

**NEW JERSEY DEPARTMENT OF  
ENVIRONMENTAL PROTECTION**

**NJPDES DISCHARGES TO GROUND WATER**

**TECHNICAL MANUAL**

**FOR THE SITE REMEDIATION PROGRAM**



Jon Corzine, Governor  
Lisa Jackson, Commissioner  
Irene Kropp, Assistant Commissioner

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## **NJDEP MISSION STATEMENT**

Vision: The Department of Environmental Protection is committed to providing high quality of life for the residents of New Jersey.

Mission: To assist the residents of New Jersey in preserving, sustaining, protecting and enhancing the environment to ensure the integration of high environmental quality, public health and economic vitality. We will accomplish our mission in partnership with the general public, business, environmental community and all levels of government by:

- Developing and integrating an environmental master plan to assist the NJDEP and our partners in decision-making through increased availability of resource data on the Geographic Information System.
- Defining and publishing reasonable, clear and predictable scientifically based standards.
- Achieving the NJDEP's goals in a manner that encourages compliance and innovation.
- Employing a decision-making process that is open, comprehensive, timely, predictable and efficient.
- Providing residents and visitors with affordable access to safe and clean open space, historic and natural resources.
- Assuring that pollution is prevented in the most efficient and practical way possible.
- Assuring that the best technology is planned and applied to achieve long-term goals.
- Assuring that non-treatable wastes are isolated, managed and controlled.
- Enhancing environmental awareness and stewardship through education and communication.
- Fostering a work environment that attracts and retains dedicated and talented people.
- Committing to an ongoing evaluation of the NJDEP's progress toward achieving our mission.

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## **I. Prologue**

This is a New Jersey Department of Environmental Protection (NJDEP) technical manual prepared pursuant to N.J.S.A. 13:1D-111 to 1D-113. By necessity it condenses and summarizes statutes, regulations, and other documents; as a result it may not always precisely reflect all requirements. In the case of any inconsistency between this technical manual and any statutes, regulations, or policy determinations based upon same, the requirements of the statutes, regulations, or policy determinations shall prevail. Accordingly, this technical manual should not be used as a substitute for a thorough analysis of the law and regulations as they apply to the facts of any specific project or proposal.

Unless otherwise required by federal or state law, the policies and procedures contained in the technical manual which is in effect on the date a proposal is submitted to the NJDEP, will be binding on both the NJDEP and the applicant. The technical manuals may be updated whenever a regulatory change requires revisions.

This Site Remediation Program technical manual is posted on the NJDEP web page at the following address:

[www.state.nj.us/dep/srp](http://www.state.nj.us/dep/srp)

Follow the link under "Guidance Documents" in the drop-down box to obtain this NJDEP technical manual as well as other NJDEP guidance documents. If you are unable to obtain copies from the Internet, you may obtain a copy of this manual by contacting the NJDEP Case Manager assigned to the site.

In addition to this manual, non-judicial copies of rules are also available from the NJDEP. The New Jersey Pollutant Discharge Elimination System rule (N.J.A.C. 7:14A) is posted on the NJDEP web page at the following address:

[www.state.nj.us/dep/dwq/714a.htm](http://www.state.nj.us/dep/dwq/714a.htm)

The Technical Requirements for Site Remediation rule (N.J.A.C. 7:26E) is posted on the NJDEP web page at the following address:

[www.state.nj.us/dep/srp/regs/techrule](http://www.state.nj.us/dep/srp/regs/techrule)

## II. Introduction

The purpose of this document is to provide guidance for implementing the New Jersey Pollutant Discharge Elimination System - Discharge to Ground Water (NJPDES-DGW) regulations at contaminated sites, as defined in the Procedures for Department Oversight of the Remediation of Contaminated Sites, N.J.A.C. 7:26C (the Oversight Rules) and/or at sites subject to the Technical Requirements for Site Remediation, N.J.A.C. 7:26E (the Technical Rules).

On July 5, 2005, amendments to the NJPDES regulations at N.J.A.C 7:14A-2.5, 7.5, 8.5, 10.2 and 22.4 and the Technical Requirements for Site Remediation at N.J.A.C 7:26E-6.3(c) were adopted. These changes significantly modified and streamlined the NJPDES process used for site remediation.

The main focus of this guidance is the site remediation provisions of the DGW permit-by-rule sections of the NJPDES regulations and the associated permit-by-rule provisions of the Technical Rules. Other sections of NJPDES that relate to site remediation are briefly discussed below and in Section III. This guidance replaces the 1999 NJPDES Technical Manual for the Site Remediation Program.

This guidance document does not address activities that are handled by the Division of Water Quality.

### A. Definitions

**New Jersey Pollutant Discharge Elimination System - (NJPDES)** N.J.A.C. 7:14A: the system for issuing, modifying, suspending, revoking and reissuing, terminating, administering, and enforcing discharge permits pursuant to the State Act.

**Discharge to Ground Water - (DGW)** releasing, spilling, leaking, pumping, pouring, emitting, emptying or dumping of a pollutant into the ground waters of the State, onto land or into wells from which the pollutant might flow or drain into such waters and/or injecting of a liquid or gaseous substance into the ground waters of the State.

**Procedures for Department Oversight of the Remediation of Contaminated Sites (Oversight Rules)**, N.J.A.C. 7:26C –the administrative procedures for a person to participate in the remediation of a contaminated site or of a potentially contaminated site under NJDEP oversight, and the procedures to determine the applicable oversight document.

**Technical Requirements for Site Remediation - (Technical Rules)**, N.J.A.C. 7:26E: The minimum technical requirements to investigate and remediate contamination at any site. The distinct components of the remediation process may include preliminary assessment, site investigation, remedial investigation (RI), remedial alternative analysis, and remedial action.

**Ground Water Quality Standards - (GWQS)**, N.J.A.C. 7:9C: means the New Jersey rules which set forth a designated use or uses for the ground waters of the State, use classifications,

water quality criteria for the State's waters based upon such uses, and the NJDEP's policies concerning these uses, classifications and criteria.

**Permit-by-rule - (PBR):** a provision of the NJPDES regulations stating that a facility or activity is deemed to have a NJPDES permit if it meets the requirements of the applicable regulations. The applicable regulations for the purpose of this guidance are set forth at N.J.A.C. 7:14A-7.5 and 8.5 and N.J.A.C. 7:26E-2.1 (a)14, 3.7(c)2, 6.3(c) and 6.3(d).

**Underground Injection Control - (UIC):** subsurface emplacement of fluids (liquids or gases) by well injection.

**Injection well:** a well, septic, subsurface disposal bed, cavity, tube or pipe, or any structure used to deliver fluids directly to a point below the ground surface. The regulations (N.J.A.C. 7:14A-8.2) categorize the injection wells into 5 types.

**Classification Exception Area - (CEA):** an area within which one or more constituent standards and designated uses are suspended in accordance with N.J.A.C. 7:9C-1.6.

**Treatment Works Approval - (TWA):** an approval, pursuant to the NJPDES regulations, of any treatment works.

**Treatment Works:** any device or system used in the storage, treatment, recycling, or reclamation of liquid waste. Also, any other method or system for preventing, abating, reducing, storing, separating, or disposing of pollutants.

## B. Permit by Rule Approval

Before the July 5, 2005 amendments, an individual permit was required for any long-term DGW from a ground water remediation project, such as injection of treated water or the addition of any materials into the ground that meets the definition of a discharge.

In order to facilitate the investigation and remediation of sites under NJDEP oversight, lead programs in the NJDEP are now able to approve most discharges to the ground waters of the State under the permit-by-rule provisions of N.J.A.C. 7:14A-7.5(b) and 8.5(b). The most common types of discharge to ground water units for site remediation approvals are: Underground Injection Control (UIC) Class V injection wells and injection trenches, infiltration-percolation lagoons, overland flow units, and spray irrigation systems.

A written approval from the NJDEP of a proposed DGW related to site remediation is required to qualify for a permit-by-rule (except for certain discharges to the ground from activities associated with the installation, development and sampling of monitoring wells). Another permit-by-rule prerequisite for DGWs that need a written approval, is that the contaminated site where the discharge is proposed is being remediated pursuant to one or more of the environmental statutes and regulations listed at N.J.A.C. 7:14A-7.5(b)1. The last major requirement is that the discharge fits into one or more of the seven categories listed in N.J.A.C. 7:14A-7.5(b)3. These are described in detail in Section IV below.

Proposals for discharges related to site remediation are now incorporated into the remediation process during either the investigation or remedial action phases. The written approval of the discharge will usually be included in the approval of the site remedial investigation work plan or the remedial action workplan, but in some instances may be a separate approval letter.

C. Solid Waste Landfills

The Site Remediation Program may issue closure and post-closure NJPDES-DGW Permits for closed or closing solid waste landfills. This manual does not include guidance for submittal of closure or post closure plans, as detailed requirements are listed in the applicable regulations and other guidance documents. Any questions regarding NJPDES Permit application, renewal, or revocation requirements for solid waste landfills should be directed to the Solid & Hazardous Waste Program at either (609) 984-4611, or visit their web site at [www.nj.gov/dep/dshw/permitting.htm](http://www.nj.gov/dep/dshw/permitting.htm).

Some solid waste landfills may be engaged in site remediation activities with NJDEP oversight. When remediating a solid waste landfill site in accordance with these regulations, the person(s) responsible for the remediation may potentially qualify for a permit-by-rule for the remediation-related DGWs included in N.J.A.C. 7:14A-7.5. This technical manual applies to those discharges.

D. Hazardous Waste Treatment, Storage, and Disposal Facilities (HW TSDFs)

The Site Remediation Program may issue closure and post-closure NJPDES-DGW Permits for closed or closing hazardous waste TSD units; these permits are the equivalent of a RCRA permit. This manual does not include guidance for submittal of closure or post-closure plans, as detailed requirements are listed in the applicable regulations and other guidance documents. Applicants for such permits or permittees with existing hazardous waste closure or post closure permits should seek case specific detailed guidance from the case manager assigned to their facility. The July 5, 2005 amendments to the NJPDES regulations included NJPDES permit exemptions concerning these facilities which are discussed in Section III below.

E. Treatment Works Approval

Pursuant to N.J.A.C. 7:14A-22.4(b)5, a Treatment Works Approval is not required for an authorized permit-by-rule discharge conducted in accordance with N.J.A.C. 7:14A-7.5 or 8.5. Section V specifies applicable TWA-related requirements.

### **III. NJPDES DGW Permit Exemption for HW TSDFs**

For a RCRA Closure and Post-Closure approval, an alternate enforceable oversight document can now be used in lieu of an individual NJPDES permit. The enforceable documents must include the requirement for closure/post closure of the RCRA units and have appropriate provisions for public notice. NJDEP oversight documents that would be acceptable provided they include those provisions would include:

1. Hazardous Waste Facility Permit
2. Administrative Consent Order or Administrative Order
3. Remediation Agreement
4. Judicial Consent Decree or Order

All hazardous waste facilities shall obtain an individual NJPDES-DGW permit issued pursuant to N.J.A.C. 7:14A-10 to conduct ground water monitoring and corrective action unless exempted as described above which is based on N.J.A.C 7:14A-2.5(a)9 and 10. A reference to the NJPDES regulations has been provided at [www.state.nj.us/dep/dwq/7\\_14a/sub02rul.pdf](http://www.state.nj.us/dep/dwq/7_14a/sub02rul.pdf) for further information.

## **IV. Provisions for discharges to ground water by permit-by-rule**

### **A. Summary of Changes to Permit-by-Rule Regulations**

Before the July 2005 amendments to NJPDES and the Technical Rules, a separate NJPDES application and individual permit was required for any long-term ground water remediation projects that included a discharge to the ground, such as injection of treated water or the addition of any materials into the ground that meets the definition of a discharge. Following is a short summary highlighting the three major regulatory modifications that were made to the permit-by-rule process:

1. The permit-by-rule provisions in N.J.A.C. 7:14A-7.5(a), for discharges to ground water from activities associated with the installation, development and sampling of monitoring wells in accordance with a NJPDES permit, were expanded to include the same types of discharges, done in accordance with certain provisions of the Technical Rules. Prior approval from the NJDEP is not required for these discharges.
2. The time frame for the remediation permit-by-rule provisions in N.J.A.C. 7:14A-7.5 (b)3i and iv, (i.e., remediation pilot or engineering tests) was lengthened to 180 days. Discharges for dewatering at contaminated sites and for regulated underground storage tank facilities were added as a new category of permit-by-rule authorized discharges; the duration is also 180 days. No changes were made to the provisions regarding discharges needed to remediate contamination from heating oil releases at residential buildings of four units or less (N.J.A.C. 7:14A-7.5(b)3v), which can be for any duration.
3. All other non-hazardous waste DGWs for site remediation, are also now included in the list of discharges which can qualify for a permit-by-rule; see N.J.A.C. 7:14A-7.5(b)3vii. This “3vii” category includes long-term discharges to implement a final or site-wide ground water remedy. For “3vii discharges” the details of the proposed discharge must be included in a remedial action workplan (RAW) and the new provisions of the Technical Rules, N.J.A.C 7:26E-6.3(c) must be followed. A new provision of the Technical Rules that applies only to this category of discharge is that the person conducting a remediation with a ground water discharge is required to publish a public notice of the discharge that establishes a 30-day comment period. Comments are to be sent to the NJDEP and to the owner or operator of the facility. The NJDEP will respond to all comments received. To expedite the public notice process, a boilerplate public notice is included in the Technical Rules as new Appendix H. The person conducting the remediation must utilize this boilerplate language for the public notice in a local or regional newspaper.

### **B. Types of Remediation Related Discharges in the Permit-By-Rule Provisions**

The types of DGWs included in the permit-by-rule provisions can be put in three major categories:

1. **Discharges that do not require written NJDEP approval [7:14A-7.5(a)4]**

- Discharges to ground water from activities associated with the installation, development and sampling of monitoring wells in accordance with a NJPDES permit or for activities not included in a NJPDES permit, in accordance with the Technical Requirements for Site Remediation, including, but not limited to, the requirements of N.J.A.C. 7:26E-3.7(c)2 and 6.4(d)3;

2. **Discharges that require written NJDEP pre-approval and have either a 30 day or 180 day time limit, or for residential buildings with four or less units, have no time limit [7:14A-7.5(b)3i-3vi]**

- Discharges to ground water not to exceed 180 calendar days, from pilot treatment plants to obtain engineering design data;
- Discharges to ground water related to biotreatability studies where the discharge will not exceed 180 calendar days;
- Discharges to ground water not to exceed 30 calendar days, from wells to test aquifers for the purpose of obtaining engineering and hydrogeologic design data;
- Discharges to ground water not to exceed 180 calendar days, from any other facility or equipment associated with engineering studies, remedial action selection, or design studies and associated monitoring;
- Discharges to ground water to remediate contamination from discharges of heating oil as defined at N.J.A.C. 7:14A-1.2, at a residential building of four units or less;
- Discharges to ground water, not to exceed 180 calendar days, related to dewatering at a contaminated site or regulated underground storage tank facility; and

3. **Discharges that require written NJDEP pre-approval, submittal of a remedial action workplan (RAW) including public notice (PN) provisions and have no time limit [7:14A-7.5(b)3vii]**

- Discharges to ground water not included above that occur during the course of a site remediation that is being conducted in accordance with the Technical Requirements for Site Remediation, N.J.A.C. 7:26E, including the requirements of N.J.A.C. 7:26E-6.1 and 6.3(c). These include discharges that are part of a final or site-wide remedy or that require greater than 180 calendar days to implement.

C. **General Regulatory Guidance Regarding the Above Types of Discharges**

Applicable requirements in the NJPDES Rules (N.J.A.C. 7:14A) and Technical Rules (N.J.A.C. 7:26E) are summarized in Table 1. Regulatory citations are highlighted in items 1 – 5 below.

Table 1: Requirements for Discharges to Ground Water at Remediation Sites\* Included in Permit-By-Rule Provisions of NJPDES

| NJPDES citation for each discharge type | Type of Discharge to Ground Water   | Written pre-approval required from the NJDEP | Regulatory Time Limit (calendar days) | Part of RI or RAW? / PN Needed? |
|---|---|--|---------------------------------------|---------------------------------|
| N.J.A.C. 7:14A- 7.5 (a)4                | From activities associated with the installation, development and sampling of monitoring wells.   | NO   | NONE                                  | RI / NO                         |
| N.J.A.C. 7:14A- 7.5(b)3 i **            | From pilot treatment plants to obtain engineering design data.  | YES  | 180                                   | RI / NO                         |
| N.J.A.C. 7:14A- 7.5(b)3 ii **           | Related to biotreatability studies.   | YES  | 180                                   | RI / NO                         |
| N.J.A.C. 7:14A- 7.5(b)3 iii **          | From wells to test aquifers for the purpose of obtaining engineering and hydrogeologic design data.   | YES  | 30                                    | RI / NO                         |
| N.J.A.C. 7:14A- 7.5(b)3 iv **           | From any other facility or equipment associated with engineering studies, remedial action selection, or design studies and associated monitoring. | YES  | 180                                   | RI / NO                         |
| N.J.A.C. 7:14A- 7.5(b)3 v **            | To remediate contamination from discharges of heating oil as defined at N.J.A.C. 7:14A-1.2, at a residential building of four units or less.      | YES  | NONE                                  | RAW/ NO                         |
| N.J.A.C. 7:14A- 7.5(b)3 vi **           | Related to dewatering at a contaminated site or regulated underground storage tank facility.  | YES  | 180                                   | RI & RAW / NO                   |
| N.J.A.C. 7:14A- 7.5(b)3 vii **          | Discharges other than (b)3i-vi, that occur during the course of a site remediation.   | YES  | NONE                                  | RAW / YES                       |

\* Regulated by Underground Storage of Hazardous Substances Act, Industrial Site Recovery Act, Spill Compensation and Control Act, the Procedures for Department Oversight of the Remediation of Contaminated Sites, or the Technical Requirements for Site Remediation.

\*\* Pursuant to N.J.A.C. 7:14A-8.5(b)11 includes Class V underground injection wells or trenches.

1. General requirements for all discharge proposals – All discharge proposals must be consistent with the six items listed at N.J.A.C. 7:14A-2.1(b), which include “protect public health and safety” and prevent, “control, and abate water pollution.” Based on N.J.A.C. 7:14A-7.1 all permitted DGWs must be designed “in accordance with N.J.S.A. 58:10A-1 et seq. and the Ground Water Quality Standards (GWQS) in N.J.A.C. 7:9C.” Pursuant to N.J.A.C. 7:14A-7.5(c) the Department is required to invalidate any permit-by-rule if: “1. The discharge is likely to contravene the ground water quality standards at N.J.A.C. 7:9C; ” and “2. The discharge may result in violation of the Surface Water Quality Standards at N.J.A.C. 7:9B.” The Department will not approve discharge proposals if they do not appear to be designed to ensure compliance with the requirements of these rules.

Detailed guidance for compliance with these general standards is in Sections VII, VIII, and Appendix A.

2. Duration and effective date for all permit-by-rule discharges - For all the permit-by-rule discharges, the duration of the permit for a particular discharge begins on the day the discharge first occurs, not on the date the discharge approval letter is issued or received. A record of the date discharging begins should be made in a system operation log and the department should be notified of this date as soon as possible. Although any applicable regulatory time limits begin as explained above, the effective date for the permit-by-rule discharges that require a written approval is the issue date of the approval letter since the discharge can begin anytime after that date.

For long term discharges approved pursuant to N.J.A.C. 7:14A-7.5(b)3v or vii, there is no requirement to obtain a new written approval every five years. A permit-by-rule is a regulatory provision, thus for every permit-by-rule included in the NJPDES regulations (both those that require an individual written approval of the discharge and those that do not), the five year duration and renewal provision of N.J.A.C. 7:14A-2.7 is satisfied by the five year cycle of readoption, and/or expiration date extension, for the NJPDES regulations.

These procedures are consistent with the “Summary of Public Comments and Agency Responses”, in the adopted amendments to NJPDES and the Technical Rules in the NJ Register on July 5, 2005.

3. Discharges that do not require written approval - For the first type of permit-by-rule discharge listed in B above, applicable regulations at N.J.A.C. 7:26E-2.1(a)14 and 3.7(c)2 indicate that acceptable procedures for these discharges are specified in the NJDEP Field Sampling Procedures Manual (FSPM). Therefore, consult the most current version of the NJDEP FSPM, Sections 2.4.5.6 (Disposal of Drill Cuttings) and 2.4.5.7 (Disposal of Development, Purge, Pump Test and Decontamination Waters) for such discharges. Those sections of the NJDEP’s FSPM can now be accessed at: [www.nj.gov/dep/srp/guidance/fspm/pdf/chapter02a.pdf](http://www.nj.gov/dep/srp/guidance/fspm/pdf/chapter02a.pdf).

DGWs that are consistent with these FSPM sections, and the specific regulatory requirements of N.J.A.C. 7:26E-6.4(d)3 if applicable, are deemed to have a permit-by-rule per N.J.A.C. 7:14A-7.5(a)4. Note that, as indicated in FSPM section 2.4.5.7, fluid

discharges into wells are not included in this type of permit-by-rule since N.J.A.C. 7:14A-**8.5(b)11** refers only to N.J.A.C. 7:14A-**7.5(b)**.

4. Discharge proposals in RI phase - Proposals for short-term discharges that are part of pilot tests, biotreatability studies etc. (full descriptions in section B.2. above) are subject to the Technical Rules at N.J.A.C. 7:26E – **4.1(a) 4, and 6, 4.2(a), and 4.2(b) 8**. Based on these regulations (as detailed below), proposals for discharges from treatability, pilot studies, etc., and to develop permit limitations must be part of a remedial investigation workplan (RIW).

N.J.A.C. 7:26E – **4.1(a) 4** requires collection and evaluation of data to evaluate remedial action alternatives, which can require treatability studies, pilot studies, etc.. N.J.A.C. 7:26E – **4.1(a) 4i** indicates such work should be initiated by the end of the second contaminant delineation phase. N.J.A.C. 7:26E – **4.2(b) 8i** requires RIWs to include proposals for treatability and pilot studies.

N.J.A.C. 7:26E – **4.1(a) 6** requires collecting data to develop permit limitations for discharges required for a remedial action. Such data collection would be a necessary step in most proposals for the different types of discharges described above. N.J.A.C. 7:26E – **4.2(b) 8ii** requires proposals for such data collection be included in the RIW.

5. Identify Containment Activities -N.J.A.C. 7:26E – **4.1(a)7** requires identification of “containment and/or stabilization activities to prevent contaminant exposure to onsite receptors and to prevent the offsite migration of contaminants while remedial alternatives are being evaluated.” At contaminated sites a short-term DGW may be proposed as a result of excavation dewatering such as during: road or building construction; underground tank installation or removal; or removal of contaminant sources below the water table (last item in B.2 above). The requirements in C.1. above mean the discharge proposal must include actions to prevent the discharge from causing unsafe onsite exposure to contaminants and actions to limit or prevent offsite migration of contaminants in the recovered water as a result of its discharge to the ground. These actions (e.g., monitoring to ensure contaminant levels do not exceed applicable standards or construction of treatment and disposal facilities) meet the definition of “containment activities” (N.J.A.C. 7:26E – **1.8**).

Other containment activities may also be needed, such as an interim remedial action to control migration of ground water contamination until a final remedial action is chosen.

If the need for a short-term dewatering related discharge or a discharge to implement another containment activity is realized, N.J.A.C. 7:26E – **4.1(a)7 and 4.8(c)15** require including in a RI report a notification that such discharges will be proposed.

6. Discharge proposals in RA phase – If any of the short-term ( $\leq 180$  days) dewatering related discharges discussed in C.5. above will be proposed they are subject to the requirements of N.J.A.C. 7:26E – **5 and 6** even if the activity resulting in the dewatering (e.g., building construction) is not by itself a remedial action. This is because the containment activities required to regulate the discharge are a type of “remedial action” because “containment” is

included in the definition of remedial action.

N.J.A.C. 7:26E – **5.2(a)4** requires a remedial action selection report (RASR) be submitted to the Department if the “selected remedial action is being implemented to address ground water, surface water or sediment contamination or ecological impact.” Pursuant to N.J.A.C. 7:26E – **5.2(d)** the RASR can be submitted as part of the RI report or with the RAW.

Proposals for dewatering related discharges can be submitted with the full-site RAW or as a single phase remediation RAW, per N.J.A.C. 7:26E – **6.1(c)**. Note that the requirements at N.J.A.C. 7:26E – **6.3(c)** do not apply to this type of discharge proposal if it is authorized pursuant to N.J.A.C. 7:14A-**7.5(b)3vi**. If the discharge is proposed to last for more than 180 days, is falls under N.J.A.C. 7:14A-**7.5(b)3vii** which then does require compliance with N.J.A.C. 7:26E – **6.3(c)** (includes the newspaper public notice).

#### D. Consecutive Permit-By-Rule Approvals and Modifications to Approved Discharges

Consecutive permit-by-rule discharges of the type that have regulatory time limits can only be approved if the purpose is to obtain information outside the scope of the original work plan, or because conditions arose which precluded the completion of a pilot test (e.g., system breakdown that could not be repaired).

Be advised that a public notice pursuant to N.J.A.C. 7:26E-6.3(c) is required for pilot tests, treatability or design studies, etc., that continue for greater than 180 days. To facilitate efficiency and allow uninterrupted testing/studies, approval for the first 180 days can be issued before the public notice. Approval for the remainder of the test/study period could be issued after the 30 day public comment period is complete.

A similar two-step approval process can be used to allow uninterrupted progress from a testing/study phase to a site-wide or final remediation related discharge.

If a permit-by-rule for a discharge that is part of a long term, full site, or final remediation (i.e., no 180 day time limit) has been obtained and then later significant changes to the discharge are needed, the following procedures should be followed. An addendum to, or a revised work plan, with the detailed information listed at N.J.A.C. 7:26E-6.3(c)1i.-ix., must be submitted to the Department for any changes to be made to alter the performance of the remediation and discharge system. The Department will comment on and/or approve the submittal. A new public notice may be needed if the proposed changes include a different general discharge location (i.e., address), type of treatment, or type of discharge unit not listed as a possible option in the original workplan or public notice. If appropriate, the Department will also issue a new discharge approval letter.

Accounting for such potential changes, and including sufficient detail about them, in the first, initially submitted discharge proposal work plan (including the public notice) would be the most efficient means for appropriately addressing this issue. If sufficient detail can be included in the initial workplan/public notice, a new public notice and discharge approval letter may not be

needed. Additional guidance should be sought from your case manager regarding how to address possible future modifications to approved discharges.

#### E. Individual Permits

Because of the expansion of the permit-by-rule provisions, the NJDEP does not plan to renew existing individual NJPDES DGW permits, or issue new individual DGW permits, solely for non-hazardous waste discharges required to implement a remedial action. The NJDEP recommends that all such permittees should take the actions needed, with regard to the remediation related discharge, to be deemed to have a permit-by-rule pursuant to N.J.A.C. 7:14A-7.5 of the NJPDES regulations.

If any permittee desires to renew an individual permit instead of utilizing the permit-by-rule, they should discuss this with their assigned case manager. If possible, this discussion should occur well in advance of six months prior to the permit expiration date as this may preserve eligibility for the expedited renewal procedure at N.J.A.C. 7:14A-16.3(h).

If an expired permit has already been administratively continued pursuant to N.J.A.C. 7:14A-2.8, switching to a permit by rule is relatively straight forward. Consistent with N.J.A.C. 7:14A-2.8(a), a continued individual permit will be considered administratively expired upon the effective date of the new permit (i.e., the permit-by-rule replacing the individual permit). As explained previously the effective date is the issue date for the letter which approves the discharge proposal. The approval letter will include a formal notification that the continued individual permit is now administratively expired.

If an individual permit will expire within the next 6 months and has not been administratively continued per N.J.A.C. 7:14A-2.8(a), the Department can, if appropriate, continue the permit based on N.J.A.C. 7:14A-2.8(d). If the permit has expired and was not continued, the discharge should cease and the NJDEP should formally notify the permittee (via just a letter) that, as of the expiration date, the permit is considered administratively expired. If a discharge occurred under a continued permit but now has permanently ceased (e.g. active remediation complete), the Department must issue a permit revocation or denial of a permit renewal as specified at N.J.A.C. 7:14A-16.3.

In most situations where a PBR will replace an individual DGW Permit, a RAW, or its equivalent, has already been approved by SRP and the discharge related decisions and requirements have already been determined. Therefore, the PBR requirement regarding a RAW can be considered fulfilled by submitting a proposed addendum to the RAW that includes: 1) references to the date and title of the previously approved RAW and the RAW approval letter and 2) a copy of the already established effluent and monitoring requirements. Any proposal to modify the discharge, or the established requirements, should also include justifications for the changes as appropriate based on the requirements at N.J.A.C 7:26E-6.3(c).

In this situation the requirements to public notice the workplan for the discharge in a local newspaper would still apply but a variance for some of the related requirements will be made available if requested. The variance would allow downgrading the requirement to send the

entire RAW to the local entities listed at N.J.A.C 7:26E-6.3(c)3 since the individual permit was public noticed in the past and compliance with the notification requirements of N.J.A.C. 7:26E-1.4 of the Technical Rules is also applicable. The variance would allow sending only a copy of the public notice that will appear in the newspaper to the local entities along with a written commitment to provide additional information regarding the discharge if requested by the local officials/entities. The model public notice in Appendix H of the Technical Rules must be modified accordingly as part of this variance request.

## V. **Applicable Requirements for Treatment Works**

N.J.A.C. 7:14A-22.4 lists the activities for which a Treatment Works Approval (TWA) is not required, which as previously stated includes discharges that qualify for a permit-by-rule. In addition, N.J.A.C. 7:14A-22.4(a)13 specifies that a TWA is not required for treatment systems for ground water recovery and release back to the ground performed under the auspices of a SRP oversight document. However, as per N.J.A.C. 7:14A-22.2(g), a treatment works that does not need a TWA must still conform with any applicable requirements of subchapters 22 and 23 of NJPDES. Those applicable requirements for SRP remediation discharges are explained below. Note that a licensed operator is not required pursuant to N.J.A.C. 7:10A-1.10(c)1. These requirements are applied only to discharges regulated pursuant to N.J.A.C 7:14A-7.5(b)3vii.

### A. General TWA Requirements

1. An engineer's report and the construction plans/specifications for the treatment system must remain on file with the permittee and be available for SRP inspection prior to operation of the treatment system and should be ready for submittal to SRP if they are requested.
2. If the "as built" design differs from the original plans, "as built" plans and specifications must replace the original plans in the permittee's files prior to start-up of the system.
3. Prior to start-up of the treatment system, an Operation and Maintenance Plan for the treatment system must be prepared, and kept on file with the permittee and remain available for SRP inspection during the operating life of the system.
4. All visits in which treatment system maintenance and/or inspection was performed must be noted in the system operation log. SRP may establish minimum site visit requirements if any condition of the permit is violated or if the performance criteria are not met.

### B. Details for Engineer's Report

The engineer's report should include or address the following and should be accompanied by a letter of appointment from a responsible official of the RP/permit applicant, which certifies that the engineer that prepared the design plans has been duly authorized to prepare those documents.

1. Engineer's abstract;
2. Table of contents;
3. Description of, and detailed design plans for, water treatment/disposal systems;
4. Detailed description of all units, purpose and function;
5. Ultimate destination of all treated waters, sludges and residues;
6. Schematic diagram indicating and labeling all components of the extraction, treatment and disposal system.

## **VI. Administrative Aspects of the Permit-by-Rule Requirements in the Technical Rules**

- A. The NJDEP amended the Technical Requirements for Site Remediation at N.J.A.C. 7:26E-6.3(c): [www.state.nj.us/dep/srp/regs/techrule/techrule.pdf](http://www.state.nj.us/dep/srp/regs/techrule/techrule.pdf) to provide the substantive and administrative requirements applicable to the discharges authorized under the permit-by-rule provisions at N.J.A.C. 7:14A-7.5(b)3vii. N.J.A.C. 7:26E-6.3(c) sets forth the information requirements for the person responsible for conducting a remediation who seeks permit-by-rule approval pursuant to N.J.A.C. 7:14A-7.5(b)3vii. The N.J.A.C. 7:26E-6.3(c) requirements parallel and substitute for the requirements that would have applied under the NJPDES-DGW permits issued under former rules. Technical information, such as the nature, location and duration of the discharge, is required to be submitted to the NJDEP with the remedial action workplan (RAW). At their discretion, case managers may approve a variance petition, per N.J.A.C. 7:26E-1.6(d), to submit a separate remediation discharge proposal at any time during the remediation process instead of as part of the full RAW.

N.J.A.C. 7:26E-6.3(c) also establishes the public notice requirements for persons seeking approval under a permit-by-rule pursuant to N.J.A.C. 7:14A-7.5(b)3vii. N.J.A.C. 7:26E-6.3(c)2 through 7 require the person seeking the permit-by-rule to publish a public notice of a proposed discharge in a local daily or weekly newspaper of general circulation, and to provide copies of the remedial action workplan to the local authorities for each municipality where the contaminated site is located. The Technical Rules state that public comments regarding the discharge be submitted to the NJDEP. These notice requirements are consistent with the public notice requirements of the Water Pollution Control Act, N.J.S.A. 58:10A-1 *et seq.*, and the NJPDES regulations at N.J.A.C. 7:14A-15, which would otherwise apply to these discharges to ground water.

In conjunction with the requirement for public notice, the NJDEP added a model public notice at new Appendix H to N.J.A.C. 7:26E, [www.state.nj.us/dep/srp/regs/techrule](http://www.state.nj.us/dep/srp/regs/techrule). The person responsible for conducting the remediation is required to complete the notice, to provide a brief description of the proposed discharge, and publish the notice in an appropriate local newspaper as described above. Each notice invites interested persons to submit comments to the NJDEP and the owner and operator of the facility, within 30 days of publication of the notice. The NJDEP will consider comments that relate to the requirements of the proposed discharge that are received by the close of the public comment period. After the close of the public comment period, the NJDEP will determine whether or not to approve the proposed discharge. The NJDEP may require modification of the discharge proposal, public notice, or both in its technical notice of deficiency letter on the RAW. The NJDEP will respond to all significant and timely public comments on the discharge proposal with its decision of whether or not to approve the discharge.

- B. The person seeking approval under the permit-by-rule shall publish the NJDEP approved public notice at least 45 days prior to the proposed startup date of the ground water discharge. There is no requirement for the NJDEP to approve the discharge within a set

time frame. If the responsible party (RP) receives public comments pursuant to the public notice, and if it is not obvious that the comments have also been sent to the NJDEP, then the RP should ensure that the comments are also sent to the NJDEP because the NJDEP has legal responsibility to respond to comments.

- C. The person seeking approval under the permit-by-rule shall provide a copy of the remedial action workplan, or if approved by the NJDEP case manager, just a separate remediation discharge proposal, to the mayor, clerk, and planning board for each municipality where the contaminated site is located, and any sewage authority, health officer and environmental commission with jurisdiction for each area in which the contaminated site is located. Where an individual permit for the same discharge already exists, the variance discussed in section IV.E. above may apply.
- D. The person seeking approval under the permit-by-rule shall submit to the NJDEP:
  - 1. proof of publication of the public notice within 15 calendar days after the notice is published and
  - 2. a list of the names and addresses of the local entities that were sent a copy of the RAW, remediation discharge proposal, or public notice, prior to the end of the public comment period.
- E. Written comments and requests for a public hearing on the proposed discharge shall be submitted to the NJDEP to the address provided in the public notice.
- F. The NJDEP shall hold a public hearing if there is, or may be, a significant degree of public interest in favor of holding a public hearing.
- G. The NJDEP shall consider comments received during the public comment period, respond to the comments when it issues the written decision whether or not to approve the proposed discharge, and send a copy of permit-by-rule approval letters to all local entities listed in item C above. In most cases this approval will be included in the full RAW approval letter.
- H. The person that obtains the permit-by-rule shall comply with the record-keeping requirements of the NJPDES rules set forth at N.J.A.C. 7:14A-6.6. Therefore, the person to whom the NJDEP issues its approval of the discharge is responsible for retaining records of the following information for five years from the sample date or creation of the record. Note that the NJDEP may require the records be kept longer if there is enforcement action, litigation, or relevant water quality studies. Other provisions of Subchapter 6 of the NJDPES regulations may also be applicable. Appendix A provides additional guidance regarding these provisions.
  - 1. The date, exact places, and time of sampling or measurements.
  - 2. The individual(s) who performed the sampling.
  - 3. The date(s) analyses were performed.
  - 4. The individual(s) who performed the analyses.

5. The analytical techniques used.
6. The results of the analyses.

## VII. Submission Requirements for Discharges Proposed in a RAW

The person seeking approval to discharge to ground water pursuant to N.J.A.C 7:14A-7.5(b)3vii shall submit a remedial action workplan pursuant to N.J.A.C. 7:26E-6.2 and 6.3(c) (or a separate remediation discharge proposal) that includes the following. Items A through I, if applicable, should be considered guidance for discharge proposals not subject to N.J.A.C. 7:26E-6.3(c) (e.g., from short-term pilot/treatability studies or dewatering proposals, etc.).

- A. A detailed description of the concentrations of all contaminants expected to be present in the discharge.
- B. A detailed description of the chemical content of all fluids and substances to be discharged and/or placed into or onto the ground to implement remediation.
- C. A detailed explanation of why the ground water treatment system (if proposed) would be appropriate for the discharge. The explanation shall demonstrate that the system will treat the contaminants so as to achieve, as applicable:
  - 1. concentrations that will comply with capture-zone discharge requirements (e.g. 95% removal of contaminants from ground water), see Appendix A;
  - 2. concentrations that will comply with the antidegradation limits, if the discharge is outside the capture zone, see Appendix A;
  - 3. no violation of the Surface Water Quality Standards, N.J.A.C. 7:9B;
- D. A general description of the treatment system and operation and maintenance procedures. Requirements/guidelines for treatment systems are included in Appendix A.
- E. An estimation of how long the discharge will occur and whether the discharge is designed to be continuous or intermittent.
- F. A detailed monitoring plan, including but not limited to:
  - 1. the monitoring wells to be sampled;
  - 2. the frequency of sampling wells and, if applicable, the fluid to be discharged;
  - 3. a list of all the analytes to be monitored;
  - 4. a site map which includes, at a minimum, the location of all monitoring wells, ground-water flow direction(s), and the location of the proposed discharge(s);
  - 5. well logs and construction details for the wells to be included in the monitoring plan; and
  - 6. descriptions of the well sampling methods (e.g., traditional, low-flow, Passive Diffusion Bag (PDB), etc.) to be used in the monitoring plan.
- G. A detailed schedule for the submission of reports of all discharge-related activities;
- H. A detailed proposal to modify, as applicable, any existing Classification Exception Area or establish a new Classification Exception Area, as defined in the Ground Water Quality

Standards, N.J.A.C. 7:9C. The existing CEA may have to be modified or a new CEA proposed based on how the proposed discharge relates to the existing extent of the CEA. Include a map showing the boundaries of any proposed or existing CEA in relation to all the features listed for the monitoring plan site map. See Appendix A for additional guidance.

- I. If applicable, submit specifications for the design of an underground injection system. Such specifications shall be in accordance with New Jersey Pollutant Discharge Elimination System (NJPDES) rules at N.J.A.C 7:14A-8. Specifications considered applicable are detailed in Appendix A. Additional design, construction, and operation guidelines are provided in Appendix A for other types of DGWs such as overland flow, infiltration-percolation lagoons, and spray irrigation systems.
- J. A draft public notice, worded exactly as the model in Appendix H of the Technical Rules (unless a variance to modify it has previously been granted), [www.state.nj.us/dep/srp/regs/techrule](http://www.state.nj.us/dep/srp/regs/techrule), for NJDEP approval prior to publication.

## VIII. Technical Considerations for Monitoring Requirements

The person submitting a request for a permit-by-rule approval shall consider the following items in designing a monitoring plan (cited in Section VII.F.):

- A. Analytical Methods: The permittee must use certified analytical methods to monitor for contaminants and injected chemicals. However, when no certified method exists for a parameter or if there are no labs certified for the required method, then the permittee shall propose an appropriate method. If approved by the NJDEP, then the permittee shall perform and submit all the QA/QC required by the method.

In cases in which it is not certain whether a method will detect an injected chemical, the permittee shall perform a bench scale test to see if the method is appropriate. Usually, analyses of samples spiked with the chemical in question would be sufficient.

- B. Sampling and Monitoring Methods: Pursuant to the Technical Rules at N.J.A.C. 7:26E-2.1(a)14, all sampling and monitoring shall conform to applicable industry methods such as those specified in the most current edition of the NJDEP's Field Sampling Procedures Manual.
- C. Monitoring Frequency: Monitoring frequency should generally be more frequent at the start of the discharge. Table 2 outlines an example of a post-injection sampling schedule that was approved by the NJDEP for a facility that proposed to conduct remedial injection activities.

Monitoring should continue throughout the duration of the discharge. Monitoring shall also continue after the cessation of the discharge if the discharged materials, and/or their by-products, are still above the GWQS or background concentrations. This sampling should be done at the same time sampling is done to evaluate site-specific ground water contaminants and the effectiveness of the remediation.

| EXAMPLE OF SAMPLING FREQUENCY SCHEDULE FOR INDICATOR PARAMETERS AND CHEMICAL CONSTITUENTS |  |  |
|---|--|--|
| Weekly for the first month following commencement of the injection activities             | Monthly for the first quarter following commencement of the injection activities (i.e., two additional months of sampling following the weekly schedule) | Quarterly following the first three months (i.e., first quarter) of sampling |

TABLE 2

- D1. Monitoring Parameter Selection and Baseline Water Quality: If chemicals are to be added to ground water, it will usually be necessary to monitor for the constituents that are included in the injected materials. If applicable, Material Safety Data Sheets (MSDS) should be consulted when choosing the monitoring parameters. The MSDS shall be submitted to the NJDEP.

It will also be necessary to establish the background concentrations for those constituents and/or associated indicator parameters (see below). For example, if nutrients are to be injected, the permittee should sample for nitrates, phosphates, etc. It is important to obtain representative baseline water quality (i.e., sample prior to injection activities) so that future analyses can be compared to pre-existing conditions. This sampling should be

done at the same time baseline (pre-injection) sampling is done for the site-specific ground water contaminants.

- D2. Indicator Parameters: Some parameters are useful to monitor the effect of injected chemicals. Dissolved oxygen, dissolved carbon dioxide, Eh, and pH are common indicator parameters. For example, if hydrogen peroxide is being introduced to increase dissolved oxygen (DO), then DO should be monitored in the wells to determine the extent of the effect of the injected peroxide.

In addition, an increase in dissolved carbon dioxide in ground water could be indicative of increased aerobic degradation of hydrocarbons. Higher Eh and lower pH in ground water are expected with the successful introduction of peroxide.

- E. Capture Zone Monitoring: If ground water pumping and treatment is the selected remedial technology, the permittee must propose a method of defining the capture zone and demonstrate whether the discharge will remain within that zone.

## **Appendix A**

### **Design, Construction and Operation Guidelines for Site Remediation Permit-by-Rule**

- I. Classification Exception Areas, Antidegradation Policy and Treatment Objectives**
- II. Conditions Applicable to All NJPDES Permits**
- III. Class V Injection Wells**
- IV. Infiltration Percolation Lagoons or Trenches**
- V. Spray Irrigation and/or Overland Flow Systems**

## Design, Construction, and Operation Guidelines for Site Remediation Permit-by-Rule

Topics covered in this appendix include: the Ground Water Quality Standard's (GWQS) Classification Exception Areas (CEAs), the antidegradation policy of the GWQS, and treatment objectives for discharges of recovered ground water (Section I); policies and regulatory conditions applicable to all permittees (Section II); and guidelines for the following types of discharge to ground water (DGW) facilities (or units): Class V injection wells; infiltration-percolation lagoons or trenches; and spray irrigation and overland flow systems (Sections III through V).

### I. Classification Exception Areas, Antidegradation Policy and Treatment Objectives

This section applies to all the types of DGW units discussed in this Appendix. It provides additional guidance on compliance with the [GWQS, N.J.A.C. 7:9C](#). N.J.A.C. 7:9C-1.6 contains the basis for establishing CEAs, and N.J.A.C. 7:9C-1.8 covers the antidegradation policy. For expediency, "ground water standard," as used below, means the higher of the ground water quality criterion or practical quantitation level (PQL). For Class II aquifers, these standards are the values in the far right-hand column of [Table 1 of the GWQS](#).

The antidegradation policy is to protect clean ground water from being contaminated up to the ground water standards or to prevent further degradation where those standards are already contravened. The policy includes developing "antidegradation limits" which are constituent standards applicable to discharges (i.e., numeric permit limitations). In Class II-A ground waters, for areas in which background quality is less than the standard, antidegradation limits are halfway between the background level and the ground water standard. So, if background is 2 ppm and the standard is 10 ppm, the antidegradation limit is 6 ppm. When dealing with background values of zero (synthetic contaminants) the antidegradation limit is half of the criterion or the PQL.

A. Requirements for Various Discharge Categories: Three categories of discharge scenarios are discussed below: *in situ* treatment related discharges; treated ground water discharged within the capture zone/CEA, and treated ground water discharged partially or fully outside the capture zone/CEA. For the third category, the typical case (item A.3) and some unusual kinds of site settings (item A.4.) are discussed. Removal of any free product in recovered ground water is required for all applicable discharge scenarios. For any scenarios not discussed below seek site specific guidance from the NJDEP prior to submitting discharge proposals. Except as explained in C below, the same requirements apply to short-term discharges included in pilot studies, treatability studies, etc.,.

1. In Situ Treatment Discharges – an *in situ* ground water, soil and/or source area treatment technology is proposed which includes a discharge of substances and constituents which meet the definition of pollutant. These discharges would occur within or adjacent to the CEA for the site ground water plume.

For most *in situ* treatment technologies the amount and concentration of substances discharged should be the minimum levels that provide effective *in situ* treatment of subsurface contaminants. However, to be effective, these substances may need to contain

concentrations of constituents listed in the GWQS, that exceed their corresponding antidegradation limits. N.J.A.C. 7:9C-1.6(c) allows temporary noncompliance with antidegradation limits related to the localized effects of a permitted discharge. Thus, per N.J.A.C. 7:9C-1.6(c), the permit-by-rule, resulting from the approval of the discharge, automatically establishes a CEA. This CEA includes only the constituents permitted to be discharged, is regulated separately from the CEA for the site ground water plume, and is not subject to the CEA requirements at N.J.A.C. 7:26E-8.

A CEA created by the temporary localized effect of an approved discharge has a duration equal to the life of the approved NJPDES permit action. This action, and therefore the duration of the CEA, includes the duration of the effects of the approved discharge which are a needed part of the remediation. The CEA extent is defined as the area between the discharge location and the locations of downgradient monitoring wells designed to evaluate the effects of the discharge.

If antidegradation limits for any constituent in the discharge will be exceeded, the discharge proposal must include a list of those constituents and indicate they will be considered part of a permit-related CEA.

Although this flexibility regarding the antidegradation policy is available, *in situ* treatment discharge proposals must be designed to prevent or minimize extensive contravention of any ground water standard (as measured in monitoring wells) for the constituents in the discharge. The limits should only be exceeded if such a contravention is a needed part of the *in situ* treatment process.

Background levels must be established for all contaminants without a specific ground water standard. The concentration and amount of these contaminants to be discharged must also be minimized to the lowest amount needed for effective remediation.

If ground water standards are contravened as a result of the approved discharge and those levels persist after the remedial technology is no longer effectively treating the original ground water contaminants, then the permit-related CEA is no longer appropriate. If that occurs these contaminants would become subject to the CEA requirements in the Technical Rules, N.J.A.C. 7:26E-8. In this case, after the treatment period is complete, if a CEA is still required for any of the original ground water contaminants then the treatment related constituents must be added to the constituent list for the site plume CEA. The expected duration of this modified CEA should be adjusted if necessary to reflect the attenuation period expected for the most persistent contaminant present. In addition, if an area outside the boundary of the plume-related CEA is affected by an *in situ* treatment discharge such that a contravention of ground water standards persists after the duration of the treatment program, the extent of the plume-related CEA should be modified to include that area. If the only remaining contaminants exceeding standards are from the approved discharge, a new CEA, subject to N.J.A.C. 7:26E-8, and including the applicable constituents must be established.

After the treatment program is determined to be complete, at least two rounds of sampling, separated by about 3 months or more, should be used to determine whether or not a contravention of the standards has occurred. Statistical analyses, using at least four samples (separated by about 2 months or more) could also be used for this determination.

It is anticipated that, in most cases, only ground water monitoring would be needed to evaluate any effects of discharges that are part of *in situ* treatment technologies. This monitoring should be designed to confirm that no inadvertent contravention of the GWQS occurs outside the permit-related CEA or the CEA for the existing plume as a result of these discharges. Such monitoring should be developed based on the guidance in Section VIII of this manual.

As mentioned above, some *in situ* technologies may include discharging a substance that does not have a specific ground water standard. If such a substance still remains in ground water above background levels after the ground water remediation for the original contaminant(s) is complete, then an interim specific ground water quality criterion may need to be developed for it, or a interim generic criterion applied. If the applicable criterion is exceeded after the remediation is complete, the constituent would be subject to the CEA requirements in N.J.A.C. 7:26E-8.

2. Discharges Within the Capture Zone/CEA – in this scenario, a ground water recovery system is needed, and the proposed discharge is within the capture zone or within the CEA for the ground water plume for the contaminated site. Based on policies stated in the GWQS [N.J.A.C. 7:9C-1.2(a) and (c)] the NJDEP considers the least stringent of the following two options for most dissolved pollutants, to be the appropriate management actions for treatment of recovered ground water for this discharge scenario:
  - reduce each individual contaminant concentration by 95% or
  - reduce contaminants to levels equal or less than their respective ground water standards.

The discharge must be consistent with the Technical Rules at N.J.A.C. 7:26E-6.1(b)4, the applicable provisions of N.J.A.C. 7:26E-1.13(a), and any other applicable regulations. These regulations require treatment to be consistent with remediation standards and imply that the discharge not: significantly change the size of the plume; significantly worsen existing ground water contaminant levels within the plume; nor have a negative impact on plume migration or receptors. The minimum requirement of free product removal from recovered ground water may be sufficient discharge treatment for some remedies.

The monitoring plan must address all items listed in Section VII. F. and Section VIII and be able to provide data to confirm that the discharge is meeting all the objectives listed above.

3. Typical Discharges Outside the Capture Zone/CEA - a ground water recovery and treatment system is needed and the resulting proposed discharge unit or units are located partially or fully outside the capture zone and/or outside the CEA needed for the site-related ground water plume. The antidegradation limit for each constituent in Class II-A areas would be 50% of their ground water quality criteria or the PQL, whichever is higher, assuming ground

water quality directly upgradient of the DGW unit is non-detect for each contaminant of concern.

The antidegradation limits can be applied either at the point of discharge and at compliance monitoring wells or only at the compliance monitoring wells.

Attachment 1 addresses a specific type of discharge proposal where antidegradation limits are applied at the point of discharge. Attachment 1 contains specifications for a discharge proposal that is consistent with NJDEP recommendations (including antidegradation limits) for discharges to ground water needed to remediate a release of heating oil (defined at N.J.A.C. 7:14A-1.2) at residential buildings of four units or less.

Where the antidegradation limits are applied only at the compliance monitoring wells the discharge approval would create a permit-related CEA. This CEA includes only the constituents permitted to be discharged, is regulated separately from the CEA for the site ground water plume, and is not subject to the CEA requirements at N.J.A.C. 7:26E-8.

This type of CEA would encompass only the area between the discharge unit and the downgradient compliance monitoring wells. Wells would need to be located and sampled specifically to monitor any effects of the discharge immediately downgradient of the DGW unit. As indicated in A.1. above, the longevity of this separate, localized CEA would be equal to the duration of the life of the approved NJPDES permit action. This action includes the duration of any localized effects of the discharge between the discharge unit and the compliance wells. Monitoring of the compliance wells beyond the active discharge duration must be proposed to ensure long-term compliance with the antidegradation policy within the permit-related CEA.

The permit-related CEA duration will end when a sufficiently long ground water monitoring period has been completed to evaluate any long-term localized effects of the discharge. The length of this post-active discharge monitoring period should be proposed based on ground water flow velocity and attenuation expectations. The date the discharge ceases should be recorded in the system operation log and reported to the Department case manager. If compliance with the applicable constituent standards is not achieved in the compliance wells within the expected time period, a site specific evaluation should be done to determine if the permit-related CEA duration should end and a CEA be established that complies with N.J.A.C. 7:26E-8.

4. Other Discharges Outside Capture Zone/CEA (Less Common or More Complicated Site Settings) - a ground water recovery and treatment system is needed and the proposed discharge is partially/fully outside the capture zone/CEA but upgradient ground water quality is above non-detect for some contaminants and/or the discharge is to ground water in a Class I or III area (based on N.J.A.C. 7:9C-1.5). As indicated above, ground water quality immediately upgradient of a DGW unit affects the determination of antidegradation limits. Pursuant to the GWQS, background water quality “means the concentration of constituents in ground water which is determined to exist directly upgradient of a discharge but not influenced by the discharge, or is otherwise representative of such concentration of

constituents as determined using methods and analyses consistent with the requirements of N.J.A.C. 7:14A-10.11(g).”

- a. *Background Above ND but < Standard* - If ground water quality directly upgradient of the unit has detectable contaminants but does not contravene the ground water standards for those contaminants, background water quality concentrations are used in calculating those antidegradation limits. For such settings, or if a site is in a Class I or III area, consult the procedures in the GWQS at N.J.A.C. 7:9C-1.8 and request site specific guidance to determine the appropriate antidegradation limits. For Class II areas the antidegradation limits are halfway between the background level and the ground water standard.
  - b. *Man-Made Contaminants > Standards Upgradient* - If ground water quality immediately upgradient of a proposed DGW unit location contravenes standards due to man-made, but non-site-related causes, a discharge in such a location may not be approved if it would cause “the volume and concentration of ground water exceeding the criteria” to increase [based on N.J.A.C. 7:9C-1.8(a) and 1.9(a)]. Locating a DGW unit for disposal of treated ground water in an area contaminated by another site would only be approved if the discharge would not cause an increase in the extent of the contamination from the other site and/or would not significantly increase risks to public health and safety and the environment. If a discharge could be approved based on those considerations, the antidegradation limits should in most cases, equal the ground water standard.
  - c. *Natural Background > Class II-A Standards* - Per N.J.A.C. 7:9C-1.9(a)2.i., if background water quality for the DGW unit contravenes the ground water standards due to natural conditions (e.g., high iron or manganese levels), the antidegradation limits for all classes of ground waters should be based on the naturally occurring levels in the well or wells immediately upgradient of the discharge unit. As indicated in the NJPDES rules at N.J.A.C. 7:14A-10.11(g), appropriate statistical methods can be used in determining background water quality; generally at least four individual samples should be used in determining background but alternate proposals can be considered.
- B. Notifications for Permit-Related CEAs for Long-Term Discharges: Sending the RAW (or discharge proposal), that includes a **permit-related** CEA proposal, to local officials/agencies; the public notice of the discharge proposal (discussed in Section VI above); and/or NJDEP issuance of the discharge approval, would satisfy CEA notification policies. Such a CEA would be established based on the GWQS at N.J.A.C. 7:9C-1.6(c). If constituent standards are exceeded in ground water within this CEA that contamination-would not become subject to the Technical Rule requirements of N.J.A.C. 7:26E-8 (Engineering and Institutional Controls) unless any statistically significant contravention of the ground water standards remains after the duration of the permit-related CEA. This duration is explained in A.1. and 3. above for the *in situ* treatment discharge category and for the category of discharges outside the capture zone/plume-related CEA.

- C. Notifications for Permit-Related CEAs for Short-Term Discharges: Very limited notification requirements apply to permit-related CEAs approved as part of a short-term discharge. Notifications are needed when such a discharge proposal must be included in one or more of the documents required to be submitted to the appropriate municipal clerk as specified at N.J.A.C. 7:26E-1.4.

## II. Conditions Applicable to All NJPDES Permits

Permittees who are deemed to have a permit-by-rule for any DGW unit must also comply with all applicable provisions of [N.J.A.C. 7:14A-1 et seq.](#) Applicable conditions include, but are not limited to, those listed below. They are mainly derived from Subchapter 6 of the NJPDES regulations. Proposals and plans submitted to the NJDEP for discharges included in the permit-by-rule provisions of N.J.A.C. 7:14A- 7.5(b) must be consistent with these conditions and include all the applicable components. Some unit specific guidelines given in later sections are also partially based on the conditions of Subchapter 6 as well as various requirements of N.J.A.C. 7:26E.

- A. General Basis for Permit Violations, N.J.A.C. 7:14A- 6.2(a)5: A permittee shall take all reasonable steps to minimize or prevent any activity in violation of its permit which has a reasonable likelihood of adversely affecting human health or the environment. Any discharge related activities inconsistent with the discharge proposal approved by the NJDEP would be considered a violation of the permit-by-rule. DGW units must not cause a violation of the Ground Water Quality Standards, N.J.A.C. 7:9C, which includes operating in a manner consistent with the policies and narrative standards of the GWQS. The discharge proposal must be such that ground water recharge is managed to prevent any adverse impact on the behavior or fate of the plume. The discharge must not create: an unpermitted discharge to any surface water of the State or cause a violation of the Surface Water Quality Standards (SWQS), N.J.A.C. 7:9B; a surface-flowing fluid condition; or an adverse impact on any type of water supply well or any other structure or receptor.
- B. Correcting Permit Violations, N.J.A.C. 7:14A- 6.2(a)11: The permittee shall take such corrective actions as required under applicable statutes and regulations to mitigate the effects of violating its NJPDES permit. This may include, at a minimum, accelerated and/or additional types of monitoring, temporary repairs, ceasing discharge, or where ceasing discharge is not possible, other measures consistent with the Technical Rules at N.J.A.C. 7:26E such as installation of additional monitoring wells.
- C. Submitting Additional Information, N.J.A.C. 7:14A- 6.2(a)14: A permittee shall furnish to the NJDEP, within a reasonable timeframe specified by the NJDEP, any information which the NJDEP may request, to determine whether cause exists for the NJDEP to invalidate the permit-by-rule pursuant to N.J.A.C. 7:14A- 7.5(c). A permittee shall also furnish any information needed to determine that the treatment and/or discharge systems are designed, operated and maintained in a manner consistent with the approved discharge proposal. The permittee shall also furnish to the NJDEP, upon request, copies of records required to be kept pursuant to N.J.A.C. 7:14A-6.6.

- D. System Shutdowns, Based on A., B. and C. above and F. below: If treatment and discharge systems were designed to operate on a 24-hour basis, seven days per week, except for routine maintenance of the system, the permittee should notify the NJDEP, in writing, within seven days of a planned system shutdown that will last longer than 48 hours. If for any reason the system is inoperable for more than 48 hours, the permittee should notify the NJDEP case manager, in writing, within ten days outlining; 1) why the system is not operable, 2) steps that are being taken to repair the system, and 3) when the system will again be operable. If the system is shut down due to the failure of an above ground treatment system to attain approved requirements, or malfunctions of the disposal systems, this may trigger noncompliance reporting requirements discussed in F. below. The permittee should consult with the NJDEP case manager regarding these issues.
- E. Compliance Schedules, N.J.A.C. 7:14A- 6.4: To allow for initial adjustments to ensure that treatment systems are operating appropriately, a schedule can be proposed for phasing-in compliance with permit requirements. If a compliance schedule is needed, discharge proposals should include the reason for, and time period needed for, this initial period of planned noncompliance with all, or certain, constituent specific antidegradation limits or other treatment requirements. The total length of this compliance period should be the minimum time necessary to allow a reasonable opportunity to attain compliance with requirements and should not exceed one year. Progress reports on attainment of treatment requirements should be submitted to the NJDEP at the midpoint and end of any compliance period longer than 5 months and at the end of any period of 5 months or less.
- F. Reporting Noncompliance, N.J.A.C. 7:14A- 6.2(a)13 and 6.10: All permittees must comply with the noncompliance reporting requirements of N.J.A.C. 7:14A-6.10 for any of the applicable discharges listed in N.J.A.C. 7:14A-6.10(a)1 through 4.

*N.J.A.C. 7:14A- 6.10(a)1 i. through iv. are applicable, however, if any antidegradation limit, percent removal, or approved treatment requirement is not attained, during a time outside of any approved compliance schedule, the permittee should immediately report the incident, by telephone, to the assigned case manager or their supervisors. These parties must then determine, whether the noncompliance causes injury to, or poses a threat to human health; or causes damage to, or poses a threat to, the environment. If, through this consultation, it is determined that such injury, damage or threat has been realized, the permittee must call the DEP Hotline at 1-877 WARNDEP and report the information in N.J.A.C. 7:14A- 6.10 (c)1 through 3 within two hours of becoming aware that such a discharge has occurred.*

*N.J.A.C. 7:14A- 6.10(a)1 v. is not applicable because daily maximum effluent limitations, as defined in N.J.A.C. 7:14A-1.1, are not established through the permit-by-rule.*

*N.J.A.C. 7:14A- 6.10(a)2 and (c) require calling the DEP Hotline to report the discharge of any toxic or hazardous pollutant (listed in Appendix A of N.J.A.C. 7:14A-4) that was not included in the approved discharge proposal.*

*N.J.A.C. 7:14A- 6.10(a)3 and (d) require calling the DEP Hotline to report any upset or*

unanticipated bypass of any part of the treatment or disposal systems. Events that may be considered an upset and/or a bypass are included in the unit specific guidelines and bypass is defined in N.J.A.C. 7:14A-1

Any events that would or may be considered an upset or bypass should immediately be reported, by telephone, to the assigned case manager or their supervisors, who can provide additional guidance on whether an upset or a bypass has occurred. This determination should be based on the narrative criteria in N.J.A.C. 7:14A- 6.10(a)1 i. through iv. If an upset and/or bypass occurs, and the case manager cannot be reached, the permittee must call the DEP Hotline within 24 hours of determining that they have occurred and verbally report the information listed at N.J.A.C. 7:14A- 6.10(d)1 through 8.

Based on N.J.A.C. 7:14A- 6.10(j), for all instances of noncompliance not reported to the NJDEP Hotline as specified above, the information listed in N.J.A.C. 7:14A- 6.10(d) 1 through 8 should be submitted in writing to the assigned case manager at the same time the next required set of monitoring reports must be submitted.

*N.J.A.C. 7:14A-6.10(a)4* covers an anticipated bypass of any portion of the treatment works. Based on the reasons for the discharges discussed in this manual it is unlikely that such a discharge would need to occur. However, if such an event is anticipated the information listed at N.J.A.C. 7:14A-6.10(g) must be submitted to the assigned case manager 10 days prior to the bypass occurring.

- G. Monitoring Requirements, N.J.A.C. 7:14A- 6.5 and 6.8: For all proposed discharges under N.J.A.C. 7:14A- 7.5(b), the NJDEP will not approve a discharge proposal unless appropriate monitoring is included in the proposal. Monitoring must be sufficient to show that the GWQS will not be contravened and the SWQS, will not be violated. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. Monitoring must be done in accordance with the edition of the NJDEP's "Field Sampling Procedures Manual" applicable at the time of sampling or an alternate method approved by the NJDEP. The discharge proposal must indicate the format for how monitoring results will be reported to the NJDEP.
- H. Changes to Permitted Facilities, N.J.A.C. 7:14A- 6.7: All permittees shall give written notice to the NJDEP of any planned physical alterations or additions to the permitted facility/unit which meet the criteria in N.J.A.C. 7:14A- 6.7(b) as soon as possible.
- I. Operation and Maintenance Plan, N.J.A.C. 7:14A- 6.12: A permittee shall, at all times, operate and maintain in good working order, the treatment works and facilities which are installed or used by the permittee, to: achieve compliance with the applicable requirements specified in section I above of this appendix; comply with the applicable general conditions of N.J.A.C. 7:14A; and maintain consistency with the approved discharge proposal. The operation and maintenance activities and plan must address and/or include the concerns and conditions listed in N.J.A.C. 7:14A- 6.12(a), (c), and (d), which includes an emergency and safety plan, and must be consistent with the applicable requirements discussed above in Section V of this manual.

All treatment systems, infiltration percolation lagoons, trenches, spray irrigation and overland flow systems should be fenced or otherwise have access or entry restricted as needed to prevent safety or other hazards. Where the entire facility is fenced, consideration should be given to whether this constitutes adequate protection against unauthorized entry.

All discharge proposals should state that an operation and maintenance plan manual for any treatment and/or discharge systems (including related appurtenances and collection systems) has been or will be completed prior to start-up of the systems.

Note that the inspection schedules recommended below in parts III and IV of this appendix are more frequent than the recommended sampling frequency given in Section VIII of the manual. The inspection frequency recommended in part V below matches the sampling frequency of Section VIII.

### III. Class V Injection Wells

These guidelines apply to all Class V Underground Injection Control (UIC) wells. These include injection wells/systems meeting either of the regulatory definitions below which will receive ground water recovered as part of a remediation system and/or fluids injected as part of an *in situ* site remedial action. Fluids include any substance that flows, whether liquid, gas, or slurry; however, injection of pure or unpolluted atmospheric oxygen as part of a site remediation, has generally not been regulated via NJPDES-DGW permits.

- NJPDES Definition, N.J.A.C. 7:14A-1.2:

"Injection well" means a well, septic system, subsurface disposal bed, cavity, tube or pipe, or any structure used to deliver fluids directly to a point below the ground surface.

- [Well Construction; Maintenance And Sealing Of Abandoned Wells](#) – Definitions, N.J.A.C. 7:9D-1.5:

"Well" means a hole or excavation larger than four inches in diameter or a hole or excavation deeper than 10 feet in depth that is drilled, bored, cored, driven, jetted, dug, or otherwise constructed for the purpose of removal or emplacement of, or investigation of, or exploration for, fluids, water, oil, gas, minerals, soil, or rock, or for the installation of an elevator shaft.

"Injection well" means a well through which liquid or gas is injected, under pressure or gravity flow, into the ground for the purpose of disposing wastes, maintaining formation pressure, recharging the aquifer, or environmental remediation.

The term UIC unit will be used below since Class V injection wells include subsurface disposal systems that are not regulated through the rules titled Well Construction; Maintenance And Sealing Of Abandoned Wells. UIC units that obtain a permit-by-rule must comply with all applicable provisions of N.J.A.C. 7:14A-8. For the majority of site remedial actions those provisions include,

but may not be limited to the following.

- A. Injection wells that meet the definition of well in Well Construction; Maintenance And Sealing Of Abandoned Wells, N.J.A.C. 7:9D-1.5, must comply with those rules. Injection wells used for environmental remediation projects are Category 3 wells pursuant to N.J.A.C. 7:9D-2.1; they are subject to the construction, installation, operation, maintenance, and decommissioning requirements applicable to Category 3 wells in Subchapters 2 and 3 of those rules.
- B. The NJDEP recommends that injection wells and the area used for ground water recharge/injection be inspected on at least a weekly basis during the first two months of operation, monthly for the next three months and quarterly afterwards but also after significant storms for evidence of malfunctioning (i.e., possible upsets). Evidence of malfunctioning shall include, but not be limited to: breakout, overflow due to clogging, wet areas, ponding, odors and an overabundance or loss of vegetative cover. If malfunctions or upsets are observed or suspected, the permittee shall notify the NJDEP as indicated above in section II. f. of this appendix. If the malfunction or failure is considered serious, based on a joint determination of the NJDEP and the permittee, the inspection schedule frequency should repeat the initial pattern specified above (i.e., weekly for first two months after the problem, etc.)

The results of these inspections and an operation log must be kept to document the operation and maintenance of the system. These records must be available for NJDEP review upon request.

- C. The following requirements are based on N.J.A.C. 7:14A-8.5(b)11, 7.5(b) and (c), 8.9(a)4 and 5, and 8.16(c)1. The implications of N.J.A.C. 7:14A-8.16(c)1 are further explained in paragraph d. below. Ground water injection shall be managed so it does not adversely impact the behavior of the plume, create an unpermitted discharge to any surface water of the State, create a persistent standing, ponded or surface-flowing fluid condition or adversely impact a water supply well. The permittee shall take any and all action necessary to operate and maintain the UIC unit(s) in such a way as to prevent the discharge from causing any ground water contamination to impact a water supply well or underground source of drinking water.
- D. N.J.A.C. 7:14A-8.16(c)1 specifies that operating requirements for all Class V injection wells includes “other pertinent regulations.” This indicates that Class V injections wells and their associated discharges that occur during the course of a site remediation, under a permit-by-rule pursuant to N.J.A.C. 7:14A-8.5 and 7.5, must be operated and maintained consistent with applicable requirements of the Technical Rules. Therefore, consistent with N.J.A.C. 7:26E-1.13 and 6.1, discharges must comply with all applicable remediation standards and must not cause an uncontrolled or unpermitted discharge or transfer of contaminants from one medium to another. Pursuant to N.J.A.C. 7:14A-8.16(e) if a permittee fails to comply with the conditions specified in this paragraph or in paragraph C. above, the permit-by-rule authorization for the injection well and approved discharge automatically terminates.

- E. For all UIC units subject to N.J.A.C. 7:14A-7.5(b)3vii, including those subject to N.J.A.C. 7:9D (Well Construction, etc. rules), an abandonment plan for the unit, to be implemented immediately upon its final closure, must be included in the final remedial action workplan. For interim remedies, pilot, or engineering studies UIC unit abandonment plans are only needed when it is known that the units will not be used for future remedial work. The plan must meet the decommissioning requirements of N.J.A.C. 7:9D-3.1 et seq. where applicable, and N.J.A.C. 7:14A-8.12(d) to the extent they are consistent with the following. Upon closure, the unit must be removed and the area restored, to the extent practical, to conditions equivalent to the native material as indicated in the Technical Rules at N.J.A.C. 7:26E-6.4(b) and consistent with 6.2(a)13. N.J.A.C. 7:26E-6.2(a)13, states that all RAWs must include a “description of procedures for dismantling and removal of remedial structures and equipment from the site... .” The NJPDES rules also require that: restoration of the area must prevent direct and rapid movement of fluids into an underground source of drinking water or from one underground source of drinking water to another; and that all influent and effluent lines shall be excavated, removed or sealed such that no leaching of contaminants can occur.
- F. Unless the well permit obtained pursuant to N.J.A.C. 7:9D included ongoing use for monitoring as well as injection, final cessation of injection operations constitutes abandonment which requires decommissioning of the well. If needed, pursuant to N.J.A.C. 7:9D-1.11(a) and (b) a new well permit may potentially be obtained to redesignate the use of the well from injection to monitoring.
- G. Injection wells that exert a total pressure that exceeds the pressure exerted by the fluid under the influence of gravity at its height above the point of discharge plus the atmospheric pressure, shall be required to follow the standards described for Class I wells. Standards for Class I wells include additional provisions not discussed above. Class V wells which rely solely on a gravitational means of discharge are strongly recommended to simplify applicable NJPDES requirements.

#### **IV. Infiltration Percolation (IP) Lagoons or Trenches**

The guidelines below apply to DGW facilities that may obtain a permit-by-rule and meet the following description based on N.J.A.C. 7:14A-1.2 and 7.3:

- “infiltration percolation lagoon” - a natural topographic depression, man-made excavation or trench, or diked area formed primarily of earthen materials (although it may be lined with man-made materials), which is designed to transmit a discharge to the subsurface and which is not an injection well;

Treated, recovered ground water is generally the expected, site remediation related discharge for these units. Additional guidance is available in *Technical Guidance For Sizing and Positioning of: Spray Irrigation Systems, Overland Flow Systems, Infiltration/Percolation Lagoon Systems, and Surface Impoundments*, a DWQ document available at [www.state.nj.us/dep/dwq/pdf/techguid.pdf](http://www.state.nj.us/dep/dwq/pdf/techguid.pdf). This DWQ guidance document is geared toward discharges of wastewater from domestic treatment works, but it also contains information

applicable to any type of liquid discharge. Combining a discharge of recovered ground water with a wastewater regulated by DWQ would require an individual NJPDES permit from DWQ.

The following guidelines should be used to prepare a permit-by-rule discharge proposal for IP units:

- A. Proposals for infiltration/percolation lagoons or trenches must be designed, constructed, maintained and operated to prevent overtopping as this will result in a discharge that has not been approved.
- B. When flow is to, from, or between holding tanks, lagoons, trenches and/or other connected systems all interconnections should be piped or lined in a manner which will prevent degradation of lagoon banks or dikes, trench walls, or other flow transfer facilities.
- C. For new construction, all piping, manholes, etc., should be installed prior to the construction of the foundation, banks or dikes.
- D. The NJDEP recommends that the permittee perform a physical inspection of all visible portions of the infiltration percolation lagoons or trenches on at least a weekly basis during the first month of operation, monthly for the next three months and quarterly afterwards but also immediately after significant storms to detect evidence of any erosion or other signs of deterioration in banks, dikes or other containment devices and check for malfunctions or improper operation of the delivery or control system(s). If any malfunctions or failures are observed or suspected, the permittee shall notify the NJDEP as explained in section II. f. If the malfunction or failure is considered serious, based on a joint determination of the NJDEP and the permittee, the inspection schedule frequency should repeat the initial pattern specified above (i.e., weekly for first month after the problem, etc. )

The results of these inspections and an operation log must be kept to document the operation and maintenance of the system. These records must be available for NJDEP review upon request.

## **V. Spray Irrigation and/or Overland Flow Systems**

The guidelines below apply to DGW facilities that may obtain a permit-by-rule and meet the following definitions at N.J.A.C. 7:14A-1.2:

- “overland flow” - the controlled discharge, by spraying or other means, of pollutants onto sloping land with maintained vegetation where a proportion of the wastewater may appear as runoff. Overland flow is also the movement of pollutants across the surface of the land where infiltration may occur.
- “spray irrigation” - a system for land application of a discharge, over maintained vegetated ground surfaces using sprinkler heads or nozzles as a method of application.

Treated, recovered ground water is generally the expected, site remediation related discharge for these units. Additional guidance is available in *Technical Guidance For Sizing and Positioning of Spray Irrigation Systems, Overland Flow Systems, Infiltration/Percolation Lagoon Systems, and Surface Impoundments*, a Division of Water Quality (DWQ) document available at [www.state.nj.us/dep/dwq/pdf/techguid.pdf](http://www.state.nj.us/dep/dwq/pdf/techguid.pdf). This DWQ guidance document is geared toward discharges of wastewater from domestic treatment works, but it contains information applicable to any type of liquid discharge. Combining a discharge of recovered ground water with a wastewater regulated by DWQ would require an individual NJPDES permit from DWQ.

The following guidelines should be used to prepare a permit-by-rule discharge proposal for spray irrigation and/or overland flow systems:

- A. The permittee shall not apply effluent to an overland flow field or via spray irrigation when more than one (1) inch of snow or ice is on the ground anywhere within the overland flow field, when the ground is frozen, or when the ambient air temperature is at or below 32 degrees F, unless operational practices are implemented to prevent freezing prior to infiltration.
- B. The permittee shall assess the effects of wind speed and direction during periods of operation to minimize the formation of aerosols and to prevent the migration of aerosols onto residential properties or neighboring properties.
- C. The NJDEP recommends that physical inspections of the entire overland flow or spray irrigation site be made on at least a weekly basis during the first month of operation, monthly for the next two months and quarterly afterwards. If any malfunctions or failures are observed or suspected, the permittee shall notify the NJDEP as explained in section II. F. If the malfunction or failure is considered serious, based on a joint determination of the NJDEP and the permittee, the inspection schedule frequency should repeat the initial pattern specified above (i.e., weekly for first month after the problem, etc.) The results of these inspections and an operation log must be kept to document the operation and maintenance of the system. These records must be available for NJDEP review upon request.
- D. The discharge should not be allowed to form channels during its overland flow or any time prior to infiltration. If channeling occurs, the overland flow or spray irrigation field should be re-contoured and re-vegetated within 60 days of identification of the channeling condition.
- E. The overland flow or spray irrigation field shall be sown, as necessary, with vegetation appropriate for the location. Discharges onto bare ground should not occur. In selecting a crop or vegetation to be grown, the permittee must ensure that it is tolerant of the chemical quality of the discharge.
- F. At least thirty (30) days prior to start-up of the discharge, the permittee should contact the U.S.D.A. Soil Conservation Service to determine whether a Soil Conservation Plan is required.

## Attachment 1

Listed below are the treatment method, antidegradation limits, effluent monitoring and analysis specifications and reporting frequency consistent with what is required by NJDEP for discharges resulting from active ground water remediation due to releases of heating oil at residences of four units or less. Since standards can change, the most recent version of the GWQS for specific and interim generic criteria should be consulted prior to submitting a discharge proposal. An updated version of the GWQS can be found at <http://www.state.nj.us/dep/srp/regs/#toc>.

### For Discharges in Class II-A Areas

Include only the parameters appropriate for the site specific conditions. The workplan/discharge proposal can include the following:

Prior to discharge, recovered ground water will be treated with two GAC units in series and effluent samples will be collected from two locations, defined and designated as follows:

- Sample location KO1 - after the first GAC unit.
- Sample location K02 - after the second GAC unit.

| Parameter                    | Antidegradation Effluent<br>Limits (*1) | Notes | Sampling<br>Month | Reporting<br>Month |
|------------------------------|---|-------|-------------------|--------------------|
| Sheens, Odors                |   |       |                   |                    |
| Vapors                       |   |       | Weekly            | Quarterly          |
| Flow                         |   |       | Weekly            | Quarterly          |
| pH                           |   | *2    | Monthly           | Quarterly          |
| Benzene                      | 1                                       | *3,*4 | Monthly           | Quarterly          |
| Toluene                      | 500                                     | *3,*4 | Monthly           | Quarterly          |
| Ethylbenzene                 | 350                                     | *3,*4 | Monthly           | Quarterly          |
| o,m,p-xylenes                | 500                                     | *3,*4 | Monthly           | Quarterly          |
| Base Neutrals + 15 by GC/MS: |   | *5    | Quarterly         | Quarterly          |
| Acenaphthene                 | 200                                     |       |                   |                    |
| Anthracene                   | 1000                                    |       |                   |                    |
| Benzo(a)anthracene           | 0.1                                     |       |                   |                    |
| Benzo(a)pyrene               | 0.1                                     |       |                   |                    |
| Benzo(b)fluoranthene         | 0.2                                     |       |                   |                    |
| Benzo(ghi)perylene           | 50*                                     | *6    |                   |                    |
| Benzo(k)fluoranthene         | 0.5                                     |       |                   |                    |
| Bis(2-ethylhexyl)phthalate   | 3                                       |       |                   |                    |
| Butylbenzylphthalate         | 50                                      |       |                   |                    |
| Chrysene                     | 2.5                                     |       |                   |                    |
| Dibenz(a,h)anthracene        | 0.3                                     |       |                   |                    |
| Diethylphthalate             | 3000                                    |       |                   |                    |
| Di-n-butylphthalate          | 350                                     |       |                   |                    |
| Di-n-octylphthalate          | 50                                      |       |                   |                    |
| Fluoranthene                 | 150                                     |       |                   |                    |
| Fluorene                     | 150                                     |       |                   |                    |

|                        |     |    |
|------------------------|-----|----|
| Indeno(1,2,3,cd)pyrene | 0.2 |    |
| Naphthalene            | 150 |    |
| Phenanthrene           | 50* | *6 |
| Pyrene                 | 100 |    |

Notes: These effluent limits are formulated for Class II-A aquifers pursuant to the Antidegradation Policy of the Ground Water Quality Standards (N.J.A.C. 7:9-6.8) and reflect one-half the Ground Water Quality Criteria or the Interim Generic Criteria. Where the available criteria is less than the promulgated Practical Quantitation Level (PQL), the PQL is identified as the effluent limit. The current version of the Ground Water Quality Standards can be found online at <http://www.state.nj.us/dep/srp/regs/#toc>.

(\*1) Effluent limits are in ppb

(\*2) pH is to be field determined.

(\*3) Benzene, toluene, ethylbenzene and o,m,p-xylenes (BTEX) will be sampled biweekly for the first month, and monthly thereafter.

(\*4) 40 CFR Part 136-Method 602 will be used to identify and monitor for the BTEX compounds. The method detection limits specified in 40 CFR Part 136-Method 602 will be achieved, and the quality assurance and quality control methodologies specified in 40 CFR Part 136 will be utilized. In the event that a laboratory cannot achieve the required detection limit, the permittee will document why these limits cannot be achieved (i.e. the specific instrument limitations). If needed, a request for alternate quantitation limits will be submitted for Department approval. Any alternate quantitation limit proposed would be the lowest level that can be reliably achieved within the limits of precision and accuracy specified in 40 CFR Part 136. Documentation of these quality assurance and quality control measures, including the results of field, trip and method blanks, will be submitted within 30 days of a written request for them from the Department.

(\*5) 40 CFR Part 136-Method 625 will be used to identify and monitor for the base/neutral extractable pollutants (+ 15 unknown peaks). For non target compounds, a forward library search using the EPA/NBS/NIH Mass Spectral Library (Library) will be performed. If the spectra do not meet the criteria of identification of the library, the compound will be reported as "unknown". If possible, an additional classification of the unknown compound will be presented (e.g. unknown aromatic, unknown hydrocarbon, etc.). For estimating concentration, the laboratory will assume a response factor of one (1) and estimate the concentration by comparison to the peak height of the nearest internal standard of the reconstructed ion chromatogram. Since the Department is aware that Method 625 cannot currently attain some of the Effluent Limits listed above, the laboratory will attempt to get as close as possible to the standards listed.

(\*6) \* means that the effluent limit is 50 ppb, reflecting one half the Interim Generic Criteria for a non-carcinogenic compound.

**For Discharges in Class I-A and I-PL Areas**

The specifications should be the same as for Class II-A ground water areas except for the antidegradation limits. The differences in specifications are indicated below:

| <b>Parameter</b>           | <b>Antidegradation Effluent Limits (*1)</b> | <b>Notes</b> | <b>Sampling Month</b> | <b>Reporting Month</b> |
|----------------------------|---|--------------|-----------------------|------------------------|
| Sheens, Odors              |   |              |                       |                        |
| Vapors                     |   |              | Weekly                | Quarterly              |
| Flow                       |   |              | Weekly                | Quarterly              |
| pH                         |   | *2           | Monthly               | Quarterly              |
| Benzene                    | ND <1                                       | *3,*4        | Monthly               | Quarterly              |
| Toluene                    | ND <1                                       | *3,*4        | Monthly               | Quarterly              |
| Ethylbenzene               | ND <2                                       | *3,*4        | Monthly               | Quarterly              |
| o,m,p-xylenes              | ND <2                                       | *3,*4        | Monthly               | Quarterly              |
| Base Neutrals              |   |              |                       |                        |
| + 15 by GC/MS:             |   | *5           | Quarterly             | Quarterly              |
| Acenaphthene               | ND <10                                      |              |                       |                        |
| Anthracene                 | ND <10                                      |              |                       |                        |
| Benzo(a)anthracene         | ND <0.1                                     |              |                       |                        |
| Benzo(a)pyrene             | ND <0.1                                     |              |                       |                        |
| Benzo(b)fluoranthene       | ND <0.2                                     |              |                       |                        |
| Benzo(k)fluoranthene       | ND <0.3                                     |              |                       |                        |
| Bis(2-ethylhexyl)phthalate | ND <3                                       |              |                       |                        |
| Butylbenzylphthalate       | ND <1                                       |              |                       |                        |
| Chrysene                   | ND <0.2                                     |              |                       |                        |
| Dibenz(a,h)anthracene      | ND <0.3                                     |              |                       |                        |
| Diethylphthalate           | ND <1                                       |              |                       |                        |
| Di-n-butylphthalate        | ND <1                                       |              |                       |                        |
| Fluoranthene               | ND <10                                      |              |                       |                        |
| Fluorene                   | ND <1                                       |              |                       |                        |
| Indeno(1,2,3,cd)pyrene     | ND <0.2                                     |              |                       |                        |
| Naphthalene                | ND < 2                                      |              |                       |                        |
| Pyrene                     | ND <0.1                                     |              |                       |                        |

Notes: These effluent limits are formulated for Class I-PL aquifers pursuant to the Antidegradation Policy of the Ground Water Quality Standards (N.J.A.C. 7:9C) and reflect the promulgated Practical Quantitation Level (PQL). The Ground Water Quality Standards can be found online at <http://www.state.nj.us/dep/srp/regs/#toc>.

(\*1) Effluent limits are in ppb and are based on Attachment 1 of the permit-by-rule discharge authorization issued on \_\_\_\_\_.

(\*2) pH is to be field determined.

(\*3) Benzene, toluene, ethylbenzene and o,m,p-xylenes (BTEX) will be sampled biweekly for the

first month, and monthly thereafter.

(\*4) 40 CFR Part 136-Method 602 will be used to identify and monitor for the BTEX compounds. The method detection limits specified in 40 CFR Part 136-Method 602 will be achieved, and the quality assurance and quality control methodologies specified in 40 CFR Part 136 will be utilized. In the event that a laboratory cannot achieve the required detection limit, the permittee must be able to document why these limits cannot be achieved (i.e. the specific instrument limitations). Alternate quantitation limits are subject to Department approval. Any alternate quantitation limit must be the lowest level that can be reliably achieved within the limits of precision and accuracy specified in 40 CFR Part 136. Documentation of these quality assurance and quality control measures, including the results of field, trip and method blanks, must be submitted within 30 days of a written request from the Department.

(\*5) 40 CFR Part 136-Method 625 will be used to identify and monitor for the base/neutral extractable pollutants (+ 15 unknown peaks). For non target compounds, a forward library search using the EPA/NBS/NIH Mass Spectral Library (Library) must be performed. If the spectra do not meet the criteria of identification of the library, the compound will be reported as "unknown". If possible, an additional classification of the unknown compound will be presented (e.g. unknown aromatic, unknown hydrocarbon, etc.). For estimating concentration, the laboratory will assume a response factor of one (1) and estimate the concentration by comparison to the peak height of the nearest internal standard of the reconstructed ion chromatogram. The Department is aware that Method 625 cannot currently attain some of the Effluent Limits listed in Table 1. The laboratory must attempt to get as close as possible to the standards listed.

#### **For Both Class I-PL and II-A Areas**

The following specifications can apply to these types of discharge proposals for all areas:

- Monitoring at both K01 and K02 will be performed in accordance with all specifications listed in the above table.
- The antidegradation effluent limits apply only at K02 (i.e., just prior to discharge). However, the first GAC unit will be regenerated or replaced immediately if there is an exceedance of an effluent limit at sample K01.
- If sheens, vapors, odors, exceedances of effluent limits, etc. are detected prior to discharge to the ground (i.e., in K02) the permittee will immediately (1) cease the discharge; (2) repair the treatment and/or discharge system; and (3) notify the NJDEP case manager of the conditions by fax or telephone within 24 hours, and in writing within 7 days.