start date of this permit.

Note: A "Pollutant(s) of concern" means a pollutant that is contributing to the impairment of a water body. State and Federal Approved TMDLs can be identified by contacting the Department, or by searching for the State and Federal Approved TMDL list on the Department Internet site. The current link to identify the list of State and Federal Approved Final TMDLs is: <http://dnr.wi.gov/org/water/wm/wqs/303d/TMDL.html>

New or Increased Discharges. Federal Statutes, 40 CFR 122.4, prohibit the issuance of a WPDES permit to a new discharger that will contribute to a violation of a water quality standard in a 303(d) listed water. Also, an increased discharge of a pollutant of concern that would cause or contribute to a violation of a water quality standard in a 303(d) listed water is not to be allowed. Therefore, this general permit specifies that a permittee may not establish a new pollutant of concern discharge to a 303(d) listed impaired water body or significantly increase the discharge of a pollutant of concern to an impaired water body unless the new or increased discharge does not contribute to the receiving water impairment, or the new discharge is consistent with a Department finalized total maximum daily load (TMDL) allocation for the impaired water body. Any new or increased pollutant of concern discharge to an impaired surface water authorized under this general permit shall be consistent with the baseline load allocation for general permittees discharging to an impaired receiving water.

This general permit can not be used if this requirement is not met for a new discharger. For a new remedial action operation requesting coverage under this general permit, the Department will evaluate the proposed new pollutant discharge amount and receiving water to determine if the above requirement can be met. A variety of options may be available to insure any proposed new discharger does not contribute to the receiving water impairment such as on-site capture of the pollutant of concern, an alternate discharge location, wastewater reuse opportunities, directing the discharge to a seepage area, enhanced treatment options so the discharge would meet the water quality standard, etc.

If an existing discharger would proposed a significant increase in a pollutant of concern discharge to an impaired water body, evaluation of the proposed increase would begin via notification to the Department of a planned change under standard requirement 5.6 of the permit. Upon notification of the proposed increase, the Department would evaluate the proposed increased pollutant discharge amount and receiving water to determine if the discharge change would be within the baseline load allocation to general permittees discharging to the surface water. If necessary, a variety of options may be available to insure any proposed increased discharge does not contribute to the receiving water impairment such as on-site capture of the pollutant of concern, an alternate discharge location, wastewater reuse opportunities, directing the discharge to a seepage area, enhanced treatment options so the discharge would meet the water quality standard, etc.

Alternate Permit needed to meet TMDL. If the Department notifies a General Permit facility or applicant that the pollutant of concern discharge would not meet the requirements of a state and EPA approved TMDL allocation, the permittee would need to submit an application for a site specific individual WPDES permit or an alternate general permit that specifies the additional pollutant controls necessary to comply with the TMDL. The alternate permit may require the permittee to submit a proposed TMDL implementation plan to the Department. The proposed TMDL implementation plan shall specify feasible additional management practices, pollution prevention activities, and wastewater treatment improvements that can be implemented to meet the waste load allocation. Note: The section 303(d) list of Wisconsin impaired surface water bodies may be obtained by contacting the Department or by searching for the section 303(d) list on the Department's

Internet site. The Department updates the section 303(d) list approximately every two years. The updated list is effective upon approval by EPA. The current link to the section 303(d) list is:
<http://dnr.wi.gov/org/water/wm/wqs/303d/>.

Recommendations for Discharges to 303(d) Listed Impaired Surface Waters – If a facility discharges a pollutant of concern to an 303(d) listed impaired water body, the permittee is encouraged to minimize the pollutant discharge as part of an overall state effort to reduce the pollutant loading to the water body. Wisconsin water impairments are primarily due to excessive sediment, phosphorus and mercury levels which are normally very low or non-detectable in remedial action wastewater discharges.

Since the 303(d) impaired waters list is updated every 2 years, the permittee is encouraged to check in the third year of the permit term whether the permittee discharges remedial action wastewater to a section 303(d) listed impaired water body. If so, the permittee is encouraged to evaluate whether additional control measures and practices could be used to voluntarily minimize, with the goal of elimination, the discharge of pollutant(s) of concern that contribute to the impairment of the water body. The permittee should keep a record of the amount of pollutant discharge reduction that has been voluntarily achieved. The exact amount of pollutant reduction needed will be legally established in the State and Federal Approved Total Daily Maximum Load (TMDL) allocation established for the discharge.

DISCHARGES OF PETROLEUM REMEDIATION WASTEWATERS TO SURFACE WATERS

Treatment Based Limits - As authorized by NR 220.21, the permit contains limits for petroleum product remediation wastewater that represents Best Available Treatment (BAT) in the professional judgment of the Department. These limits are based upon readily available air stripping and oil/water separator treatment technology. The limits for benzene and BETX (the sum of benzene, ethylbenzene, toluene and total xylenes) are the same as the expired permit. It is thought the treatment level required to meet the benzene and BETX limits will adequately remove other volatile petroleum product constituents. The permit also contains a limitation for Napthalene at 70 ug/L and a requirement to monitor for MTBE (Methyl Tert Butyl Ether), an oxidant gasoline additive.

Limits and monitoring requirements for petroleum contaminant discharge to surface waters:

<u>Parameter</u>	<u>Effluent Limit</u>	<u>Sample Type</u>	<u>Sample Frequency</u>	<u>Notes</u>
Flow	-	Total Daily	Daily	See NR 218.05
Benzene	50 ug/L, Monthly Avg.	Grab	See Part 2.5	
Total BETX	750 ug/L, Daily Maximum	Grab	See Part 2.5	See BETX part
MTBE	-	Grab	See Part 2.5	
Polynuclear Aromatic Hydrocarbons	0.1 ug/L, Monthly Avg.	Grab	See Part 2.5	See PAH part
Benzo(a)pyrene	0.1 ug/L, Monthly Avg.	Grab	See Part 2.5	
Napthalene	70 ug/L, Monthly Avg.	Grab	See Part 2.5	
Total Recoverable Lead	50 ug/L, Daily Maximum	Composite	See Part 2.5	
Total Recoverable Lead (Site Specific)	*ug/L, Weekly Average	Composite	See Part 2.5	Lead limit calc
Total Recoverable Lead (Site Specific)	*mass/day, Weekly Average	Composite	See Part 2.5	Lead limit calc
Oil/Grease	10 mg/L, Daily Maximum	Grab	See Part 2.5	
Total Suspended Solids	40 mg/L, Daily Maximum	Grab	See Part 2.5	See TSS part

Permit sections 2.5 and 2.4 set monitoring frequency and specify wastewater and SW-846 test methods.

* - see the lead limits paragraph below.

Other Petroleum Limits - Groundwater from remediation of "heavier" products such as heating fuel, diesel fuel, jet fuel, and other similar petroleum products may contain polynuclear aromatic hydrocarbons. The discharge limit for polynuclear aromatic hydrocarbons (PAH's) is retained from the previous permit. Free product separation is required as the first step to remove the petroleum product constituents. The PAH discharge limit of 0.1 ug/L was developed based on the likely carcinogenic effects of the contaminants and the judgment that this low effluent level is achievable with activated carbon treatment. Benzo(a)pyrene is limited individually at 0.1 ug/L based on this compound having the most toxicological data. The PAH group criteria applies to the following compounds: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene. The permit requires that the detected amounts of the 10 polynuclear aromatic hydrocarbons in the group have a sum of less than 0.1 ug/L. Alternatively, the permittee can demonstrate compliance with the limit if there is no detection of these compounds using EPA methods 610 or 8310 (High Pressure Liquid Chromatography). Also, method 8270 is acceptable when high levels of other organic contaminants necessitate significant sample dilution.

A more restrictive site specific permit should be drafted for a direct discharge of benzene or polynuclear aromatic hydrocarbons to waters, such as the Great Lakes or Lake Winnebago, that are classified as public drinking water sources.

Lead Limitations - The permit contains limits for total recoverable lead based on the number of gasoline remediation projects detecting significant amounts of lead in the wastewater. The permittee can analyze for total lead or total recoverable lead to show compliance with the permit limit. The 50 ug/L daily maximum lead limit represents a reasonably achievable (treatment technology based) limit for all discharges. Experience to date has indicated that the form of lead in gasoline, tetra ethyl lead, is strongly attached to fine sediment particles that may be removed from the aquifer by pumping. Therefore, removal of fine sediment particles may be needed to control total recoverable lead in discharges from leaded gasoline remediation projects.

The permit also contains weekly average lead limits that can be quite restrictive for low flow, low hardness receiving waters. The weekly average lead limit is a function of: the receiving water hardness as specified in NR 105.06 table 6, the effluent average day design flow (Q_e), the receiving water background concentration (C_s), and the receiving water design flow (Q_s) as specified in NR 106.06(3). To calculate the weekly average lead limit for the general permit, the WQC variable in the NR106.06(3) formula needs to be adjusted to reflect 1/3 of the assimilative capacity to prevent significant lowering of water quality per NR 207.04(2)(c)2. Separate formulas are provided in NR 106.06(3) for discharges to streams and discharges to lakes. Since most of the discharges under this permit are to streams, the permit provides formulas to directly calculate the weekly average lead permit limits for a stream discharge. Department staff can provide assistance to the permittee for calculation of the weekly average lead limits. The result of the lead limit calculation should be confirmed in writing (possibly in the cover letter) to make sure there is no confusion over the correctly calculated limitation. The highest day (normal operation) design effluent flow should be used for Q_e in the calculation. This should be a stable number because remediation projects are usually designed for a certain groundwater withdrawal pumping rate to control plume migration.

DISCHARGES OF VOLATILE ORGANIC COMPOUNDS TO SURFACE WATERS

Treatment - Effective treatment is required, such as air stripping or activated carbon adsorption, for all discharges containing volatile organic chemicals. The Clean Water Act requires best available treatment economically achievable to minimize the discharge of contaminants into waters of the state, even when the untreated wastewater could meet the concentration limits listed in the permit. This best available treatment requirement will assure compliance with Wisconsin Water Quality Standards listed in NR 105, Wis. Adm. Code in almost all cases. When more restrictive water quality based effluent limits are needed, such as for direct discharges of certain VOC contaminants to low mean annual flow, warm or cold water streams, a site

specific WPDES permit should be individually drafted to regulate the discharge.

Unchanged Limits - The limits for volatile organic compounds are the same as those in the previous permit. These limits represent effluent concentrations judged to be achievable with a well designed air stripper.

Monitoring Frequency - The sampling frequency requirements start at weekly for the first 6 weeks of discharge under the remedial action operations general permit, then the frequency is reduced to monthly. The permit also allows an option that the Department can approve, in the discharge management plan approval, a sample frequency reduction to quarterly after at least 16 samples over at least one year are reported.

Water Quality Evaluation - Department staff need to evaluate discharges from volatile organic compound (VOC) remediation projects. GP limits need to be compared with Wisconsin's water quality criteria for the priority pollutant VOC's. The human threshold and human cancer criteria are from Ch. NR 105, and the fish and aquatic life acute criteria are from EPA documents. To get an idea of what concentrations are reasonably achievable with available treatment technology, the final BAT regulations for the Organic Chemicals point source category (52 CFR 42582, November 5, 1987) were referenced. The limits chosen for this general permit were designed to be achievable with available treatment technology, and be restrictive enough to meet water quality standards (NR 105, 106 and 207) in almost all cases.

Limits and monitoring requirements for VOC's in a discharge to surface waters:

<u>Parameter</u>	<u>Effluent Limit</u>	<u>Sample Type</u>	<u>Sample Frequency</u>	<u>Notes</u>
Flow	-	Total Daily	Daily	See NR 218.05
Acrylonitrile	No Discharge	-	-	-
Bromoform	120 ug/L, Monthly Avg.	Grab	See Part 2.5	
Carbon Tetrachloride	150 ug/L, Monthly Avg.	Grab	See Part 2.5	
Chloroform	120 ug/L, Monthly Avg.	Grab	See Part 2.5	
Dichlorobromomethane	120 ug/L, Monthly Avg.	Grab	See Part 2.5	
1,2-Dichloroethane	180 ug/L, Monthly Avg.	Grab	See Part 2.5	
1,1-Dichloroethylene	50 ug/L, Monthly Avg.	Grab	See Part 2.5	
Methyl Bromide	120 ug/L, Monthly Avg.	Grab	See Part 2.5	
Methyl Chloride	120 ug/L, Monthly Avg.	Grab	See Part 2.5	
1,1,2,2-Tetrachloroethane	50 ug/L, Monthly Avg.	Grab	See Part 2.5	
Tetrachloroethylene	50 ug/L, Monthly Avg.	Grab	See Part 2.5	
1,1,2-Trichloroethane	50 ug/L, Monthly Avg.	Grab	See Part 2.5	
1,1,1-Trichloroethane	50 ug/L, Monthly Avg.	Grab	See Part 2.5	
Trichloroethylene	50 ug/L, Monthly Avg.	Grab	See Part 2.5	
Vinyl Chloride	10 ug/L, Monthly Avg.	Grab	See Part 2.5	
Total Suspended Solids	40 mg/L, Daily Maximum	Grab	See Part 2.5	

Permit sections 2.4 and 2.5 set monitoring frequency and specify wastewater test methods.

VOC Limits Restrictive Enough - The impact of the remediation site discharge on the receiving surface water quality must be evaluated for each request to discharge under this section of the permit. This evaluation should be checked by Water Quality staff in all cases. Four main things must be known to determine if the general permit limits are sufficiently restrictive to protect surface water quality: a characterization of the pollutants in the discharge, the highest monthly average (design) discharge flow rate, the receiving water classification, and the surface water mean annual flow. It is assumed that the stream background concentration of VOC's is zero due to stream turbulence and bio-degradation. The expected pollutant

concentration after mixing with the receiving water mean annual flow must be compared with 1/3 of the water quality criteria (to prevent significant lowering of water quality per NR 207) for the aquatic or use classification.

For example, this general permit's limit for carbon tetrachloride may not be sufficiently restrictive to prevent significant lowering of water quality when a cold water (trout) stream has a low mean annual flow. A mixing ratio would be 20 if the stream mean annual flow is 20 times the highest monthly average (design) discharge flow rate. For a mixing ratio of 20, the 150 ug/L general permit limit would result in a theoretical carbon tetrachloride concentration of 7.5 ug/L beyond the mixing zone. An in-stream concentration of 7.5 ug/L would be greater than the 3.3 ug/L water quality criteria (1/3 of 10 ug/L), and the proposed discharge would result in significant lowering of water quality as defined in NR 207. As long as treatment to meet the 3.3 ug/L in-stream criteria is technically and economically achievable, the GP should not be used in this example. An individual, site specific permit should be drafted based on meeting the carbon tetrachloride in-stream criteria of 3.3 ug/L. The individual permit carbon tetrachloride monthly average limit would be 66 ug/L for discharge to the trout stream in this example.

If there is no economically achievable treatment system that can meet the 3.3 ug/L in-stream criteria, the general permit could be used (consistent with NR 207) to allow a mixed cold water in-stream carbon tetrachloride concentration up to 10 ug/L (the whole assimilative capacity under the water quality criteria). An increase up to 10 ug/L of Carbon Tetrachloride in the stream could be allowed only if the treatment options and costs comparisons are evaluated as specified in NR 207.04(1)(d). If the Department approves the documented treatment and cost evaluation, significant lowering of water quality in the stream could be authorized and the general permit limit would be protective up to an in-stream criteria of 10 ug/L.

DISCHARGES TO GROUNDWATER

Infiltration to Groundwater that is not part of the Remediation Zone - When the discharge will seep into the ground (there are no surface water resources in the area) or a significant part of the discharge would seep into the ground before entering a surface water, the impacts from remedial action discharges are also regulated by NR 140, Wis. Adm. Code. In this case, the general permit requires that the wastewater treatment system be designed to minimize the concentration of the pollutants in the groundwater to the extent that it is technically and economically feasible. Based on the requirement to minimize pollutant concentrations in the groundwater, the general permit establishes monthly average effluent limitations that are equivalent to NR 140 Preventive Action Limits (PAL). In other words, the effluent would have to meet limitations that are equivalent to PAL's at the end of the discharge pipe. Expressing the limit as a monthly average recognizes that any higher short-term values would likely not be significant due to dispersion or mixing as the water flows into and through the ground.

Petroleum Compounds:

Acetone	-	200 ug/L	Methyl isobutyl ketone	-	50 ug/L
Benzene	-	0.5 ug/L	Methyl tert-butyl ether	-	12 ug/L
Benzo(a)pyrene	-	0.02 ug/L	Naphthalene	-	10 ug/L
Benzo(b)fluoranthene	-	0.02 ug/L	Pyrene	-	50 ug/L
Chrysene	-	0.02 ug/L	Pyridine	-	2 ug/L
Ethylbenzene	-	140 ug/L	Styrene	-	10 ug/L
Ethylene Dibromide	-	0.005 ug/L	Tetrahydrofuran	-	10 ug/L
Fluoranthene	-	80 ug/L	Toluene	-	160 ug/L
Fluorene	-	80 ug/L	Trimethylbenzenes	-	96 ug/L
Lead	-	1.5 ug/L	(combined 1,2,4 & 1,3,5)		
Methyl ethyl ketone	-	90 ug/L	Total BETX	-	750 ug/L

Chlorinated Organics:

1,1-Dichloroethane	-	85 ug/L	Chloromethane	-	0.3 ug/L
1,2-Dichloroethane	-	0.5 ug/L	Methylene Chloride	-	0.5 ug/L
1,1-Dichloroethylene	-	0.7 ug/L	Pentachlorophenol	-	0.1 ug/L
1,2-Dichloroethylene (cis)	-	7 ug/L	1,1,1,2-Tetrachloroethane	-	7 ug/L
1,2-Dichloroethylene (trans)	-	20 ug/L	1,1,2,2-Tetrachloroethane	-	0.02 ug/L
1,2-Dichlorobenzene	-	60 ug/L	Tetrachloroethylene	-	0.5 ug/L
1,3-Dichlorobenzene	-	125 ug/L	1,1,1-Trichloroethane	-	40 ug/L
1,4-Dichlorobenzene	-	15 ug/L	1,1,2-Trichloroethane	-	0.5 ug/L
Carbon tetrachloride	-	0.5 ug/L	Trichloroethylene	-	0.5 ug/L
Chloroethane	-	80 ug/L	1,2,4-Trichlorobenzene	-	14 ug/L
Chloroform	-	0.6 ug/L	Vinyl Chloride	-	0.02 ug/L

Alternate Effluent Limits for Infiltration – When the infiltration discharge is to groundwater that is not part of the remediation zone, the permit provides an opportunity for the permittee to propose and justify alternate effluent limitations (up to a level equal to NR 140 Enforcement Standards) in the Discharge Management Plan. This type of discharge system would be eligible for a design management zone (DMZ) under NR 140. The permittee would have to show that the limits listed in the permit are not technically or economically achievable, or that factors (such as dispersion or degradation) would occur inside the design management zone. The Department can approve, conditionally approve or reject the proposed management plan. The results of a groundwater model would usually be needed to help demonstrate that dispersion or degradation would cause the groundwater to be less than the PAL or Enforcement Standard outside the DMZ. Sampling of monitoring wells installed around the infiltration system may be required in the discharge management plan in cases when an alternate effluent limit is approved.

Remediation of In-situ Contaminants - The permit contains conditions that regulate infiltration or injection discharges that are part of in-situ bioremediation projects. Since the water being discharged almost always contains some contaminants, a discharge permit would be required. This part of the general permit is designed to meet the wastewater permitting needs for these projects. Regulation of bioremediation projects often requires coordination between Department watershed staff and remediation staff.

Since contaminant release or spill sites are not eligible for a NR 140 design management zone, this permit section's discharge requirements were split between the discharges that could meet preventive action limits

(PAL's) in the water prior to injection or infiltration, and other discharges that would be above PAL's in the infiltrated or injected water. With no DMZ, discharge levels above the PAL's would require a temporary exemption issued in accordance with NR 140.28(5). The permit establishes effluent limitations that are equivalent to PAL's for projects that do not have a NR 140 temporary exemption. In cases where the discharge is above PAL's, detailed limitations and other requirements for a the in-situ remediation project should be specified in the NR 140.28(5) temporary exemption and the remedial action plan approved under s. 292.31, Wisconsin Statutes. The permit also contains a condition on degradation by-products based on environmental repair program in-situ bioremediation guidance.

Agri-chemical Remediation Wastewaters - The permit contains conditions that regulate landspreading or spray irrigation of wastewaters from agri-chemical remediation projects. The extracted groundwater from these sites often contains pesticides, ammonia-nitrogen, nitrate-nitrogen, chlorides and phosphorus. Since the water being discharged contains contaminants, a discharge permit is required. Regulation of the discharges from agri-chemical remediation projects needs to be coordinated with staff in the Department of Agriculture, Trade and Consumer Protection. The permit contains nitrogen and chloride loading limitations from NR 214, Wi. Adm. Code, that are consistent with the limits put on other dischargers to landspreading or spray irrigation. A ponding and runoff condition is also included due to the need to prevent wastewater from collecting in a localized area or entering a surface waterway. The permit requires that any agri-chemical remediation wastewaters spread on farm fields be applied for the beneficial use of the crop, and that any pesticide contribution from the remedial action water be in accordance with the appropriate pesticide product label restrictions.

Standard industrial wastewater permit conditions from NR 205 (noncompliance, spills, reporting data, process changes, etc.) are included as Part 8 of this permit. The permit's expiration date is June 30, 2017. A Request for Coverage under this general permit should be sent to the Department of Natural Resources, Water Permits Central Intake, P.O. Box 7185, Madison, WI 53707-7185.

Respectfully Submitted,

Jeffrey W. Brauer, Env. Engineer
Wastewater Section, Bureau of Water Quality
jeff.brauer@wisconsin.gov
Madison, Wisconsin (608) 267-7643

Table of Contents
For

Remedial Action General Permit

WPDES Permit No. WI-0046566-6

<u>Section</u>		<u>Page</u>
1	Applicability Criteria	3
2	Requirements for all Discharges	3
3	Additional Requirements For Discharges To Surface Waters From Remediation of Petroleum Product Contamination	7
4	Additional Requirements For Discharges To Surface Waters From Remediation of Volatile Organic Compound Contamination	9
5	Additional Requirements For Remedial Action Discharges Via Infiltration to Non-impacted Groundwaters	10
6	Additional Requirements for Discharges to Enhance Remediation of In-situ Contaminants	12
7	Additional Requirements for Discharges of Agri-chemical Remediation Waters to Farm Fields	13
8	Standard Permit Conditions (for General WPDES Permittees)	14