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N.J.A.C. 7:26E
TECHNICAL REQUIREMENTS FOR SITE REMEDIATION

Statutory authority
N.J.S.A. 13:1D et seq., 13:1E et seq., 13:1K-6 et seq., 58:10-23.11a et seq., 58:10A-1 et seq.,
58:10A-21 et seq., and 58:10B-1 et seq.

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SUBCHAPTER 1. GENERAL INFORMATION

7:26E-1.1 Scope

(a) This chapter constitutes the minimum technical requirements to investigate and remediate contamination at any site.

(b) Any remediation performed pursuant to this chapter shall not relieve any person from:

1. Complying with more stringent requirements or provisions imposed by any other Federal, State or local applicable statutes or regulations; or

2. Obtaining any and all permits required by State, Federal or local statute or regulation, except as expressly provided herein.

(c) No provision of this chapter shall be construed to limit the Department's authority to require additional remediation based upon site-specific conditions in order to protect human health and the environment.

(d) The Department's approval of any document pursuant to this chapter shall not be interpreted as an approval of any remediation costs eligible for reimbursement pursuant to N.J.S.A. 13:1E-116, N.J.S.A. 58:10B-28, or any other law.

7:26E-1.2 Liberal construction

These rules, being necessary to promote the public health and welfare, and to protect the environment, shall be liberally construed in order to permit the Commissioner and the Department to effectuate the purposes of N.J.S.A. 13:1D-1 et seq., 13:1E-1 et seq., 13:1K-6 et seq., 58:10-23.11a et seq., 58:10A-1 et seq., 58:10A-21 et seq., 58:10B-1 et seq. and 58:10C-1 et seq.

7:26E-1.3 Applicability

(a) Any person conducting remediation pursuant to any of the following statutes shall comply with this chapter and all guidance found on the Department's website, www.nj.gov/dep/srp/srra/guidance:

1. The Industrial Site Recovery Act (ISRA);
2. The New Jersey Underground Storage of Hazardous Substances Act (UST);
3. The Spill Compensation and Control Act;
4. The Solid Waste Management Act;

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5. The Water Pollution Control Act;

6. The Resource Conservation and Recovery Act (RCRA);

7. The Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by Superfund Amendments and Reauthorization Act of 1986 (42 U.S.C. §§ 9601 et seq.) (CERCLA);

8. The Brownfield and Contaminated Site Remediation Act, N.J.S.A. 58:10B-1 et seq.; and

9. The Site Remediation Reform Act, N.J.S.A. 58:10C-1 et seq.

(b) The requirements of this chapter are applicable as follows:

1. For any site at which a particular phase of remediation was commenced prior to July 1, 1993, the Department shall evaluate such work to determine whether the work is in substantial compliance with this chapter, as originally adopted effective June 7, 1993 (see 25 N.J.R. 2881(b)), and therefore acceptable to the Department.

2. Any work conducted after February 3, 2003 shall be in full compliance with this chapter, except that work conducted pursuant to workplans which were submitted to the Department prior to February 3, 2003 may be conducted pursuant to N.J.A.C. 7:26E in effect as of August 2, 1999, as long as work is conducted within six months of Department approval of the workplan.

(c) The person responsible for conducting the remediation of a site shall remediate:

1. To meet the remediation standards at N.J.A.C. 7:26D and the impact to groundwater soil remediation standards set by the Department for a particular site pursuant to its authority under N.J.S.A. 58:10B-12a; or

2. To meet the standards or criteria developed by the Department under N.J.S.A. 58:10B-12a for that site prior to June 2, 2008, provided:

i. A remedial action workplan or a remedial action report containing standards or criteria developed for the site under N.J.S.A. 58:10B-12a is submitted to the Department before December 2, 2008;

ii. The remedial action workplan or a remedial action report meets the requirements of N.J.A.C. 7:26E-6; and

iii. The standards or criteria developed by the Department under N.J.S.A. 58:10B-12a for the site are not greater by an order of magnitude or more, than the remediation standards otherwise applicable under N.J.A.C. 7:26D.

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(d) All applicable remediation standards and remedial actions that involve real property located in the Pinelands area shall be consistent with the provisions of the Pinelands Protection Act, N.J.S.A. 13:18A-1 et seq. and any rules promulgated pursuant thereto, and with section 502 of the National Parks and Recreation Act of 1978, 16 U.S.C. § 4711.

7:26E-1.4 Notification and public outreach

(a) Immediately after a discharge commences, any person or persons responsible for a discharge who knows or should reasonably know of a discharge shall immediately notify the Department by following the requirements of the Discharge of Petroleum and Other Hazardous Substances rules at N.J.A.C. 7:1E-5.3.

(b) The person responsible for conducting the remediation shall immediately notify the assigned Department case manager, or the hotline at 1-877 WARNDP or 1-877-927-6337 if a case manager for the site has not been assigned or the case manager is unavailable when:

1. Contamination is identified that has been caused by a discharge that is not already known to the Department; or
2. Immediate environmental concern conditions are identified at a contaminated site.

(c) The person responsible for conducting the remediation shall notify the Department pursuant to this subsection if that person determines that contamination migrated onto the site from another site. The person responsible for conducting the remediation shall notify the assigned case manager, or if a case manager for the site has not been assigned, the hotline at 1-877 WARNDP or 1-877-927-6337.

(d) The person responsible for conducting the remediation shall notify the Department in writing, on the Confirmed Discharge Notification form available from the Department, within five days after the occurrence of any of the following events:

1. A discharge of a hazardous substance, or the discovery of a discharge of a hazardous substance pursuant to N.J.A.C. 7:1E-5.7; and
2. The owner or operator of a regulated tank system:
 - i. Determines that there has been a known or suspected discharge from the regulated tank system, pursuant to N.J.A.C. 7:14B-6 or 7;
 - ii. Is required to close a regulated underground storage tank system, pursuant to N.J.A.C. 7:14B-8.1(a)6, 9.1(d), 9.2 or 9.3; or
 - iii. Is otherwise required to conduct a site investigation pursuant to N.J.A.C. 7:14B.

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(e) The person responsible for conducting the remediation shall notify the Department prior to conducting potable well sampling, and indoor air or sub-slab soil gas sampling pursuant to N.J.A.C. 7:26E-1.17 and 1.18, respectively. The person shall notify the Department, on a Potable Well/Indoor Air Sampling Notification form available from the Department, at the time that that person contacts property owners or tenants for the purpose of gaining access to conduct sampling, but no later than seven days prior to the scheduled sampling date.

(f) The person responsible for conducting the remediation shall provide a copy of the remedial action workplan and any updates or status reports to the municipality in which the site is located, when requested by the municipality.

(g) The person responsible for conducting the remediation of any unregulated heating oil tank system or the person responsible for conducting an emergency response action shall only comply with the notification requirements of (a) through (c) above.

(h) Except as provided in (g) above, the person responsible for conducting the remediation shall provide public notice, either by posting a sign pursuant to (i) below or by sending periodic notification letters pursuant to (j) below, as follows:

1. All public notices, whether in the form of a sign or a notification letter, shall be in English. Additionally, where the person responsible for conducting the remediation determines that a language other than English is predominantly spoken by property owners and tenants in the area within 200 feet of the site boundary, notice shall also be provided in that predominant non-English language; and

2. The person responsible for conducting the remediation may, at any time, change the form of notification pursuant to this subsection from posting a sign pursuant to (i) below to sending periodic notification letters pursuant to (j) below, or from sending notification letters pursuant to (j) below to posting a sign pursuant to (i) below.

(i) If the person responsible for conducting the remediation chooses to provide public notice by posting a sign, the following shall apply:

1. A minimum of one sign shall be posted so that it is clearly visible to the public;

2. The sign shall be posted no later than 14 days prior to either initiating field activities associated with a remedial investigation of a multi-phase remediation or initiating a single phase remediation;

3. The sign shall remain posted and shall be maintained so that it is legible at all times, until such time as the required remediation is completed and the final remediation document is filed or issued;

4. The sign shall be at least two feet by three feet in size and shall include the following wording, printed in font that is of sufficient size to be readable from the street or sidewalk:

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- i. "Environmental Investigation/Cleanup In Progress at This Site";
- ii. "For Further Information Contact . . .," followed by the name and telephone number for the person responsible for conducting the remediation and the name and telephone number for the licensed site remediation professional. If there is no licensed site remediation professional, include the telephone number for Department's Office of Community Relations, which is posted on the Department's website at www.state.nj.us/dep/srp;
- iii. The Department's Preferred ID, as provided in the most recent edition of the "Department's Known Contaminated Sites in New Jersey" report or the valid EPA site identification number. If neither number is available, the incident number provided by the Department's hotline may be substituted; and
- iv. "Posted on," followed by the date the sign was posted;

5. Within 14 days after the sign is posted, the person responsible for conducting the remediation shall submit the site information required at (j)4 below, and a photograph of the sign showing its location and content in both electronic/digital format and in hard copy with a Public Notification and Outreach form available from the Department to:

- i. The assigned case manager. If a case manager for the site has not been assigned, include a copy of the photograph as part of the remedial investigation report or remedial action report required by this chapter;

- ii. The Department's Office of Community Relations at the address provided below:

New Jersey Department of Environmental Protection
Office of Community Relations
401 East State Street, 6th Floor
P.O. Box 413
Trenton, NJ 08625-0413

- iii. The municipal clerk of each municipality in which the site is located; and

- iv. The designated local health official; and

6. The person responsible for conducting the remediation shall comply with all local laws and requirements relevant to the posting of signs.

(j) If the person responsible for conducting the remediation chooses to provide public notice by sending notification letters, the following shall apply:

1. Notification letters shall be sent no later than 14 days prior to either initiating field activities associated with a remedial investigation or remedial action of a multi-phase remediation or initiating a single phase remediation.

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2. Additional notification letters that reflect the current condition and progress of the remediation shall be sent every two years until all the required remediation is completed and the final remediation document is filed or issued.

3. The notices prepared pursuant to (j)1 and 2 above shall be sent to the following persons by certified mail or by using the certificate of mailing service:

i. Each owner of all real property, as shown on the current municipal tax duplicate, and tenants of those properties, located within 200 feet of the site boundary; and

ii. The administrator of each school and child care center located within 200 feet of the site boundary.

4. The notice shall include the following site information:

i. The name and address of the site;

ii. The tax block(s) and lot(s);

iii. The Department's Preferred ID number as provided in the most recent edition of the "Department's Known Contaminated Sites in New Jersey" report found at <http://www.nj.gov/dep/srp/kcs-nj/>, or the valid EPA site identification number. If neither number is available, the communication center incident number provided by the Department's hotline may be substituted;

iv. A statement that contamination has been identified;

v. A brief description of the type of contamination in common language, the affected environmental media, the current remediation phase, action(s) being taken at the site and the date field activities are expected to begin;

vi. Contact information for the person responsible for conducting the remediation and the name and telephone number for the licensed site remediation professional. If there is no licensed site remediation professional, include the telephone number for the Department's Office of Community Relations, which is posted on the Department's website at www.nj.gov/dep/srp; and

vii. A statement that the person responsible for conducting the remediation will provide a copy of all environmental reports to the municipality upon the municipality's request.

5. Each time notification letters are sent, the person responsible for conducting the remediation shall submit an electronic copy and a paper copy of one notification letter and list of recipients to the following:

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i. The assigned case manager. If a case manager for the site has not been assigned, include a copy of the notification letter and list of recipients as part of the remedial investigation report or remedial action report required by this chapter;

ii. The Department's Office of Community Relations at the address provided in (i)5ii above;

iii. The municipal clerk of each municipality in which the site is located; and

iv. The designated local health official.

(k) If the person responsible for conducting the remediation proposes to bring contaminated material on to the site in an amount that is in excess of the amount that is needed to complete the remediation requirements, to raise the topographic level in the floodplain, or to construct the engineering controls approved by the Department in a remedial action workplan pursuant to N.J.A.C. 7:26C-8, the person shall obtain the Department's prior approval, comply with the Department's Alternative Fill Protocol, and comply with all of the following:

1. Send a notification letter to each of the following persons by certified mail or by using the certificate of mailing service:

i. Each owner of real property, as shown on the current municipal tax duplicate, and the tenants of those properties, located within 200 feet of the site boundary;

ii. The mayor of each municipality where the site located;

iii. The county designated solid waste coordinator;

iv. The designated local health official; and

v. The assigned case manager. If a case manager for the site has not been assigned, to the Department's Office of Community Relations at the address provided in (i)5ii, above; and

2. Include the following in the additional notification:

i. A description of the proposed use of contaminated material at the site;

ii. The concentrations of contaminants in the material;

iii. The amount of material proposed to be brought on to the site;

iv. The controls designed to reduce or eliminate exposure to the contamination; and

v. A tentative schedule for the activity.

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(l) Except as provided in (g) above and (m) and (n) below, if contamination migrates off site in any environmental medium, the person responsible for conducting the remediation shall prepare, distribute and publish a fact sheet as follows:

1. The fact sheet shall be prepared and distributed within 14 days after the determination that contamination has migrated off site;

2. The fact sheet shall be distributed by certified mail or by using the certificate of mailing service, to each owner of real property, as shown on the current municipal tax duplicate, and the tenants of those properties, located within 200 feet of the site boundary.

3. The fact sheet and any updates shall be in English. Additionally, where the person responsible for conducting the remediation determines that a language other than English is predominantly spoken by property owners and tenants in the area within 200 feet of the site boundary, the fact sheet and any updates shall also be provided in that predominant non-English language;

4. The fact sheet shall include the following information:

i. The name and address of the site;

ii. The tax block(s) and lot(s);

iii. The Department's Preferred ID number as provided in the most recent edition of the "Department's Known Contaminated Sites in New Jersey" report found at <http://www.nj.gov/dep/srp/kcs-nj/>, or the valid EPA site identification number. If neither number is available, the communication center incident number provided by the Department's hotline may be substituted;

iv. A description of the commercial and industrial history of the site based on information gathered during the preliminary assessment conducted pursuant to N.J.A.C. 7:26E-3.1(c);

v. A description of contamination including:

(1) The contaminants of concern;

(2) The affected environmental media;

(3) Contaminant concentrations;

(4) The remediation standard applicable to each contaminant;

(5) The extent of contamination,

(6) The date contamination was identified;

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(7) The source of contamination; and

(8) A list of online resources for information about the contaminants;

vi. A description of the actions performed to minimize the impact to the public;

vii. The date that the fact sheet was prepared;

viii. Contact information for the person responsible for conducting the remediation; and

ix. The name and telephone number for the licensed site remediation professional. If there is no licensed site remediation professional, include the telephone number for the Department's Office of Community Relations, which is posted on the Department's website at www.nj.gov/dep/srp;

5. Within 30 days of the discovery of off-site contamination, the person responsible for conducting the remediation shall:

i. Publish the fact sheet prepared pursuant to this subsection as a display advertisement in a daily or weekly newspaper of general circulation in the vicinity of the site pursuant to this section and the Department's Public Notification Guidance; and

ii. Submit a copy of the fact sheet, a list of persons to whom the fact sheet was mailed pursuant to (l)2 above, and a copy of the display advertisement to:

(1) The assigned case manager. If a case manager for the site has not been assigned, include a copy of the fact sheet, list of recipients and a copy of the display advertisement as part of the remedial investigation report or remedial action report required by this chapter;

(2) The Department's Office of Community Relations at the address provided in (i)5ii above;

(3) The municipal clerk of each municipality in which the site is located; and

(4) The designated health official; and

6. Within 30 days after the horizontal and vertical extent of contamination has been determined pursuant to N.J.A.C. 7:26E-4.1, the person responsible for conducting the remediation shall:

i. Except as provided in (l)6iii below, publish an updated fact sheet as a display advertisement in a daily or weekly newspaper of general circulation in the vicinity of the site pursuant to this section and the Department's Public Notification Guidance;

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ii. Submit a copy of the updated fact sheet, a list of persons to whom the updated fact sheet was mailed pursuant to (l)2 above, and a copy of the display advertisement to:

(1) The assigned case manager. If a case manager for the site has not been assigned, include a copy of the fact sheet, list of recipients and a copy of the display advertisement as part of the remedial investigation report or remedial action report required by this chapter;

(2) The Department's Office of Community Relations at the address provided in (i)5ii, above;

(3) The municipal clerk of each municipality in which the site is located; and

(4) The designated local health official; and

iii. For ground water contamination, conduct the public notification pursuant to the requirements of N.J.A.C. 7:26E-8.3 when the Department establishes a classification exception area (CEA).

(m) If the contamination has only affected one adjoining property and the affected contaminated medium is limited to the soil, the person responsible for conducting the remediation shall notify only that adjoining property owner and tenant in writing via certified mail or by using the certificate of mailing service. The notice shall describe the nature and extent of the contamination.

(n) If contamination migrates off site and the affected media is limited to historic fill, the person responsible for conducting the remediation is exempt from the requirements of (l) above.

(o) Except as provided in (p) below, the person responsible for conducting the remediation who is performing the remediation with the Department's oversight in accordance with N.J.A.C. 7:26C may propose a plan for public notice and outreach as an alternative to (i) or (j) above. The alternative plan shall be submitted to the assigned case manager and Department's Office of Community Relations at the address in (i)5ii above for the Department's review.

1. If the Department determines that the application is complete and that the proposed alternative plan provides adequate public notice, the Department will provide the person responsible for conducting the remediation with a written approval of the alternative plan; or

2. If the Department determines that the application is deficient, the Department will provide written comments to the person responsible for conducting the remediation describing the deficiencies in the application, in which case the person may submit a revised application addressing the deficiencies to the Department.

(p) The person responsible for conducting the remediation may implement an alternative plan if that plan is prepared by a licensed site remediation professional, and that plan meets the intent

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of this section. The person responsible for conducting the remediation shall include in the applicable remedial phase report that is submitted to the Department the rationale for the alternative plan and a discussion of how the alternative plan provides adequate public notice.

(q) The person responsible for conducting the remediation shall conduct additional public outreach if the Department determines that additional outreach is needed due to site-specific circumstances, or when the Department determines that there is substantial public interest in remediation activities concerning a contaminated site.

1. The Department may determine that there is substantial public interest when it receives:

- i. A petition containing the signatures of 25 or more people who live or work within 200 feet of the site, if contamination has not migrated off site;
- ii. A petition containing the signatures of 25 people that live or work within 200 feet of the extent of contamination, if contamination has migrated from the site boundary; or
- iii. A written request by a municipal official, such as the mayor or the chairperson of an environmental commission, or a designated local health official.

2. When the Department determines that there is substantial public interest, the Department shall notify the person responsible for conducting the remediation and post a summary of this determination on the Department's web site at www.state.nj.us/dep; and

3. The person responsible for conducting the remediation shall develop and implement additional public outreach based on the needs expressed by the community. The outreach may include the following:

- i. Publicizing and hosting an information session or public meeting;
- ii. Publishing a notice containing basic information about the site in the local paper of record; or
- iii. Establishing a local information repository.

(r) The notifications required pursuant to this section are not intended to satisfy the public participation requirements applicable to sites subject to the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§ 9601 et seq., and the National Contingency Plan regulations, 40 CFR Part 300.

(s) The person responsible for remediating a contaminated site located within the jurisdiction of the Pinelands Commission as defined pursuant to N.J.S.A. 13:18A-1 et seq. shall:

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1. Submit copies of all final reports or workplans for preliminary assessments, site investigations, remedial investigations and remedial actions to the Pinelands Commission concurrently with submission of such documents to the Department;
2. Submit, for approval, a copy of the remedial design and construction documents and a completed Pinelands application to the Pinelands Commission prior to implementing a remedial action; and
3. Not commence any construction activity at the site until the Pinelands Commission approves the remediation in writing; and
4. Send the information required pursuant to this subsection to the Pinelands Commission at the following address:

The Pinelands Commission
P.O. Box 7
15 Springfield Road
New Lisbon, NJ 08064

7:26E-1.5 Certifications, forms and submissions

(a) The person responsible for conducting the remediation shall:

1. Certify, and shall have the licensed site remediation professional certify if applicable pursuant to N.J.A.C. 7:26C-1.5, all forms and documents prepared pursuant to this chapter; and
2. Except as otherwise noted in this chapter, submit all forms and documents to the Department at the address in N.J.A.C. 7:26C-1.6.

(b) All forms are available from the Department at www.nj.gov/dep/srp/srra/forms.

7:26E-1.6 Documenting compliance with the technical requirements

(a) All work being conducted at a site pursuant to this chapter, whether or not being done with Department oversight, shall be documented and included in reports which follow the format and contain the information required pursuant to the reporting sections of N.J.A.C. 7:26E-1 through 8. If a report has already been submitted to the Department pursuant to another Department regulatory program, including, but not limited to, N.J.A.C. 7:14B, 7:26B or 7:26C, then a summary of what was included in the previously submitted report may be submitted. The summary shall include a reference to the Department program to which the report was submitted and the date that it was submitted. Any reports prepared pursuant to this chapter may be combined into a single report.

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(b) When the remediation is conducted with Department oversight, the person responsible for conducting the remediation shall submit workplans (if applicable) and reports in a timely manner. The workplan and/or report shall comply with the format and contain the information required pursuant to N.J.A.C. 7:26E-1 through 8.

(c) The person responsible for conducting the remediation shall have a continuing obligation to ensure that the Department receives all complete, accurate and relevant information regarding remediation at the site.

7:26E-1.7 Variance from the technical requirements and guidance

(a) Except as provided in (b) below, the person responsible for conducting the remediation may only vary from certain technical requirements in N.J.A.C. 7:26E-1 through 8, and site remediation guidance referenced in N.J.A.C. 7:26E-1 through 8 unless expressly exempted by the Department, provided that the person submits the following technical information in the applicable remedial phase report:

1. The regulatory citation for the requirement, or the guidance name and version number for the requirement;
2. A description of how the work performed deviated from the rule requirement or guidance; and
3. The rationale for varying from the requirement that includes supporting information as necessary to document that the work conducted has:
 - i. Provided results that are verifiable and reproducible;
 - ii. Achieved the objectives as the rule requirement or guidance from which it varied; and
 - iii. Furthered the attainment of the goals of the specific remedial phase.

(b) The person responsible for conducting the remediation shall not vary from any non-technical requirements, including, but not limited to, the following:

1. Department notification requirements;
2. Regulatory timeframes;
3. The requirement to obtain permits;
4. The requirement to submit reports that are in the format required in this chapter and address the information required to be provided in this chapter;

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5. The requirement to comply with applicable remediation standards; and
6. The requirement to comply with quality assurance laboratory requirements.

7:26E-1.8 Definitions

The following words and terms, when used in this chapter, shall have the following meanings unless context clearly indicates otherwise:

"Active ground water remediation" means any form of ground water remediation which requires physical action to alter the nature of the impacted aquifer for the purposes of achieving applicable remediation standards. Active ground water remediation includes, but is not limited to, pumping that consistently depresses the water table over an areal extent, air sparging, and bioremediation involving the addition of nutrients and/or organisms below the water table.

"Aquifer" means "aquifer" as defined in the Ground Water Quality Standards, N.J.A.C. 7:9C-1.4.

"Area of concern" means any existing or former distinct location where any hazardous substance, hazardous waste, or pollutant is known or suspected to have been discharged, generated, manufactured, refined, transported, stored, handled, treated, or disposed, or where any hazardous substance, hazardous waste, or pollutant has or may have migrated, including, but not limited to, each current and former:

1. Storage tank and appurtenance, including, without limitation each:
 - i. Above ground or underground storage tank and silo;
 - ii. Rail car;
 - iii. Piping, above and below ground pumping station, sump and pit; and
 - iv. Loading and unloading area;
2. Storage and staging area, including each:
 - i. Storage pad and area;
 - ii. Surface impoundment and lagoon;
 - iii. Dumpster; and
 - iv. Chemical storage cabinet or closet;
3. Drainage system and area, including, without limitation each:

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i. Building floor drain and piping, sump and pit, including each trench and piping from each sink that potentially receives process waste;

ii. Roof leader (when process operations vent to roof);

iii. Drainage swale and culvert;

iv. Storm sewer collection system;

v. Storm water detention pond and fire pond;

vi. Surface water body;

vii. Leach field; and

viii. Dry well and sump;

4. Discharge and disposal area, including, without limitation each:

i. Area of discharge pursuant to N.J.A.C. 7:1E;

ii. Waste pile as defined by N.J.A.C. 7:26;

iii. Waste water treatment, collection and disposal system, including, without limitation, each, septic system, seepage pit and dry well;

iv. Landfill;

v. Landfarm;

vi. Sprayfield;

vii. Incinerator; and

viii. Historic fill material area or any other fill material area;

5. Other areas of concern, including, without limitation each:

i. Electrical transformer and capacitor;

ii. Hazardous materials storage or handling area;

iii. Waste treatment area;

iv. Discolored area or spill area;

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- v. Open area away from production operations;
 - vi. Area with stressed vegetation;
 - vii. Other discharge area;
 - viii. Underground piping including industrial process sewer;
 - ix. Compressor vent discharge;
 - x. Non contact cooling water discharge;
 - xi. Area that may have received floodwater or stormwater runoff from any potentially contaminated area; and
 - xii. Any other area suspected of containing contaminants;
6. Environmental media at a site, including:
- i. Ground water, including, without limitation, present or past regulated activities under the New Jersey Pollutant Discharge Elimination System (NJPDES) Discharge to Ground Water regulations, N.J.A.C. 7:14A, including each: seepage pit; dry well; lagoon; and septic system which received industrial waste;
 - ii. Surface water, including, without limitation, each surface water area and associated sediment which receive or may have received any point or non-point source discharge from the site; and
 - iii. Soil.

"Background ground water contamination" means concentrations of hazardous substances, hazardous waste and pollutants in ground water that originated from either natural sources (that is, non-man-made) or upgradient, offsite discharges (that is, man-made, non-site-related discharges). Background ground water contamination may include, but is not limited to, the same contaminants present both on the site and off the site at upgradient locations, or parent contaminants detected off the site at upgradient locations and daughter products of these parent contaminants detected on the site.

"CERCLA" means the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by Superfund Amendments and Reauthorization Act of 1986 (42 U.S.C. 9601 et seq.).

"Child care center" means such a facility as defined at N.J.S.A. 30:5B-13 et seq.

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"Commissioner" means the Commissioner of the Department of Environmental Protection or his or her authorized representative.

"Containment" or "containment activities" means actions to limit or prevent discharges or the spread of contamination.

"Contaminated site" means all portions of environmental media at a site and any location where contamination is emanating, or which has emanated, therefrom, that contain one or more contaminants at a concentration which fails to satisfy any applicable remediation standard.

"Contamination" or "contaminant" means any discharged hazardous substance as defined pursuant to N.J.S.A. 58:10-23.11b, hazardous waste as defined pursuant to N.J.S.A. 13:1E-38, or pollutant as defined pursuant to N.J.S.A. 58:10A-3.

"Contract laboratory program" or "CLP" means a program of chemical analytical services developed by the EPA to support CERCLA.

"Damages" means the amount of money the Department has determined is necessary to restore, rehabilitate, replace or otherwise compensate for the injury to natural resources as a result of a discharge.

"Day" means calendar day.

"Deed notice" means a document which is identical in wording to N.J.A.C. 7:26E, Appendix E and which provides notice of the following for a specific real property:

1. That the contamination on the real property exists at a level above the applicable unrestricted use soil remediation standards;
2. The restrictions to the applicable property due to contamination; and
3. The engineering controls applicable to the property.

"Department" means the New Jersey Department of Environmental Protection.

"Department certified laboratory" means a laboratory that is currently certified pursuant to N.J.A.C. 7:18, the Regulations Governing Laboratory Certification and Standards of Performance, to perform laboratory analyses for a specific certification category and a specific parameter within the certification categories.

"Diligent inquiry" means:

1. Conducting a diligent search of all documents which are reasonably likely to contain information related to the object of the inquiry, which documents are in such person's possession, custody or control, or in the possession, custody or control of any other person from whom the person conducting the search has a legal right to obtain such documents; and

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2. Making reasonable inquiries of current and former employees and agents whose duties include or included any responsibility for hazardous substances, hazardous wastes, or pollutants, and any other current and former employees or agents who may have knowledge or documents relevant to the inquiry.

"Discharge" means any intentional or unintentional action or omission resulting in the releasing, spilling, leaking, pumping, pouring, emitting, emptying or dumping of a hazardous substance, hazardous waste or pollutant into the waters or onto the lands of the State, or into waters outside the jurisdiction of the State when damage may result to the lands, waters, or natural resources within the jurisdiction of the State.

"Discharge to ground water proposal" or "DGW proposal" means a proposal for a new discharge to ground water (DGW) designed to occur during or as part of the site remediation process.

"Effective solubility" means the theoretical aqueous solubility of an organic constituent in ground water that is in chemical equilibrium with a separate phase mixed product (product containing several organic chemicals). The effective solubility of a particular organic chemical can be estimated by multiplying its mole fraction in the product mixture by its pure phase solubility.

"Engineered system response" means a system that is designed to mitigate risk or remediate an IEC or free product and as further described in the Department's Immediate Environmental Concern (IEC) guidance.

"Engineering controls" means any physical mechanism to contain or stabilize contamination or ensure the effectiveness of a remedial action. Engineering controls may include, without limitation, caps, covers, dikes, trenches, leachate collection systems, signs, fences, physical access controls, groundwater monitoring systems and groundwater containment systems including, without limitation, slurry walls and groundwater pumping systems.

"Environmental medium" means any component such as soil, air, sediment, structures, ground water or surface water.

"Environmentally sensitive natural resources" means all areas defined at N.J.A.C. 7:1E-1.8(a), ground water, and areas and/or resources that are protected or managed pursuant to the Pinelands Protection Act, N.J.S.A. 13:18A-1 et seq. and the Pinelands Comprehensive Management Plan, N.J.A.C. 7:50.

"EPA" means the United States Environmental Protection Agency.

"Feasibility study" means a study designed to develop and evaluate options for remedial action using data gathered during the remedial investigation to develop the objectives of the remedial action, and to develop possible remedial action alternatives, to evaluate those

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alternatives and create a list of feasible alternatives, and to analyze the engineering, scientific, institutional, human health, environmental, and cost of each selected alternative.

"Fill material" means non-indigenous material, used to replace soil in an area or raise the topographic elevation of the site.

"Final remediation document" means a document defined as such pursuant to N.J.A.C. 7:26C-1.3.

"Free product" means a separate phase material, present in concentrations greater than a contaminant's residual saturation point. This definition applies to solids, liquids, and semi-solids. The presence of free product shall be determined pursuant to the methodologies described in N.J.A.C. 7:26E-2.1(a)14.

"Full laboratory data deliverables" means those deliverables identified as follows:

1. For non-EPA/Contract Laboratory Program analyses, the regulatory format data deliverables listed in the version of the Professional Laboratory Analytical Services contract issued by the New Jersey Department of Treasury, Division of Purchase and Property in effect as of the date on which the laboratory is performing the analysis; and

2. For EPA/Contract Laboratory Program analyses, the deliverables listed in the EPA Contract Laboratory Program "Statement of Work" documents in effect as of the date on which the laboratory is performing the analysis as modified by specific requirements listed in Appendix A, incorporated herein by reference.

"Ground water use area" means any area, as determined by a well search conducted pursuant to N.J.A.C. 7:26E-1.17 and an evaluation of the current and potential groundwater uses of an area using a 25-year planning horizon pursuant to N.J.A.C. 7:26E-8.3(b)4ii, where any domestic, irrigation, industrial, public supply well, or well with a water allocation permit exists, is proposed, or where there is reasonable expectation a well will be installed within the 25-year planning horizon.

"Ground water" means the portion of the water beneath the land surface that is within the zone of saturation where all pore spaces of the geologic formation are filled with water.

"Hazardous waste" means any solid waste as defined in the Solid Waste Regulations, N.J.A.C. 7:26-1.4, that is further defined as a hazardous waste pursuant to the Hazardous Waste Regulations, N.J.A.C. 7:26G.

"Highly permeable soils" means soils having less than 15 percent silts and/or clays. Soils may be classified in the field using a standard system texture analysis.

"Historic fill material" means non-indigenous material, deposited to raise the topographic elevation of the site, which was contaminated prior to emplacement, and is in no way connected with the operations at the location of emplacement and which includes, without limitation,

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construction debris, dredge spoils, incinerator residue, demolition debris, fly ash, or non-hazardous solid waste. Historic fill material does not include any material which is substantially chromate chemical production waste or any other chemical production waste or waste from processing of metal or mineral ores, residues, slag or tailings. In addition, historic fill material does not include a municipal solid waste landfill site.

"Immediate environmental concern" means a condition at a contaminated site where any of the following types of contamination or any of the following conditions related to the discharges at the site are found at the site:

1. Contamination in a well used for potable purposes at concentrations at or above the Class II ground water remediation standards;
2. Contamination in indoor air at a level greater than any vapor intrusion rapid action level included in or developed consistent with the Department's Vapor Intrusion Guidance;
3. Contamination in an occupied or confined space producing a toxic or harmful atmosphere resulting in an unacceptable human health exposure, or producing an oxygen-deficient atmosphere, or resulting in demonstrated physical damage to essential underground services;
4. Contamination that exceeds the Department's acute human health exposure levels in surface soil such that dermal contact, ingestion, or inhalation of the contamination could result in an acute human health exposure, as further described in the Department's IEC Guidance; or
5. Any other condition that poses an immediate threat to the environment or to the public health and safety as further described in the Department IEC Guidance.

"Impermeable" means a layer of natural and/or man-made material of sufficient thickness, density and composition so as to have a maximum permeability for water of 10^{-7} cm/sec at the maximum anticipated hydrostatic pressure.

"Indoor air screening level" means a screening level for indoor air defined in the Department's Vapor Intrusion Guidance.

"Injury" means any adverse change or impact of a discharge on a natural resource or impairment of a natural resource service, whether direct or indirect, long term or short term, and includes the partial or complete destruction or loss of the natural resource.

"Innovative remedial action technology" means a new or alternative method, procedure or process that does not have a substantial operational record. An innovative remedial action technology with a substantial operational record in one field could be considered innovative if it is proposed for a new or different environmental problem.

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"Institutional controls" means a mechanism used to limit human activities at or near a contaminated site, or to ensure the effectiveness of the remedial action over time, when contaminants remain at a site at levels above the applicable remediation standard which would allow for the unrestricted use of the property. Institutional controls may include, without limitation, structure, land, and natural resource use restrictions, well restriction areas, classification exception areas, deed notices, and declarations of environmental restrictions.

"Landfill" means a sanitary landfill as defined pursuant to N.J.S.A. 13:1E-1 et seq.

"Licensed site remediation professional" or "LSRP" means a person defined as such pursuant to the Administrative Requirements for the Remediation of Contaminated Sites rules, N.J.A.C. 7:26C-1.3.

"Light non-aqueous phase liquid" or "LNAPL" means hydrocarbons that exist as a separate and immiscible phase liquid when in contact with water and/or air, can exist as a continuous phase (mobile) and/or a discontinuous mass (immobile) and is less dense than water at ambient temperature.

"Limited restricted use remedial action" means any remedial action for soil that requires the continued use of institutional controls but does not require the use of an engineering control in order to meet the established health risk or environmental standards.

"Method detection limit" or "MDL" means the minimum concentration of a substance that can be measured and reported with a 99 percent confidence that the analyte concentration is greater than zero and is determined from the analysis of a sample in a given matrix containing the analyte.

"Mineral oil" means an oil of mineral origin, refined from crude oil, possessing electrical insulating properties.

"Natural background soil level" means the chemical concentration of a substance which is found in soil and which is not attributable to human activity.

"Natural ground water remediation" means any form of ground water remediation in which only degradation, retardation, and dispersion mechanisms are used to achieve applicable remediation standards. For active ground water remediations, this definition shall also apply to portions of plumes that are not captured by the active ground water remediation, but are expected to be naturally remediated after separation from the source plume.

"Natural resources" means all land, biota, fish, shellfish, and other wildlife, air, waters and other such resources.

"No further action letter" means a written determination by the Department defined pursuant to the Administrative Requirements for the Remediation of Contaminated Sites rules, N.J.A.C. 7:26C-1.3.

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"Non-targeted compound" means a compound detected in a sample using a specific analytical method that is not a targeted compound, a surrogate compound, a system monitoring compound or an internal standard compound.

"Order of magnitude" means a factor of 10.

"Person" means any individual or entity, including without limitation, a public or private corporation, company, estate, association, society, firm, partnership, joint stock company, foreign individual, or entity, interstate agency or authority, the United States, and any of its political subdivisions, the State of New Jersey, or any of the political subdivisions of or found within the State of New Jersey, or any of the other meanings which apply to the common understanding of the term.

"Person responsible for conducting the remediation" means any person defined pursuant to the Administrative Requirements for the Remediation of Contaminated Sites rules, N.J.A.C. 7:26C-1.3.

"Pollutant" means any substance defined as such pursuant to the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq.

"Practical quantitation level" or "PQL" means the lowest quantitation level of a given analyte that can be reliably achieved among laboratories within the specified limits of precision and accuracy of a given analytical method during routine laboratory operating conditions.

"Preliminary assessment" means the first phase in the process of identifying areas of concern pursuant to N.J.A.C. 7:26E-3.

"Prospective purchaser" means any person contemplating acquiring contaminated property who:

1. Is not in any way responsible under any statute, Federal or state, or common law for any hazardous substances, hazardous wastes, or other pollutants discharged at a contaminated site; and

2. Is not a corporate successor to, or capitalized by, any person who is in any way responsible under any statute, Federal or state, or common law for any hazardous substances, hazardous wastes, or other pollutants discharged at a contaminated site.

"Quality assurance" means the total integrated program for assuring the reliability of monitoring and measurement data which includes a system for integrating the quality planning, quality assessment and quality improvement efforts to meet data end-use requirements.

"Quality assurance project plan" means a document which presents in specific terms the policies, organization, objectives, functional activities and specific quality assurance/quality control activities designed to achieve the data quality goals or objectives of a specific project or operation.

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"Quality control" means the routine application of procedures for attaining prescribed standards of performance in the monitoring and measurement process.

"Rapid action level" means a level for indoor air defined in the Department's Vapor Intrusion Guidance that triggers an immediate environmental concern condition.

"Receptor" means any human or other ecological component which is or may be affected by a contaminant from a contaminated site.

"Reduced laboratory data deliverables" means, for both EPA/Contract Laboratory Program and non-EPA/Contract Laboratory Program analyses, the laboratory data deliverables listed in Appendix A, Sections III and IV.

"Region of the site" means the area on and adjacent to the site.

"Remedial action" means those actions taken at a contaminated site as may be required by the Department, including, without limitation, removal, treatment measures, containment, transportation, securing, or other engineering or institutional controls, whether to an unrestricted use or otherwise, designed to ensure that any discharged contaminant is remediated in compliance with the applicable remediation standards pursuant to N.J.A.C. 7:26E-6.

"Remedial action selection" means the process of selecting the most appropriate remedy for a site or area of concern that will ensure protection of the public health, and safety and the environment, based upon careful consideration of a variety of factors, including, without limitation, future site use, surrounding land uses, remediation goals and objectives, cost, implementability, reliability and effectiveness.

"Remedial action selection report" means a report describing how a proposed non-CERCLA/non-RCRA remedial action was determined to be the most appropriate remedy pursuant to N.J.A.C. 7:26E-5.

"Remedial investigation" means actions to investigate contamination and the problems presented by a discharge. The requirements of a remedial investigation are set forth at N.J.A.C. 7:26E-4.

"Remedial phase" means a distinct component of the remediation process. Such components may include preliminary assessment, site investigation, remedial investigation, remedial alternative analysis, and remedial action.

"Remediation" or "remediate" means all necessary actions to investigate and cleanup or respond to any known, suspected, or threatened discharge, including, as necessary, the preliminary assessment, site investigation, remedial investigation and remedial action; provided, however, that "remediation" or "remediate" shall not include the payment of compensation for damage to, or loss of, natural resources.

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"Remediation costs" means costs defined as such pursuant to the Administrative Requirements for the Remediation of Contaminated Sites rules, N.J.A.C. 7:26C-1.3.

"Remediation standards" means the combination of numeric standards that establish a level or concentration, and narrative standards, to which contaminants must be treated, removed or otherwise cleaned for soil, ground water or surface water, as provided by the Department pursuant to N.J.S.A. 58:10B-12, in order to meet the health risk or environmental standards.

"Residual product" means a separate phase material present in concentrations below a contaminant's residual saturation point, retained in soil or geologic matrix pore spaces or fractures by capillary forces. This definition applies to solids, liquids, and semi-solids. The presence of residual product shall be determined pursuant to the methodologies described in N.J.A.C. 7:26E-2.1(a)14.

"Residual saturation point" means the saturation point below which non-aqueous phase liquid becomes discontinuous and is immobilized by capillary forces, and fluid drainage will not occur.

"Restricted use remedial action" means any remedial action for soil that requires the continued use of engineering and institutional controls in order to meet the established health risk or environmental standards.

"Restricted use standard" means a numeric soil remediation standard which, when achieved, restores the contaminated soil to a condition suitable for only certain specified uses.

"Retardation" means any process that acts to inhibit the movement of a solute in ground water, such that the solute travels more slowly than the ground water itself.

"Sanitary landfill" or "landfill" means a landfill defined as such pursuant to the Administrative Requirements for the Remediation of Contaminated Sites rules, N.J.A.C. 7:26C-1.3.

"School" means a public school or private school as defined in N.J.S.A. 18A:1-1, or a charter school established pursuant to N.J.S.A. 18A:36A-1.

"Semivolatile organic compounds" means compounds amenable to analysis by extraction of the sample with an organic solvent. For the purposes of this chapter, analysis of semivolatile organic compounds means the analysis of a sample for those target compound list compounds identified as semivolatiles in the version of the EPA Contract Laboratory Program Statement of Work for Organic Analysis, Multi-Media, Multi-Concentration in effect as of the date on which the laboratory is performing the analysis.

"Site investigation" means the collection and evaluation of data adequate to determine whether or not discharged contaminants exist at a site or have migrated or are migrating from the site at levels of excess of the applicable remediation standards. A site investigation shall be developed based upon the information collected pursuant to the preliminary assessment. The requirements of a site investigation are set forth at N.J.A.C. 7:26E-3.

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"Soil" means the unconsolidated mineral and organic matter on the surface of the earth that has been subjected to and influenced by geologic and other environmental factors.

"Soil gas" means vapors or gases present in unsaturated pore spaces of subsurface material.

"Soil gas screening level" means a screening level for soil gas defined in the Department's Vapor Intrusion Guidance document.

"Specific discharge event" means a discharge that meets the criteria in N.J.A.C. 7:26E-3.7(b).

"Spill Act" means the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11a et seq.

"Surface water" means water defined as surface water pursuant to the Surface Water Quality Regulations, N.J.A.C. 7:9B.

"SWMA" means the Solid Waste Management Act, N.J.S.A. 13:1E-1 et seq.

"Tank" means a stationary device designed to contain an accumulation of hazardous substances, hazardous wastes, or pollutants which is constructed of non-earthen materials (for example, concrete, steel, plastic) that provide structural support.

"Target analyte list" or "TAL" means the list of inorganic compounds/elements designated for analysis as contained in the version of the EPA Contract Laboratory Program Statement of Work for Inorganics Analysis, Multi-Media, Multi-Concentration in effect as of the date on which the laboratory is performing the analysis. For the purpose of this chapter, a Target Analyte List scan means the analysis of a sample for Target Analyte List compounds/elements.

"Targeted compound" means a hazardous substance, hazardous waste, or pollutant for which a specific analytical method is designed to detect that potential contaminant both qualitatively and quantitatively.

"Target compound list plus 30" or "TCL + 30" means the list of organic compounds designated for analysis (TCL) as contained in the version of the EPA "Contract Laboratory Program Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration" in effect as of the date on which the laboratory is performing the analysis, and up to 30 non-targeted organic compounds (plus 30) as detected by gas chromatography/mass spectroscopy (GC/MS) analysis. For the purposes of this chapter, a Target Compound List + 30 scan means the analysis of a sample for Target Compound List compounds and up to 10 non-targeted volatile organic compounds and up to 20 non-targeted semivolatile organic compounds using GC/MS analytical methods. Non-targeted compound criteria shall be pursuant to the version of the EPA "Contract Laboratory Program Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration" in effect as of the date on which the laboratory is performing the analysis.

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"Tentatively identified compound" or "TIC" means a non-targeted compound detected in a sample using a GC/MS analytical method which has been tentatively identified using a mass spectral library search. An estimated concentration of the TIC is also determined.

"Timely manner" means in compliance with all mandatory time frames, expedited site specific time frames, and regulatory time frames set forth in these rules and in the Administrative Requirements for the Remediation of Contaminated Sites rules, N.J.A.C. 7:26C.

"Underground storage tank" means any one or combination of tanks, including appurtenant pipes, lines, fixtures, and other related equipment, used to contain an accumulation of hazardous substances, hazardous wastes or pollutants, the volume of which, including the volume of the appurtenant pipes, lines, fixtures and other related equipment, is 10 percent or more beneath the surface of the ground.

"Unknown compound" means a non-targeted compound which cannot be tentatively identified. Based on the analytical method used, the estimated concentration of the unknown compound may or may not be determined.

"Unrestricted use remedial action" means any remedial action for soil that does not require the continued use of either engineering or institutional controls to meet the established health risk or environmental standards.

"Unrestricted use standard" means a numeric soil remediation standard that, when achieved, restores the contaminated soil to a condition or quality suitable for any use. The unrestricted use standard is the lowest of any numeric standard, without limitation, any residential soil remediation standard, any non-residential soil remediation standard and any applicable impact-to-groundwater soil standard.

"UST" means the New Jersey Underground Storage of Hazardous Substances Act, N.J.S.A. 58:10A-21 et seq.

"Volatile organics" means organic compounds amenable to analysis by the purge and trap technique. For the purposes of this chapter, analysis of volatile organics means the analysis of a sample for those target compounds identified as volatiles in the version of the EPA "Contract Laboratory Program Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration" in effect as of the date on which the laboratory is performing the analysis.

"Waste oil" means a petroleum based or synthetic oil which, through use, storage or handling has become unsuitable for its original purpose due to the presence of impurities or loss of original properties.

"Waters" means the ocean and its estuaries to the seaward limit of the State's jurisdiction, all springs, streams and bodies of surface or ground water, whether natural or artificial, within the boundaries of this State.

"Wetland" means any freshwater or coastal wetland.

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"WPCA" means the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq.

7:26E-1.9 General remediation requirements

(a) The person responsible for conducting the remediation shall conduct remediation pursuant to the regulatory timeframes established in this chapter and shall submit all documents, forms, and other submissions as required in this chapter. That person may, based on site specific conditions or circumstances, request an extension of a regulatory timeframe pursuant to the Administrative Requirements for the Remediation of Contaminated Sites rules at N.J.A.C. 7:26C-3.1.

(b) The person responsible for conducting the remediation shall comply with the Site Remediation Program's guidance documents in effect at the time that the work is conducted. All guidance documents can be found in the Site Remediation Program's Guidance Library on the Department's web site at <http://www.nj.gov/dep/srp/srra/guidance>.

(c) The person responsible for conducting the remediation shall direct each licensed site remediation professional he or she hires to conduct the remediation pursuant to N.J.A.C. 7:26C-2.4.

(d) The person responsible for conducting the remediation shall make submissions to the Department pursuant to this chapter as follows:

1. One paper copy and three copies on CD in Adobe portable document format (PDF) of all forms, applications and documents, except as provided in (d)2 through 4 below;

2. One copy on CD of the site-specific health and safety plan pursuant to N.J.A.C. 7:26E-1.10; quality assurance project plan, pursuant to N.J.A.C. 7:26E-2.2, with each remedial phase report as applicable;

3. Three electronic copies of all analytical data using the format outlined in the Site Remediation Program's Electronic Data Interchange guidance;

4. One paper copy of all required maps and one electronic copy of all GIS compatible electronic maps prepared using the Department's GIS guidance;

5. Three electronic copies of all full laboratory data deliverables on CD in Adobe portable document format (PDF) or in a format determined by the Department and one paper copy of all full laboratory deliverables for drinking water, indoor air, chromium and dioxin samples; and

6. Any forms, applications or documents required by this chapter that can be submitted in an electronic format shall be submitted electronically 90 days after the date that the Department informs the public in the New Jersey Register that the relevant electronic

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application is functional. The notice shall also include a notice of administrative change that amends this subsection accordingly.

7:26E-1.10 Health and safety plan

Any person conducting remediation activities shall prepare a site-specific health and safety plan which shall be adhered to by all personnel involved in the remediation. The plan shall be in accordance with the most recently adopted and applicable general industry (29 CFR 1910) and construction (29 CFR 1926) standards of the Federal Occupational Safety and Health Administration (OSHA), U.S. Department of Labor, as well as any other Federal, State or local applicable statutes or regulations.

7:26E-1.11 Severability

If any section, subsection, provision, clause or portion of these regulations is adjudged invalid or unconstitutional by a court of competent jurisdiction, the remainder of these regulations shall not be affected thereby.

7:26E-1.12 Control of ongoing sources and implementation of interim remedial measures

(a) As a first priority, the person responsible for conducting the remediation shall:

1. Identify the need for any interim remedial measures necessary to remove, contain, or stabilize a source of contamination to prevent contaminant migration and exposure to receptors; and

2. Whenever site-specific data support the need for an interim remedial measure, include in each remedial phase report a description of each interim remedial measure implemented and each interim remedial measure that is planned.

(b) The person responsible for conducting the remediation shall follow the Department's Light Non-aqueous Phase Liquid (LNAPL) Free Product Interim Remedial Measures guidance concerning free product removal as follows:

1. Within 60 days after either March 1, 2010 or LNAPL is identified, whichever is later, initiate the recovery of free product and notify the Department on a form found on the Department's website at www.nj.gov/dep/srp/srra/forms; and

2. Within one year after either March 1, 2010 or LNAPL is identified, whichever is later, complete the installation of an LNAPL interim remedial measure, initiate operational monitoring, and submit a Free Product Interim Remedial Measures Report with a form, found on the Department's website at www.nj.gov/dep/srp/srra/forms, to the Department that documents the actions taken pursuant to this subsection.

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7:26E-1.13 Requirement for Department oversight of remediation

(a) The person responsible for conducting the remediation shall investigate and remediate contaminated sites with the Department's prior approval, in the following circumstances:

1. Sites suspected or known to be contaminated with anthropogenic radionuclide contamination of any media;
2. Sites with immediate environmental concern conditions; and
3. Sites with a landfill, if:
 - i. The landfill or any portion thereof is slated for redevelopment that includes structures intended for human occupancy;
 - ii. When landfill remediation activities are funded, in whole or part, by the Hazardous Discharge Site Remediation Fund pursuant to the Brownfield and Contaminated Site Remediation Act at N.J.S.A. 58:10B-4 through 9, a Brownfield redevelopment agreement pursuant to the Brownfield and Contaminated Site Remediation Act at N.J.S.A. 58:10B-27 through 31, or the Municipal Landfill Closure and Remediation Reimbursement Program pursuant to the Solid Waste Management Act at N.J.S.A. 13:1E-116.1 through 116.7; or
 - iii. The person conducting the remediation wants a final remediation document.

7:26E-1.14 Immediate environmental concern requirements

(a) The person responsible for conducting the remediation that identifies an immediate environmental concern (IEC) condition shall follow the Department's IEC guidance and address the IEC condition pursuant to this section.

(b) The person responsible for conducting the remediation that identifies an IEC condition shall:

1. Immediately notify the case manager if one is assigned. If no case manager is assigned or if the case manager is not available, immediately call the Department's hotline at 1-877 WARNDP or 1-877-927-6337;
2. Mitigate the IEC impacts as applicable as follows:
 - i. For potable water immediate environmental concerns, within five days after identifying the IEC condition, provide bottled water to the residents of each property where contaminant concentrations exceed any remediation standard for Class II ground

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water;

ii. For vapor intrusion immediate environmental concerns, within 14 days after identifying the IEC condition, mitigate the infiltration of vapors into structures impacted by vapor intrusion; and

iii. For soils contaminated above acute levels, within five days after identifying the IEC condition, restrict access to soil contaminated above acute levels;

3. Within 14 days after identifying the IEC condition, submit the following to the Department:

i. A completed form found on the Department's website at www.nj.gov/dep/srp/srra/forms;

ii. A completed IEC Information Spreadsheet found on the Department's website at www.nj.gov/dep/srp/srra/forms;

iii. A map indicating the location of the site and the location of the IEC condition; and

iv. All analytical results with full laboratory data deliverables, pursuant to N.J.A.C. 7:26E-2.1(a)16, with an appropriate form for the type of IEC condition found on the Department's website at www.nj.gov/dep/srp/srra/forms;

4. Within 14 days after identifying the IEC condition submit the analytical results from all indoor air sampling to the New Jersey Department of Health and Senior Services at the following address:

NJDHSS
Indoor Environments Program
135 E. State Street
PO Box 369
4th Floor
Trenton, NJ 08625-0369

5. Within 60 days after identifying the IEC condition, implement the following IEC engineered system response actions:

i. Provide water treatment or an alternative water supply to the residents of each property where contaminant concentrations in their potable well exceed any remediation standard for Class II ground water quality standard;

ii. When contaminant concentrations in indoor air are detected above the indoor air screening level, determine whether the contaminant concentrations also exceed the rapid action levels listed in the Department's Vapor Intrusion Guidance, or, if no rapid action level exists for a contaminant in the Department's Vapor Intrusion Guidance, contact the

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Department to have a site-specific rapid action level determined for the contaminant, and if the rapid action level is exceeded install a vapor mitigation system at each property where indoor air levels exceed the rapid action level; and

iii. Otherwise reduce exposure to contaminants or hazardous conditions to acceptable levels as applicable.

(c) Within 120 days after identifying the IEC condition, the person responsible for conducting the remediation shall submit an IEC engineered system response action report with an updated form found on the Department's website at www.nj.gov/dep/srp/srra/forms, that includes the following:

1. A description of all immediate response actions and engineered system response actions that have been completed, including the date that each action that was conducted pursuant to (b) above;

2. A summary of all analytical data related to the IEC and the engineered system response action;

3. All maps and figures related to the IEC and the engineered system response action;

4. A description of the contaminant source control that will be implemented as required pursuant to (d) below; and

5. A GIS compatible map of the estimated area of ground water contamination prepared pursuant to the Department's IEC Guidance.

(d) Within one year after either March 1, 2010 or identifying the IEC condition, whichever is later, the person responsible for conducting the remediation shall initiate control of the IEC contaminant source using the Department's IEC Guidance and submit an IEC contaminant source control report, with an updated form found on the Department's website at www.nj.gov/dep/srp/srra/forms that includes descriptions of each of the following:

1. Remedial actions being implemented to remediate the IEC contaminant source;

2. A monitoring plan for the mitigation system; and

3. A monitoring plan for the wells or structures that are located downgradient of the wells or structures that are impacted by the IEC condition.

7:26E-1.15 Receptor evaluation--general and reporting requirements

(a) The person responsible for conducting the remediation shall conduct a receptor evaluation pursuant to the requirements of N.J.A.C. 7:26E-1.16 through 1.19.

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(b) The person responsible for conducting the remediation who completes an unrestricted use remedial action is not required to conduct a receptor evaluation when a final remediation document is either issued by the Department or is filed with the Department by a licensed site remediation professional within one year after initiating the remediation.

(c) The person responsible for conducting the remediation shall submit an initial receptor evaluation, on a form found on the Department's website at www.nj.gov/dep/srp/srra/forms, by March 1, 2011 or one year after the initiation of remediation, pursuant to N.J.A.C. 7:26C-2.2(b), whichever is later, which shall contain the information that is known by the person responsible for conducting the remediation at the time the report is submitted.

(d) The person responsible for conducting the remediation shall submit an updated receptor evaluation report on a form found on the Department's website at www.nj.gov/dep/srp/srra/forms with the following documents, as applicable:

1. A remedial investigation report submitted pursuant to N.J.A.C. 7:26E-4.8; and
2. A remedial action report submitted pursuant to N.J.A.C. 7:26E-6.7.

(e) The person responsible for conducting the remediation shall also send a copy of each receptor evaluation to the following:

1. The clerk of each municipality in which the site is located; and
2. The designated local health official.

7:26E-1.16 Receptor evaluation--land use

(a) The person responsible for conducting the remediation shall identify all current land uses at the site and of each property located within 200 feet of the site boundary.

(b) The person responsible for conducting the remediation shall provide the address of each residence, school or child care center, as well as each park, playground or other recreation area that is identified at the site and within 200 feet of the site boundary.

(c) The person responsible for conducting the remediation shall generate and submit a map that shows the location of the site and the location of each residence, school or child care center, a park, playground or other recreation area land use that is identified pursuant to (b) above.

(d) The person responsible for conducting the remediation shall identify and describe any proposed changes of land use at the site and of each property located within 200 feet of the site boundary that the municipality has approved, with a map depicting the location of the change in relation to the areas being remediated.

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7:26E-1.17 Receptor evaluation--ground water

(a) The person responsible for conducting the remediation shall conduct a receptor evaluation of ground water when any contaminant is detected in ground water in excess of any Class II ground water remediation standard as follows:

1. Within 90 days after ground water contamination is detected, conduct a well search to identify each well that may be impacted by contamination that has or may have emanated from the site as follows:

i. Locate all wells by conducting a file search of all available Department, county and local records for all monitoring and potable wells located within one-half mile of each point of ground water contamination, and all irrigation, industrial wells, and wells with water allocation permits located within one mile of each point of ground water contamination;

ii. If the person responsible for conducting the remediation finds any of the wells described in (a)1i above, that person shall conduct a door-to-door survey by following the Department's well search guidance;

iii. For each well located, identify the type (potable, irrigation, noncontact cooling water) and the status of the well (active, inactive, properly abandoned pursuant to N.J.A.C. 7:9D), including, as available, total depth, casing length, open bore hole or screened interval, and obtain copies of well records and/or well logs on file with the Department's Bureau of Water Systems and Well Permitting, and any additional records available in county or municipal records;

iv. Document all sources used in conducting the well search, including the names of any agency that was unable to provide the information requested; and

v. For each point of ground water contamination, determine if the ground water contamination is located within a Tier 1 or a Tier 2 well head protection area; and

2. Within 120 days after ground water contamination is detected at the site above a Class II ground water remediation standard, the person responsible for conducting the remediation shall:

i. Notify the Department, pursuant to N.J.A.C. 7:26E-1.4(e), prior to conducting potable well sampling;

ii. Sample each potable well identified by the well search that is located within 1000 feet of any point of ground water contamination, or if ground water flow direction is known, limit sampling to wells 250 feet upgradient, 500 feet sidegradient and 1,000 feet downgradient from any point of ground water contamination; and

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iii. Sample irrigation wells identified by the well search when there are concerns about exposure or when information about the characteristics of the plume is needed.

(b) If the person responsible for conducting the remediation determines that a contaminant concentration is detected in any potable well sample in excess of any Class II ground water remediation standard pursuant to N.J.A.C. 7:26D-2.2(a)1, the person shall:

1. Notify the Department of the IEC condition and conduct all actions pursuant to N.J.A.C. 7:26E-1.14; and

2. Within 14 days after completing the first round of potable well sampling, the person responsible for conducting the remediation shall:

i. Continue to delineate ground water contamination, including the extent of free product, pursuant to N.J.A.C. 7:26E-4.4; and

ii. Continue to identify potential wells and conduct additional sampling pursuant to the Department's IEC Guidance.

(c) If no contaminant concentration is detected in any potable well sample in excess of any Class II ground water remediation standard, within 14 days after receipt of the analytical results from the laboratory, the person responsible for conducting the remediation shall:

1. Submit all analytical results to the Department with full laboratory data deliverables pursuant to N.J.A.C. 7:26E-2.1(a)16 with the form found on the Department's website at www.nj.gov/dep/srp/srra/forms; and

2. If a licensed site remediation professional is overseeing the remediation, conduct the following:

i. Notify each person whose potable well was sampled of the analytical results; and

ii. Provide the Department with a copy of each notification letter.

(d) The person responsible for conducting the remediation shall provide a detailed report of all potable well sampling activities in the applicable remedial phase report that that person submits to the Department.

7:26E-1.18 Receptor evaluation--vapor intrusion

(a) The person responsible for conducting the remediation shall conduct a vapor intrusion investigation pursuant to this section and Department's Vapor Intrusion Guidance (VIG) when any of the following conditions exist in shallow ground water:

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1. A ground water plume containing petroleum hydrocarbon contamination at a concentration greater than any vapor intrusion ground water screening level, is identified within 30 feet of a building;
2. A ground water plume containing volatile contamination that is not petroleum based at a concentration greater than any vapor intrusion ground water screening level is identified within 100 feet of a building;
3. Free product is identified in ground water within 100 feet of a building; or
4. When any of the following conditions are identified:
 - i. Soil gas or indoor air contamination is detected at concentrations that exceed the applicable vapor intrusion soil gas or indoor air screening levels;
 - ii. A landfill is located on or adjacent to the site;
 - iii. A wet basement or sump in a building contains free product and/or ground water containing any contaminant listed in Table 1 of the VIG;
 - iv. Methanogenic (methane generating) conditions are present that may cause an explosion; or
 - v. Any other information that indicates that human health may be impacted via the vapor intrusion pathway.

(b) Within 60 days after determining the need to conduct a vapor intrusion investigation pursuant to (a) above, the person responsible for conducting the remediation shall:

1. Identify all structures and subsurface utilities located within 200 feet of the currently known extent of the shallow ground water that contains contamination at a concentration greater than any vapor intrusion ground water screening level, or within 200 feet of any condition listed in (a)3 or 4 above;
2. Determine the specific use for each structure identified, including the presence of residences, schools or child care centers, whether each structure has a basement, crawl space, or is constructed on a slab, and the approximate square footage of each building footprint;
3. Determine the specific use, depth of the invert, diameter, and construction specifications of all subsurface utilities identified;
4. Determine the flow direction of the shallow ground water pursuant to N.J.A.C. 7:26E-3.7(e)3; and
5. Determine whether free product pursuant to N.J.A.C. 7:26E-2.1(a)14 is present at each ground water sampling location.

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(c) Within 150 days after determining the need to conduct a vapor intrusion investigation pursuant to (a) above, the person responsible for conducting the remediation shall:

1. Notify the Department prior to conducting indoor air or sub-slab sampling pursuant to N.J.A.C. 7:26E-1.4(e); and

2. Implement the Vapor Intrusion Guidance, including, but not limited to:

i. If indoor air samples are to be collected, remove sources of potential background volatile organic chemicals from inside the structure, if possible;

ii. Determine the number and locations of indoor air and/or sub-slab samples;

iii. Collect indoor air and sub-slab samples at structures that may be impacted by vapor intrusion;

iv. Collect other vapor intrusion related samples such as soil gas samples, background samples and ground water samples as necessary to fully evaluate the vapor intrusion pathway;

v. Analyze indoor air samples and sub-slab soil gas samples and any other samples collected using certified analytical methods; and

vi. Evaluate the results of indoor air sampling as follows:

(1) If the results are greater than the Department's vapor intrusion indoor air screening level, the person shall determine whether the contaminants are also greater than the rapid action levels as determined pursuant to N.J.A.C. 7:26E-1.14(b)5ii, and if so determine whether the contaminants are likely to be associated with a discharge at the site or may be attributed to background sources;

(2) If the results are greater than the vapor intrusion rapid action level as determined pursuant to N.J.A.C. 7:26E-1.14(b)5ii, the person shall immediately notify the Department of an immediate environmental concern condition and conduct all actions required pursuant to N.J.A.C. 7:26E-1.14;

(3) If the results are greater than the Department's Health Department Notification Levels for indoor air the person shall immediately notify:

(A) The Department of an immediate environmental concern condition and conduct all actions required pursuant to N.J.A.C. 7:26E-1.14; and

(B) The New Jersey Department of Health and Senior Services at 609-631-6749;

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(4) If the person identifies potentially explosive conditions in a structure or subsurface utility, the person shall immediately notify:

(A) 911 and report explosive conditions to the local emergency response agency;

(B) The Department of the emergency condition at 1-877-WARNDEP or 1-877-972-6337; and

(C) The New Jersey Department of Health and Senior Services at 609-631-6749;

(d) If no contaminant concentration is detected in any indoor air sample in excess of any Department indoor air screening level, within 14 days after receipt of the analytical results from the laboratory, the person responsible for conducting the remediation shall:

1. Submit all analytical results to the Department with full laboratory data deliverables pursuant to N.J.A.C. 7:26E-2.1(a)16 with the Full Laboratory Data Deliverables form available from the Department;

2. Submit all analytical results to the New Jersey Department of Health and Senior Services at the following address:

NJDHSS
Indoor Environments Program
135 E. State Street
PO Box 369
4th Floor
Trenton, NJ 08625-0369

3. If a licensed site remediation professional is overseeing the remediation, conduct the following:

i. Notify each person whose indoor air was sampled of the analytical results; and

ii. Provide the Department with a copy of each notification letter.

(e) If the person responsible for conducting the remediation identifies vapor intrusion IEC conditions pursuant to (c) above, within 14 days after completing the first round of sampling, the person shall continue to:

1. Delineate ground water contamination, including the extent of free product, pursuant to N.J.A.C. 7:26E-4.4; and

2. Identify structures and conduct additional indoor air and/or sub-slab sampling pursuant to the Department's IEC Guidance and the VIG.

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(f) If the person responsible for conducting the remediation determines that no IEC condition exists, but the vapor intrusion pathway is still of concern, the person shall:

1. If the results are between the indoor air screening level and the rapid action level determined pursuant to N.J.A.C. 7:26E-1.14(b)5ii:

i. Within 14 days of receipt of data showing exceedances of the indoor air screening levels, notify the Department of the exceedances on a form found on the Department's website at www.nj.gov/dep/srp/srra/forms;

ii. Within 60 days of receipt of data showing exceedances of the indoor air screening levels, submit a plan to the Department to mitigate the exposure;

iii. Within 120 days of receipt of data showing exceedances of the indoor air screening levels, implement the plan; and

iv. Within 180 days of receipt of data showing exceedances of the indoor air screening levels, submit a mitigation response action report, with a form found on the Department's website at www.nj.gov/dep/srp/srra/forms, that includes the following:

(1) A description of all mitigation actions that have been completed, including the date that each action that was conducted;

(2) A summary of all analytical data related to the vapor intrusion investigation and mitigation response; and

(3) All maps and figures related to the vapor intrusion investigation and mitigation response; or

2. If the results are below the indoor air screening levels, or are above the indoor air screening levels but below the rapid action levels and a determination has been made that a mitigation system is not necessary, complete a vapor intrusion investigation as part of the site investigation or remedial investigation, as applicable.

(g) The person responsible for conducting the remediation shall provide a detailed report of all vapor intrusion sampling activities in the applicable remedial phase report that is submitted to the Department.

(h) If the person responsible for conducting the remediation determines that the vapor intrusion pathway is not a concern at or adjacent to the site, the person shall provide a technical rationale supporting that conclusion.

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7:26E-1.19 Receptor evaluation--ecological

As part of the receptor evaluation the person responsible for conducting the remediation shall conduct a baseline ecological evaluation pursuant to N.J.A.C. 7:26E-3.11, in order to determine whether a remedial investigation of ecological receptors is required pursuant to N.J.A.C. 7:26E-4.7.

SUBCHAPTER 2. QUALITY ASSURANCE FOR SAMPLING AND LABORATORY ANALYSIS

7:26E-2.1 Quality assurance requirements

(a) The person responsible for conducting the remediation shall ensure that the following quality assurance procedures are followed for all sampling and laboratory analysis activities.

1. Laboratories performing analyses shall conform to the following:

- i. For the analysis of any aqueous samples for a parameter or category of parameters for which laboratory certification exists pursuant to N.J.A.C. 7:18, the laboratory shall be certified for that specific parameter or category of parameters pursuant to N.J.A.C. 7:18;
- ii. For the analysis of non-aqueous samples using specific analytical methods contained in the EPA Publication SW-846, "Test Methods for Evaluating Solid Waste", third edition, update IIB, January 1995, as amended and supplemented, for a parameter or category of parameters for which certification exists pursuant to N.J.A.C. 7:18, the laboratory shall be certified for that specific parameter or category of parameters pursuant to N.J.A.C. 7:18 or, at a minimum, have obtained temporary approval to analyze regulatory samples pursuant to N.J.A.C. 7:18-2.5(c);
- iii. For the analysis of samples using USEPA Contract Laboratory Program (CLP) analytical methods for a parameter or category or parameters for which certification exists pursuant to N.J.A.C. 7:18, the laboratory shall be certified for that specific parameter or category of parameters pursuant to N.J.A.C. 7:18 or, at a minimum, have obtained temporary approval to analyze regulatory samples pursuant to N.J.A.C. 7:18-2.5(c);
- iv. For the analysis of aqueous and non-aqueous samples for parameters or categories of parameters not contained in (a)1i through iii above, the person responsible for conducting the remediation is also responsible for ensuring that the selected laboratory is capable of performing the analysis. At such time as N.J.A.C. 7:18 incorporates procedures for parameters or categories of parameters not contained in (a)1i through iii above, the procedures in N.J.A.C. 7:18 shall be followed;
- v. For the analysis of soil gas or indoor air samples collected to investigate the vapor intrusion pathway for a parameter or category of parameters for which certification exists

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pursuant to N.J.A.C. 7:18, the laboratory shall be certified for that specific parameter or category of parameters pursuant to N.J.A.C. 7:18 or, at a minimum, have obtained temporary approval to analyze regulatory samples pursuant to N.J.A.C. 7:18-2.5(c);

vi. For the analysis of samples for petroleum hydrocarbons (PHC) follow the Department's Protocol for Addressing Extractable Petroleum Hydrocarbons; and

vii. For any field analytical method, the laboratory or individual conducting the analysis shall be certified for the parameter or category of parameters for field analytical methods for which the Department provides certification. If the Department does not provide certification for a field analytical method, the laboratory or person shall obtain a site-specific certification for the field analytical method from by the Department's Office of Quality Assurance;

2. The person responsible for conducting the remediation shall reject analytical data as follows:

i. For laboratories performing analyses pursuant to (a)1i above, decertification or suspension of a laboratory pursuant to N.J.A.C. 7:18 for any given parameter or category of parameters shall result in the rejection of all analytical data for that given parameter or category of parameters generated after the date of decertification or suspension.

ii. For laboratories performing analyses pursuant to (a)1ii above, decertification or suspension of a laboratory pursuant to N.J.A.C. 7:18 for any given parameter or category of parameters shall result in the rejection of all analytical data for that given parameter or category of parameters generated after the date of decertification or suspension.

iii. For laboratories performing analyses pursuant to (a)1iii above, decertification or suspension of a laboratory pursuant to N.J.A.C. 7:18 for any given parameter or category of parameters shall result in the rejection of all analytical data for that given parameter or category of parameters generated after the date of decertification or suspension.

3. Except as provided in (a) 5 below, analytical methods used shall have been published or approved by organizations with recognized expertise in the development of standardized analytical methods. These organizations include, without limitation:

i. The EPA;

ii. The American Society for Testing and Materials (ASTM);

iii. The American Public Health Association (APHA);

iv. The National Institute for Occupational Safety and Health (NIOSH);

v. The Association of Official Analytical Chemists (AOAC);

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- vi. The U.S. Army Toxic and Hazardous Materials Agency (USATHAMA);
- vii. The American Water Works Association (AWWA);
- viii. The Department;
- ix. The United States Department of Defense;
- x. The United States Department of Energy; and
- xi. The United States Department of Interior.

4. Non-aqueous samples to be analyzed for volatile organics shall be sampled using the procedures specified in either USEPA SW846 Method 5035 (USEPA Publication "Test Methods for Evaluating Solid Waste," third edition, final update III, December 1996, incorporated herein by reference, as amended and supplemented) or the USEPA Contract Laboratory Program Statement of Work for Organic Analysis, Multi Media, Multi Concentration, Revision OLMO4.2, incorporated herein by reference, as amended and supplemented. All samples are to be preserved in the field with the appropriate preservation solution except for the following:

- i. Samples that contain high levels of carbonates which would result in rapid or vigorous reaction when the sample is added to the vial containing sodium bisulfate may be shipped in vials without preservative;
- ii. Oily waste samples when the solubility of the waste is unknown may be shipped in vials without preservative; or
- iii. Samples collected using a field core sampling/storage device (that is, En Core® or equivalent. En Core® is a product of En Novative Technologies Inc. of Green Bay, Wisconsin.) and the samples are shipped to and analyzed by the laboratory within 48 hours of sampling or the samples are shipped to the laboratory and transferred to vials containing the appropriate preservation solution within 48 hours of sampling need not be preserved in the field.

5. If an analytical method as described in (a)3 above does not exist for a specific contaminant or parameter within a specific matrix, or if an analytical method as described in (a)3 above for a given contaminant or parameter is demonstrated to be inappropriate for the matrix analyzed, then the person responsible for conducting the remediation shall:

- i. Select an appropriate method from another source;
- ii. Document the rationale for selecting the method pursuant to N.J.A.C. 7:26E-1.7; and

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iii. Develop a standard operating procedure for the method, including a quality control section.

6. The person responsible for conducting remediation shall ensure that aqueous samples are analyzed to determine potability as follows:

i. For organic contaminant, use the version of USEPA 500 series methods in effect on the date of analysis (USEPA Publication "Methods for the Determination of Organic Compounds in Drinking Water, Supplement III, August 1995"), incorporated herein by reference, as amended and supplemented); and

ii. For inorganic contaminant, use the version of USEPA 200 series methods in effect on the date of analysis (USEPA Publication "Methods for the Determination of Metals in Environmental Samples, Supplement I, May 1994"), incorporated herein by reference, as amended and supplemented). As an alternative, lead may be analyzed by the version of ASTM Method D3559-90D in effect on the date of analysis (American Society for Testing Publication "Annual Book of ASTM Standards, 1994"), incorporated herein by reference, as amended and supplemented, or by the version of Method 3113B in effect on the date of analysis (American Public Health Publication "Standard Methods for the Examination of Water and Wastewater, 18th Edition"), incorporated herein by reference, as amended and supplemented.

7. The person responsible for conducting remediation shall ensure that hexavalent chromium analysis of aqueous and nonaqueous samples is conducted as follows:

i. Measure the pH and Eh of each sample, not just the quality control sample, with the pH and Eh data included and plotted in the full data deliverables using the graph in USEPA SW-846 Method 3060A incorporated herein by reference, as amended and supplemented; and

ii. Use a site sample for the quality control analyses so the reduction/oxidation effects of the site matrix can be properly evaluated using USEPA SW-846 Method 3060A.

8. For all samples to be used for determining compliance pursuant to the Department's Compliance Guidance, the analytical method(s) shall have analytical sensitivity sufficient to accurately measure concentrations at or below the applicable remediation standard or criteria.

9. If analytical methods are not available for a contaminant, analysis of indicator parameters may be acceptable with technical rationale in the applicable remedial phase report that is submitted to the Department (for example, pH may be used as an indicator parameter for acid or base discharges).

10. Laboratories shall follow all quality assurance/quality control procedures specified in the analytical methods.

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11. For solid sample analysis, including without limitation, soils and sediments, all results shall be reported on a dry weight basis, except for those results required by the method to be otherwise reported.

12. Sample matrix cleanup methods shall be performed if:

i. Petroleum contaminated soils, sediments, or other solids are analyzed for semivolatile organics, and the method detection limits are elevated above the applicable remediation standard because of matrix interference;

ii. Gas chromatographic peaks are not adequately separated due to matrix interference. A peak shall be considered inadequately separated when a rise in baseline or extraneous peaks interferes with:

(1) The instrumental ability to correctly identify compounds present (including internal standards and surrogates); and/or

(2) The integration of peak area and subsequent quantification;

iii. So specified by the analytical method; or

iv. Matrix interferences prevent accurate quantification and/or identification of target compounds.

13. Acceptable matrix cleanup methods include, without limitation, those methods contained in the EPA Publication SW846 or the EPA "Contract Laboratory Program Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration" in effect as of the date of sample analysis.

14. Methods acceptable to the Department shall be utilized for the determination of the presence of free and/or residual product in soil or water. Such methods include, without limitation, visual identification of sheens or other visible product, measurable thickness of product on the water table, the use of field instruments, ultraviolet fluorescence, soil-water agitation, centrifuging, and hydrophobic dye testing.

i. For contaminants that in their pure phase and at standard state conditions (20 degrees Celsius to 25 degrees Celsius and one atmosphere pressure) have densities greater than water, free and/or residual product shall be considered to be present if the contaminant is detected in ground water at concentrations equal to or greater than one percent of the water solubility of the contaminant if ground water contains only that organic contaminant. If a mixture of such contaminants is present, then the effective water solubility of the contaminant shall be estimated for this determination.

15. Gas chromatography methods with a mass spectrometer detector system shall be used for analysis of volatile/semi-volatile contaminants (exclusive of herbicides, pesticides, and PCBs). Chromatography methods with a mass spectrometer detector system shall be used for

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the analysis of organic analytes amenable only to non-gas chromatographic methods. A mass spectrometer detector system is not required if:

- i. Contaminant identity is known;
- ii. The contaminant chromatographic peak is adequately resolved from any other peak. A peak is considered adequately resolved when:
 - (1) Adjacent or coeluting chromatographic peaks do not result in retention time shifts causing misidentification;
 - (2) Coeluting chromatographic peaks do not interfere with quantification of the contaminant's chromatographic peak; and
 - (3) Matrix interferences as described in (a)9ii above are not present; and
- iii. At least 10 percent of the sample analyses are confirmed using the appropriate chromatograph/mass spectrometer detection system.

16. Laboratory data deliverables, as listed in Appendix A, shall be as follows unless otherwise specifically required pursuant to a NJPDES permit:

- i. Full laboratory data deliverables shall be submitted for all potable water and polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans sample results, and for all hexavalent chromium soil sample results;
- ii. Reduced laboratory data deliverables shall be submitted for all other analyses; and
- iii. Analytical results without all quality control and raw data as required in full and reduced laboratory data deliverables, may be provided for all delineation samples which necessitate additional delineation sampling, and for all long-term ground water monitoring samples where the site has Department oversight, provided the following information is submitted:
 - (1) A cover page, including facility name and address, laboratory name and address, laboratory certification number, if applicable, date of analytical report preparation and signature of laboratory director;
 - (2) A listing of all field sample identification numbers and corresponding laboratory sample identification numbers;
 - (3) A listing of all analytical methods used;
 - (4) The method detection limit and practical quantitation level for each analyte for each sample analysis;

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(5) All sample results including date of analysis;

(6) All method blank results; and

(7) All chain of custody documentation.

iv. Upon written request, the Department may require that a "reduced" data deliverables package shall be upgraded to a "full" data deliverables package for any sample analysis pursuant to N.J.A.C. 7:26E-1.7.

17. All sample collection, storage, and shipping requirements, such as sampling methods, sample preservation requirements, sample handling times, decontamination procedure for field equipment, and frequency for field blanks, field duplicates and trip blanks shall conform to the requirements specified in the Department's Field Sampling Procedures Manual. The person responsible for conducting the remediation shall document the rationale for any deviations from the methods in the Department's "Field Sampling Procedures Manual" in the applicable remedial phase report submitted to the Department.

18. Samples shall be preserved in the field immediately after collection and submitted to the laboratory as soon as possible and no later than 48 hours after sample collection.

(b) Field screening methods are limited as follows:

1. Field screening methods for all sampling matrices (soil, water, air, interior surfaces) can only be used under the following conditions:

i. For contaminant delineation if contaminant identity is known or if there is reasonable certainty that a specific contaminant may be present (for example, benzene, toluene, ethyl benzene, xylene in the case of sampling for a gasoline release); or

ii. To bias sample location to the location of greatest suspected contamination.

2. Field screening methods shall not be used to verify contaminant identity or clean zones. However, where 10 or more samples are required for initial characterization sampling at an area of concern, field screening methods listed in (b)3 and 4 below may be used to document that up to 50 percent of sampling points within the area of concern are not contaminated.

3. The field screening methods described in the version of the following references in effect as of the date of the field screening activities may be used:

i. The NJDEP "Field Sampling Procedures Manual";

ii. The NJDEP Site Remediation Program "Field Analysis Manual";

iii. "Field Measurements," EPA/530/UST-90-003; or

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iv. The "Field Screening Methods Catalog," EPA/540/2-8 8/005.

4. Other field screening methods may be used if use of the selected method enables the person to meet the sampling goals set forth in this subchapter, and the person provides the technical rationale for using the selected sampling method in the applicable remedial phase report submitted to the Department.

(c) The following requirements apply for selection of analytical parameters for all environmental media:

1. Samples shall be analyzed for:

i. The contaminants that may be present as determined during the preliminary assessment and from any other information obtained during the remediation; or

ii. The Target Compound List plus TICs/Target Analyte List (TCL + TICs/TAL), hexavalent chromium, petroleum hydrocarbons (PHC), and pH when contaminants are unknown or not well documented;

2. Based on sampling conducted pursuant to (c)1 above, the person responsible for conducting the remediation may, during future sampling events, sample for fewer contaminants than for which the person initially sampled. The person responsible for conducting the remediation shall provide the technical rationale for the reduced list in the applicable remedial phase report submitted to the Department;

3. In addition to (c)1 and 2 above, analyze samples for parameters as needed to develop:

i. A site-specific standard or criterion for:

(1) The soil impact to ground water pathway;

(2) The vapor intrusion pathway;

(3) The ecological pathway; and

ii. An alternative remediation standard for the soil inhalation pathway; and

4. For concrete and other building material that will be recycled, conduct sampling pursuant to Department's Guidance for Characterization of Concrete and Clean Material Certification.

(d) The person responsible for conducting the remediation shall analyze samples for petroleum hydrocarbons contamination (PHC) pursuant to the Department's Protocol for Addressing EPH Contamination Guidance and as follows:

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1. For all petroleum storage and discharge areas, analyze all samples pursuant to the requirements in Table 2-1 and the Department's guidance Replacement of TPH Method 418.1 for the Site Remediation Program;
2. For contaminants, where Table 2-1 indicates that additional analytical parameters are required, conduct the additional analyses on sample(s) with the highest PHC concentration(s), with a minimum of one sample; and
3. For all matrices where sheen or odor indicate the potential presence of PHC from an unknown source, analyze all samples as unknown PHC pursuant to the requirements in Table 2-1.

TABLE 2-1 ANALYTICAL REQUIREMENTS FOR PETROLEUM STORAGE AND DISCHARGE AREAS		
<u>Petroleum Product</u>	<u>Soil/Sediment</u>	<u>Water</u>
Leaded Gasoline, Aviation Gasoline	VO+TICs ¹ , Lead	VO+TICs ¹ , Lead
Unleaded Gasoline	VO+TICs ¹ , Tertiary butyl alcohol	VO+TICs ¹ , Tertiary butyl alcohol
Light Petroleum Distillates (Naphtha, Stoddard Solvent, Paint Thinner, etc.)	VO+TICs ¹	VO+TICs ¹
Kerosene, Jet Fuel	VO+TICs ¹ , Naphthalene, 2-Methyl Naphthalene	VO+TICs ¹ , SVO+TICs ²
Fuel Oil No. 2, Diesel Fuel	PHC ³ . Analyze 25 percent of samples for 2-Methyl Naphthalene and Naphthalene when PHC are detected over 1,000 mg/kg. ⁷	VO+TICs ¹ , SVO+TICs ²
Fuel Oil Nos. 4 & 6, Hydraulic Oils, Cutting Oil, Lubricating Oil	PHC ³ . Analyze 25 percent of samples for PAH ⁴ when PHC are detected over 100 mg/kg. ⁷	VO+TICs ¹ , SVO+TICs ²
Crude Oil	PHC ³ , VO+TICs ¹ , SVO+TICs ² , TAL Metals ⁵	VO+TICs ¹ , SVO+TICs ² , TAL Metals ⁵

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TABLE 2-1 ANALYTICAL REQUIREMENTS FOR PETROLEUM STORAGE AND DISCHARGE AREAS		
<u>Petroleum Product</u>	<u>Soil/Sediment</u>	<u>Water</u>
Waste Oil, Unknown Petroleum Hydrocarbons	PHC ³ . Analyze 25 percent of samples for VO+TICs ¹ , SVO+TICs ² , PCBs, EPA TAL Metals ⁵ when PHC are detected. ⁷	VO+TICs ¹ , SVO+TICs ² , TAL Metals ⁵
Waste Vehicular Crankcase Oil	PHC ³ . Analyze 25 percent of the samples for VO+TICs ¹ , SVO+TICs ² , PCBs, Lead when PHC are detected. ⁷	VO+TICs ¹ , SVO+TICs ² , Lead
Mineral Oil, Dielectric Fluid, Transformer Oil	PHC ³ and PCBs.	PHC ³ and PCBs
Manufactured Gas	PHC ³ , VO+TICs ¹ , PAH ⁴ , TAL	PHC ³ , VO+TICs ¹ , PAH ⁴ , TAL
Plant (MGP) Sites	Metals ⁵ , Cyanide, Phenolics ⁶	Metals ⁵ , Ammonia (Total), Cyanide, Phenolics ⁶

Footnotes

1. EPA Target Compound List volatile organic compounds excluding 1,2-Dibromo-3-chloropropane, 1,2-Dibromoethane (Ethylene dibromide), and 1,4-Dioxane with a library search of TICs.

2. EPA Target Compound List semivolatile organic compounds excluding phenol and substituted phenols with a library search of TICs.

3. Petroleum Hydrocarbons.

4. EPA Target Compound List Polynuclear Aromatic Hydrocarbons.

5. EPA Target Analyte List (TAL) Metals.

6. EPA Target Compound List phenol; 2-methylphenol; 4-methylphenol; and 2,4-dimethylphenol.

7. Conduct the additional analyses on sample(s) with the highest PHC concentration(s), with a minimum of one sample.

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(e) If tentatively identified compounds or unknown compounds are detected at concentrations in excess of the applicable remediation standard, they shall be addressed in either of two ways:

1. If the area will be remediated and it is likely that the concentration of the tentatively identified compounds/unknown compounds will be reduced by the remediation, the tentatively identified compounds/unknown compounds shall be analyzed in post remediation samples to document that it is no longer present in excess of the applicable remediation standard; or

2. An attempt shall be made to positively identify and accurately quantify the tentatively identified compounds/unknown compounds using an analytical method consistent with this section so that a remediation standard can be developed.

7:26E-2.2 Quality assurance project plan

(a) The person responsible for conducting the remediation shall prepare a Quality Assurance Project Plan in a format that corresponds directly to the outline of this section.

1. For each remedial phase at a site involving less than 10 areas of concern, the following shall be included in the Quality Assurance Project Plan:

i. The project's scope and complexity and how the project relates to the overall site remediation strategy;

ii. The data quality objectives specific to the site and sampling event (for example, initial site characterization, delineation of contamination, selection of a remedial action);

iii. The names, addresses and Department laboratory certification number (if applicable) of the laboratories to be used for sample analysis. This shall be updated if changes occur during the project;

iv. The name and telephone number of each of the individuals responsible for the following functions. (This shall be updated if changes occur during the project):

(1) Overall project coordination;

(2) Sampling activities, including quality assurance and quality control; and

(3) Laboratory activities, including quality assurance and quality control;

v. An "Analytical Methods/Quality Assurance Summary Table" which shall include the following information for all environmental, performance evaluation, and quality control samples:

(1) Matrix type;

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- (2) Number or frequency of samples to be collected per matrix;
 - (3) Number of field and trip blanks per matrix;
 - (4) Analytical parameters to be measured per matrix;
 - (5) Analytical methods to be used per matrix pursuant to N.J.A.C. 7:26E-2.1;
 - (6) If proposed, the number and type of matrix spike and matrix spike duplicate samples to be collected;
 - (7) If proposed, the number and type of duplicate samples to be collected;
 - (8) If proposed, the number and type of split samples to be collected;
 - (9) If proposed, the number and type of performance evaluation samples to be analyzed;
 - (10) Sample preservation to be used per analytical method and sample matrix;
 - (11) Sample container volume and type to be used per analytical method and sample matrix; and
 - (12) Sample holding time to be used per analytical method and sample matrix;
- vi. A detailed description of site specific sampling methods to be used pursuant to N.J.A.C. 7:26E-2.1(a) 14, sample storage in the field and sampling handling time requirements;
 - vii. A detailed description of all calibration and preventative maintenance procedures for all field analytical instrumentation;
 - viii. A detailed description of procedures used to obtain duplicate and split samples, if applicable;
 - ix. A detailed description of the chain of custody procedures to be utilized in the field and in the laboratory;
 - x. A detailed description of sample storage procedures to be utilized by the laboratory; and
 - xi. Laboratory data deliverable formats to be used.
2. For any remedial phase at a site involving 10 or more areas of concern, the following shall be included in the Quality Assurance Project Plan:

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- i. The requirements contained in (a)1i through x above;
- ii. A detailed description of field quality control audit procedures to be used, including without limitation, corrective action procedures;
- iii. The procedures to be followed to ensure the complete documentation of all field sampling activities; and
- iv. A detailed description of the data reporting procedures and format for all analytical data generated by the laboratory, including without limitation, the following:
 - (1) Laboratory data deliverable format(s);
 - (2) The laboratory's review and cross-check procedures for the elimination of errors during routine data transfer, in calculations, preparation of data deliverable packages and off-line storage; and
 - (3) If required by the Department, a description of the laboratory's capability to provide EPA Contract Laboratory Program analytical methodology data on diskette in standard EPA Contract Laboratory Program format utilizing the requirements in the versions of the applicable EPA Contract Laboratory Program Statements of Work documents in effect as of the date on which the laboratory is performing the analysis.

SUBCHAPTER 3. PRELIMINARY ASSESSMENT AND SITE INVESTIGATION

7:26E-3.1 Preliminary assessments

- (a) The purpose of a preliminary assessment is to identify the presence of any potentially contaminated areas of concern.
- (b) A preliminary assessment shall be based on diligent inquiry and include an evaluation of the following:
 - 1. Historical information concerning the site history shall be part of the preliminary assessment unless the remediation is directed at either a specific discharge event (rather than a particular area of concern) or any underground tank or underground tank system. The site history shall include an evaluation of the following to the extent available from diligent inquiry:
 - i. Site history information from sources including, but not limited to, the following:
 - (1) Sanborn Fire Insurance Maps;
 - (2) MacRae's Industrial Directory;

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- (3) Title and Deed;
- (4) Site plans and facility as-built drawings;
- (5) Federal, State, county and local government files; and
- (6) The Department Geographic Information System;

ii. The site history from the time the site was naturally vegetated, including without limitation:

- (1) Names of all owners and operators;
- (2) Dates of ownership of each owner;
- (3) Dates of operation of each operator; and
- (4) Brief descriptions of the past industrial/commercial usage of the site by each owner and operator;

iii. All raw materials, finished products, formulations and hazardous substances, hazardous wastes, and pollutants which are or were present on the site, including intermediates and by-products;

iv. Present and past production processes, including dates, and their respective water use shall be identified and evaluated, including ultimate and potential discharge and disposal points and how and where materials are or were received onsite (for example, rail, truck);

v. All former and current containers, container or bulk storage areas, above and below ground tanks, above and below ground waste and product delivery lines, surface impoundments, landfills, septic systems and other structures, vessels, conveyances or units that contain or previously contained hazardous substances, hazardous waste, and pollutants, including:

- (1) Type;
- (2) Age;
- (3) Dimension of each container;
- (4) Location;
- (5) Chemical content;

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(6) Integrity (for example, tank test reports);

(7) Volume;

(8) Construction materials; and

(9) Inventory control records unless a Department-approved leak detection system pursuant to N.J.A.C. 7:1E or 7:14B has always been in place and there is no discharge history;

vi. If the site area exceeds two acres, an interpretation of the aerial photographic history of the site, based on available current and historical color, black and white and infrared aerial photographs (scale 1:18,000 or less) of the site and surrounding area at a frequency which provides a historical perspective of site activities. Evaluate the photographic history back to 1932 or to the earliest photograph available. Aerial photographic coverage is available for review at the New Jersey Department of Environmental Protection, Tidelands Management Program, Aerial Photo Library, Trenton, New Jersey and from other commercial services;

vii. Any data or information concerning known discharges that have occurred on the site;

viii. Remediation activities previously conducted or currently underway at the site including dates of previous discharges, remedial actions, and all existing sampling data concerning contaminants at the site. If a government agency was involved, the name of the lead government agency, case identification number, and current case status;

ix. All remedies previously approved by the Department in a remedial action workplan or equivalent document to determine if the remedy remains protective of public health, safety and the environment;

x. All existing environmental sampling data concerning contaminants at the site;

xi. Any known changes in site conditions or new information developed since completion of previous sampling or remediation;

xii. All Federal, State and local environmental permits including permits for all previous and current owners or operators, applied for or received, or both, for the site including:

(1) The name and address of permitting agency;

(2) The reason for the permit;

(3) The permit identification number;

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- (4) The application date;
- (5) The date of approval, denial, or status of application;
- (6) The name and current address of all permittees;
- (7) The reason for denial, revocation or suspension if applicable; and
- (8) The permit expiration date;

xiii. All administrative, civil and criminal enforcement actions for alleged violations of environmental laws concerning the site, including:

- (1) The name and address of agency that initiated the enforcement action;
- (2) Date of the enforcement action;
- (3) The section of statute, rule or permit allegedly violated;
- (4) The type of enforcement action;
- (5) A description of alleged violations;
- (6) The resolution or status of violation and enforcement action; and
- (7) A description of any potential environmental impact which may have resulted from the alleged violation;

xiv. All areas where non-indigenous fill materials were used to replace soil or raise the topographic elevation of the site, including the dates of emplacement;

xv. All waste disposal records for any onsite landfill that describes the nature, quantity, location, and date of the placement in the landfill. Include waste disposal records for all wastes, drums, tanks, pressurized gas cylinders and all hazardous wastes; and

xvi. All permit requirements pursuant to a Solid Waste Operating Permit, or Disruption and Closure Permit granted pursuant to N.J.A.C. 7:26, including a description of permit requirements completed to date and a description of permit requirements not yet completed.

2. The person conducting the preliminary assessment shall conduct a site visit to verify the findings in (b)1 above.

(c) The person responsible for conducting the remediation who is conducting an evaluation of a child care center pursuant to N.J.S.A. 52:27D-130.4 and N.J.A.C. 10:122 shall conduct a

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preliminary assessment and/or site assessment pursuant to the Department's Environmental Guidance for Licensing of Proposed Child Care Centers.

(d) If any potentially contaminated areas of concern are identified during the preliminary assessment, the person responsible for conducting the remediation shall conduct a site investigation pursuant to N.J.A.C. 7:26E-3.3 through 3.13.

(e) If no potentially contaminated areas of concern are identified during the preliminary assessment, no further remediation is required at the site except that the person who is required to submit an Industrial Site Remediation Act general information notice pursuant to N.J.A.C. 7:26B-3 shall submit a preliminary assessment report with a Preliminary Assessment form available from the Department:

1. By June 1, 2010; or

2. Ninety days after the person responsible for conducting the remediation has notified the Department pursuant to the Industrial Site Recovery Act rules, at N.J.A.C. 7:26B-3.2, whichever is later.

7:26E-3.2 Preliminary assessment report

(a) The person responsible for conducting the remediation who is required to conduct a preliminary assessment pursuant to the Industrial Site Recovery Act, N.J.S.A. 13:1K-6 et seq., shall prepare a preliminary assessment report which:

1. Presents and discusses all of the information identified, evaluated or collected pursuant to N.J.A.C. 7:26E-3.1;

2. Is presented in a format that corresponds to the outline of N.J.A.C. 7:26E-3.1(b);

3. Shall also include:

- i. Scaled site plans detailing lot and block numbers, property and leasehold boundaries, construction or destruction of buildings, areas where fill or cover material has been brought onsite, paved and unpaved areas, vegetated and unvegetated areas, all areas of concern and active and inactive wells; and

- ii. Scaled historical site plans and facility as-built construction drawings, if available;

- iii. A copy of the United States Geologic Survey (USGS) 7.5 minute topographic quadrangle that includes the site and an area of at least a one mile radius around the site. This map shall be the most recent USGS revision and shall clearly note the facility location and property boundaries. When a portion of the USGS quadrangle is used, the scale (including a bar scale), north arrow, contour interval, longitude and latitude, along with the name and date of the USGS quadrangle shall be noted on the map; and

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iv. A summary of the data and information evaluated pursuant to N.J.A.C. 7:26E-3.1(b)1vii, viii, ix, and x shall be presented by area of concern and all phases of work for a particular area of concern shall be integrated into a single discussion of that area;

4. For each area of concern identified at the site that has not been remediated, the report shall contain a recommendation that either:

i. The area of concern is potentially contaminated, and thus additional investigation or remediation is required; or

ii. The area of concern is not believed to contain contaminants above the applicable remediation standards, in which case the preliminary assessment report shall include documentation for this belief;

5. For each area of concern identified at the site, for which a final remediation document was filed or issued, the person responsible for conducting the remediation shall compare the contaminant concentrations remaining in the area of concern with the Department's applicable remediation standards at the time of comparison, and the report shall contain a recommendation that either:

i. The area of concern contains contaminants above the numerical remediation standard applicable at the time of comparison; however, no further remediation is required because:

(1) The contaminant concentrations remaining in the area of concern or the site are less than an order of magnitude greater than the numerical remediation standard applicable at the time of comparison;

(2) The area of concern was remediated using engineering and institutional controls and these controls are still protective of public health, safety and the environment; or

(3) The area of concern was remediated to a site specific remediation standard and all of the factors and assumptions which are the basis for deriving the site specific remediation standard remain valid for the site;

ii. The area of concern contains contaminants above the numerical remediation standards applicable at the time of comparison and further remediation is required because:

(1) The contaminant concentrations remaining in the area of concern or the site are more than an order of magnitude greater than the numerical remediation standard applicable at the time of comparison;

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(2) The area of concern was remediated using engineering and institutional controls and these controls are no longer protective of public health, safety and the environment; or

(3) The area of concern or the site were remediated to an approved site specific remediation standard and some or all of the factors and assumptions which were the basis for deriving the site specific remediation standard are no longer valid;

iii. The area of concern or site does not contain contaminants above the numerical remediation standard applicable at the time of comparison and no further remediation is required; or

iv. The contaminant concentration remaining in the area of concern or the site is more than order of magnitude greater than the numerical remediation standard applicable at the time of comparison. Any person who is liable for contamination pursuant to N.J.S.A. 58:10-23.11g may be required to conduct further remediation; and

6. Includes a completed case inventory document prepared pursuant to the Department's Guidance for the Preparation of the Case Inventory Documents. The case inventory document shall be provided at the front of the report.

(b) The documentation required for (a)5 above shall include a table comparing the levels of contaminants remaining in the area of concern, the numerical remediation standards which are contained in the remedial action workplan that was approved by the Department or was prepared by a licensed site remediation professional and the numerical remediation standards applicable at the time of comparison. The table shall contain all sampling results, including, but not limited to, sample location, sample media, field and laboratory identification numbers, method detection limits as necessary, and analytical results for the area of concern.

7:26E-3.3 Site investigation

(a) The purpose of a site investigation is to determine if any contaminants are present at the site, or as necessary, have emanated or are emanating from the site above any of the applicable remediation standards or if no further remediation is required. If such contaminants are present at the site, then additional remediation is necessary.

(b) A site investigation shall be conducted based upon the information collected pursuant to the preliminary assessment requirements in N.J.A.C. 7:26E-3.1 and shall satisfy all of the following requirements:

1. The general sampling requirements in N.J.A.C. 7:26E-3.4;
2. The building interior sampling requirements in N.J.A.C. 7:26E-3.5, if applicable;
3. The soil sampling requirements in N.J.A.C. 7:26E-3.6;

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4. The ground water sampling requirements in N.J.A.C. 7:26E-3.7, if applicable;
5. The surface water and sediment sampling requirements in N.J.A.C. 7:26E-3.8, if applicable;
6. The area specific sampling requirements in N.J.A.C. 7:26E-3.9;
7. The background soil sampling requirements in N.J.A.C. 7:26E-3.10, if applicable;
8. The ecological evaluation requirements in N.J.A.C. 7:26E-3.11; and
9. The landfill and historic fill requirements in N.J.A.C. 7:26E-3.12, if applicable.

(c) If required pursuant to an oversight document or other applicable rule, the person responsible for conducting the remediation shall submit reports pursuant to N.J.A.C. 7:26E-3.13 in accordance with the schedules contained in the oversight document or other applicable rule.

(d) The person responsible for conducting the remediation shall conduct a comparison of all site data with the Department's applicable remediation standards, pursuant to the Department's Compliance Guidance, to determine if contaminated areas of concern are present.

(e) The person responsible for conducting the remediation who is required to conduct a site investigation pursuant to the Industrial Site Recovery Act, N.J.S.A. 13:1K-6 et seq., or the New Jersey Underground Storage of Hazardous Substances, N.J.S.A. 58:10A-21 et seq., shall complete the site investigation and submit a site investigation report with a form found on the Department's website at www.nj.gov/dep/srp/srra/forms by the later of the following:

1. By March 1, 2011; or
2. One year after the initiation of remediation, pursuant to N.J.A.C. 7:26C-2.2(b).

7:26E-3.4 Site investigation--general sampling requirements

(a) Sampling shall be conducted in all potentially contaminated areas of concern to determine whether or not any contaminants are present above the applicable unrestricted use remediation standard.

1. Sampling shall be biased to the suspected location of greatest contamination.
2. Samples shall be biased based on professional judgment, area history, discolored soil, stressed vegetation, drainage patterns, field instrument measurements, odor, or other field indicators.

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3. Sampling locations shall comply with requirements listed in N.J.A.C. 7:26E-3.5 through 3.9.

4. If access to sampling locations required pursuant to N.J.A.C. 7:26E-3.5 through 3.12 is impractical due to physical obstructions or safety hazards, and no practical sampling alternatives are available, the person responsible for conducting the remediation shall provide the rationale for alternative sampling location in the site investigation report.

(b) All sampling methods and laboratory analyses shall be conducted pursuant to N.J.A.C. 7:26E-2.1.

(c) Composite sampling shall not be conducted, except as necessary for waste classification pursuant to N.J.A.C. 7:26G-5.

7:26E-3.5 Site investigation--building interiors

The person responsible for conducting the remediation shall conduct a site investigation of building interiors when contaminants inside the building have the potential to migrate to the environment outside the building or when contaminants outside the building have the potential to migrate into the building. The person responsible for conducting the remediation shall conduct the site investigation of the vapor intrusion pathway required pursuant to this chapter and the Department's Vapor Intrusion Guidance.

7:26E-3.6 Site investigation--soil

(a) The site investigation shall satisfy the following requirements for all soil investigations:

1. A survey for buried drums, tanks or waste using test pits, ground penetrating radar, magnetometry electromagnetics, or other techniques capable of detecting metal containers and other waste to an average depth of 20 feet or deeper shall be conducted if:

- i. There have been any reports of buried drums, tanks or waste;
- ii. Ground water contamination is detected and no source has been identified; or
- iii. Aerial photographic history of the site indicates the presence of drums, tanks or waste in or adjacent to regraded and/or filled areas.

2. Soil samples shall be collected for chemical analysis and to provide a profile of subsurface conditions. The profile shall meet the following:

- i. Logs shall be prepared for all soil samples to document subsurface conditions including, without limitation, soil types and description of non-soil materials, field instrument measurements, depth to ground water, if ground water is encountered and

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document, if present, soil mottling, presence of odor, vapors, soil discoloration, and free and/or residual product, as determined pursuant to N.J.A.C. 7:26E-2.1(a)14;

ii. Soil shall be classified according to one of the standard systems (for example, Burmeister, Unified, or United States Department of Agriculture);

iii. All borings shall be performed in accordance with the Subsurface and Percolating Waters Act, N.J.S.A. 58:4A-4.1 et seq. In addition, a monitoring well permit shall be obtained from the Department prior to drilling any soil boring greater than 25 feet below grade. For soil borings to a depth of less than 25 feet below grade, the Department recommends soil not be returned to the boring hole. If contaminated materials are returned to the boring hole, then the person responsible for conducting the remediation shall address the presence of this contamination as part of the remedial action workplan; and

iv. Soil sample locations may be photo-documented.

3. Initial characterization soil samples (except samples being analyzed for volatile organics) shall be collected at zero to six inches below grade except as required pursuant to N.J.A.C. 7:26E-3.9 (Area Specific).

4. All soil samples to be analyzed for volatile organics shall be collected as follows:

i. A bulk sampling device that will collect an intact core (for example, splitspoon) shall be used to minimize contaminant loss during sampling; and

ii. Each core shall be screened with a properly calibrated direct reading instrument equipped with a photoionization detector (PID), flame ionization detector (FID), or other suitable instrument capable of detecting the contaminants pursuant to N.J.A.C. 7:26E-2.1(b) to select samples of volatile organics analysis using the following criteria:

(1) If field measurement readings are detected above background:

(A) The coring shall be extended until either background readings are achieved, groundwater is encountered, or bedrock is encountered; and

(B) An undisturbed sample from the six-inch interval registering the highest field measurement reading shall be collected, at a minimum, using the appropriate sample collection method and sampling device for volatile organics analysis pursuant to the requirements specified in N.J.A.C. 7:26E-2.1(a)4; or

(2) If all intervals register the same field measurement reading or all field measurement readings do not exceed backgrounds:

(A) The coring shall be extended to groundwater, bedrock, or 10 feet, whichever is encountered first; and

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(B) One undisturbed sample at a minimum, from the six-inch interval at the bottom of the soil boring shall be collected, using the appropriate sample collection method and sampling device for volatile organics analysis pursuant to the requirements specified in N.J.A.C. 7:26E-2.1(a)4; and

iii. Contaminants that cannot be detected with field-screening instruments shall be sampled in accordance with the requirements at N.J.A.C. 7:26E-3.4(a).

5. In all cases, samples shall be collected in discrete six inch increments. If more or less than a six inch increment is sampled because of poor sample recovery or other field logistical problems, an explanation shall be provided in the soil log.

6. Additional sampling of increments below those specified in (a)3 and 4 above shall be completed in cases where the surface has been regraded or if physical evidence in borings indicate the possible presence of contamination.

7. If the designated soil sampling point is within the saturated zone, a sample of the saturated soil shall be collected, when sample recovery is possible, and analyzed.

(b) Soil gas detection methods may be used to bias soil or ground water sample locations. The use of soil gas techniques is recommended, where appropriate, to assist in the evaluation of potentially contaminated or contaminated soil, where extensive sampling would otherwise be required, such as for lengthy sections of below-grade piping. Guidance for the use of soil gas techniques may be found in the NJDEP "Field Sampling Procedures Manual."

(c) The site investigation of soil shall be conducted:

1. For the purposes of a site investigation pursuant to N.J.A.C. 7:26E-3.3(a); and

2. According to the quality assurance and quality control requirements pursuant to N.J.A.C. 7:26E-2.1.

7:26E-3.7 Site investigation--groundwater

(a) Except as provided in (b) below, the site investigation of each area of concern shall include at least one groundwater sample if any soil contaminant detected in the area of concern has a water solubility greater than 100 milligrams per liter at 20 degrees Celsius to 25 degrees Celsius as documented by a peer-reviewed reference; and

1. All of the soil between the contaminant and the saturated zone is less than 15 percent silt and clay; or

2. Any part of the area of concern at which the soil contamination was detected is located within 2,000 feet of a public supply well, as determined from a map of public supply wells

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which is available from the Department's Bureau of Revenue, Maps and Publications (609-777-1038), or through the Department's internet home page (<http://www.state.nj.us/dep/njgs>, then select "Digital Data"). A groundwater sample is not required if documentation acceptable to the Department is provided in the site investigation report (N.J.A.C. 7:26E-3.13) demonstrating that groundwater sampling was not necessary.

(b) Ground water sampling may not be necessary during a site investigation for a particular area of concern if the person responsible for conducting the remediation documents that ground water contamination from the discharge is unlikely based on the following criteria:

1. The date and duration of the discharge is known;
2. The identity and the volume of the contaminants are known;
3. The date the remediation in response to the single discharge was completed;
4. Post remediation soil sampling data establish that the remediation meets all applicable remediation standards in effect at the time of the remediation, regardless of when the Department is informed of the remediation; and
5. Any other data or information that is relevant to the determination of the likelihood of ground water contamination.

(c) The site investigation of groundwater shall be conducted for the purposes of a site investigation pursuant to N.J.A.C. 7:26E-3.3(a) according to the following:

1. The quality assurance and quality control requirements pursuant to N.J.A.C. 7:26E-2;
2. Ground water samples may be taken pursuant to any generally acceptable sampling method pursuant to N.J.A.C. 7:26E-1.7. Sampling methods generally acceptable to the Department include, but are not limited to, those specified in the NJDEP Field Sampling Procedures Manual or the NJDEP Alternative Ground Water Sampling Techniques Guide in effect as of the date on which the sampling is performed; and
3. The groundwater sampling points shall be located in:
 - i. The excavation of any source(s) of contaminants, if possible, including without limitation, tanks, tank distribution systems, and underground injection control (UIC) units such as seepage pits, septic systems, dry wells or other injection wells regulated under N.J.A.C. 7:14A-5; or
 - ii. The expected downgradient flow direction of the area of concern and within 10 feet of the area of concern; groundwater flow direction shall be predicted based on topographic relief, the location of surface water bodies, structural controls in the bedrock or soils, location of pumping wells and subsurface conduits at or below the water table. Groundwater flow direction may also be predicted based on data from adjacent sites if

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groundwater flow direction at the adjacent site has been determined pursuant to N.J.A.C. 7:26E-3.7(e)3iv.

(d) The minimum number of ground water samples collected shall be as follows:

1. At least one ground water sample for each area of concern which is classified as an Underground Injection Control (UIC) unit including, without limitation, seepage pits, septic systems, dry wells or other injection wells regulated under N.J.A.C. 7:14A-5 sampled pursuant to N.J.A.C. 7:26E-3.9(e)3;

2. At least one ground water sample for sites with leaking underground storage tanks and tank fields containing up to three tanks with a maximum capacity of 10,000 gallons per tank. If a leaking tank is excavated, the ground water sampling point shall be located within the excavation, if possible;

3. Pump islands and associated piping greater than 25 feet from the tank field shall be considered separate areas of concern and shall require a separate ground water sample location; and

4. At least one ground water sample for all other areas of concern unless the area of concern is within 10 feet hydraulically upgradient of a ground water sampling location.

(e) The results of each ground water site investigation analysis shall be evaluated as follows:

1. If the contaminant concentrations found in all ground water samples are below the applicable remediation standards, no further remediation is necessary for ground water;

2. If the contaminant concentrations found in any ground water samples exceed the applicable remediation standards, the ground water may be resampled to confirm the presence of contamination; this confirmation sampling shall include at least two additional samples taken over a 30 day period, the results of which may be averaged with the original result to determine compliance with the applicable remediation standards; and

3. If the contaminant concentrations found in any ground water sample exceeds the applicable ground water remediation standard, the person shall determine the direction of ground water flow as follows:

i. Install a minimum of three ground water monitoring wells or piezometers in each affected aquifer or water bearing zone to determine the ground water flow direction in that zone. Install and survey the monitoring wells or piezometers pursuant to N.J.S.A. 58:4A-4.1 et seq. and N.J.A.C. 7:26E-4.4(g) to provide for adequate triangulation;

ii. Collect a minimum of two rounds of synoptic static water levels a minimum of 30 calendar days apart to provide a more accurate indication of the ground water flow direction. The water levels may be taken to evaluate seasonal variations in flow direction;

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iii. If the site is located in an area that is tidally influenced, synoptic ground and surface water levels shall be collected during two fair weather sampling events separated by a minimum 30-day period where each event entails collecting hourly water levels from all applicable wells and the surface water for a minimum 71-hour period; and

iv. Collect water level measurements and determine ground water flow direction, taking into account activities in the area which may affect flow direction, such as pumping wells or seasonally used pumping wells and injection wells.

(f) A prospective purchaser shall commence a potable water investigation no later than 30 calendar days after acquiring the property, in accordance with the requirements and schedule at N.J.A.C. 7:26E-1.17.

(g) To support a claim that all or part of groundwater contamination detected in onsite groundwater samples is caused by background groundwater contamination, a background groundwater investigation shall be conducted as follows:

1. Groundwater flow direction shall be determined pursuant to N.J.A.C. 7:26E-3.7(e)3;

2. A minimum of one background monitoring well shall be installed in each water bearing zone that is believed to contain background groundwater contamination. A sufficient number of additional monitoring wells shall be installed to evaluate all offsite sources potentially affecting onsite groundwater quality. All monitoring wells shall be installed in accordance with N.J.S.A. 58:4A-4.1 et seq. and N.J.A.C. 7:9D. Each background monitoring well shall be located:

i. Beyond the influence of all onsite areas of concern;

ii. At the upgradient property boundary of the site, as determined by N.J.A.C. 7:26E-3.7(e)3;

iii. Such that the offsite ground water impacting this well will migrate along a predicted ground water flow path that will intercept the area of concern; and

iv. Outside the zone of influence of any nearby pumping wells that would prevent upgradient ground water from flowing onto the site;

3. Background monitoring well(s) shall be sampled concurrently with collection of onsite ground water samples for all onsite contaminants believed to be originating from background sources;

4. Results of the background ground water investigation shall be evaluated as follows:

i. No further remediation is required for ground water if:

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(1) Contaminants detected in the area of concern monitoring well, as well as the contaminants' parent products, were never historically used on the site as documented pursuant to N.J.A.C. 7:26E-3.1 and 3.3;

(2) There is no additional evidence of an onsite discharge; and

(3) Contamination is present in the background monitoring well(s); and

ii. Additional remediation may be required when contamination is present in the area of concern monitoring well but not in the background monitoring well or contamination is present in both the area of concern monitoring well and the background monitoring well. In these cases, the Department shall consider the contribution of the background contamination in the determination of the applicable ground water remediation standards for the site. Factors for determining the contribution of the offsite contamination to onsite contamination shall include, but not be limited to, contaminant attenuation rates, contaminant degradation rates, and ground water flow velocity; and

5. The person responsible for conducting the remediation shall notify the Department pursuant to N.J.A.C. 7:26E-1.4(c) if that person determines, pursuant to (g)4 above, that groundwater contamination exists upgradient of the site. The person responsible for conducting the remediation shall notify their assigned case manager, or if they are not assigned a case manager, the Department hotline at (1-877 WARNDP or 1-877-927-6337).

7:26E-3.8 Site investigation--surface water and sediment

(a) If a surface water body is on or adjacent to the site, the person responsible for conducting the remediation shall determine if there is any evidence that discharges to the surface water body have occurred or are occurring. Such evidence shall include, without limitation:

1. Known historical or on-going discharges to the surface water body, as determined pursuant to N.J.A.C. 7:26E-3.1;

2. Stressed vegetation, sheens, seeps, discolored soil or sediment along the shoreline or on the surface water body;

3. Evidence of stream impacts from historical discharges including historical ecological studies documenting differences in organism population density and diversity in areas potentially impacted by the site relative to areas not impacted by the site; or

4. Existing onsite ground water contamination in excess of the applicable State Surface Water Quality criteria, N.J.A.C. 7:9B or the Federal Surface Water Quality criteria, 40 C.F.R. Part 131, whichever is more stringent, which discharges to the surface water body. Onsite ground water contamination in excess of the applicable surface water criteria shall be delineated to the applicable surface water criteria. Ground water delineation samples shall be

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collected along the ground water flow path between the area of concern and the surface water body and analyzed for applicable contaminants.

(b) If there is evidence that discharges to the surface water body have occurred, pursuant to (a) above, then a surface water investigation is required. The investigation of surface water and sediment shall be conducted according to the following:

1. The quality assurance and quality control requirements pursuant to N.J.A.C. 7:26E-2;

2. Surface water samples are required to evaluate standing water bodies, or, for flowing water, upgradient, downgradient, and discharge point water samples are required when there is reason to believe surface water may have been impacted by contamination emanating from the site. Sampling shall be designed to account for seasonal or short-term flow and water quality fluctuations due to dry versus wet weather flow, system hydraulics (obtaining flow-proportioned samples where applicable) and potential contaminant characteristics (for example, density, solubility); and

3. Sediments in surface water bodies shall be analyzed when there is reason to believe sediments may have been impacted by contamination emanating from the site as follows:

i. Sediment sampling for streams and similar water bodies shall be completed in accordance with N.J.A.C. 7:26E-3.9(d)3 (Swales/Culverts).

ii. Sediment sampling for ponded bodies of water shall be completed in accordance with N.J.A.C. 7:26E-3.9(c) (Surface Impoundments).

iii. In addition to other required analyses, surface water sediments shall also be analyzed for total organic carbon, pH, and particle size. These data are required to develop appropriate remediation standards.

7:26E-3.9 Site investigation--area specific requirements

(a) The site investigation shall also satisfy the following sampling requirements for bulk storage tanks and appurtenances, including, without limitation, all in-use and out of service storage tanks with a storage capacity greater than 55 gallons, and associated piping and fill points.

1. For above ground tanks over unpaved soil:

i. Sampling around tanks with shell or bottom in direct contact with soil now or in the past shall meet all the following criteria:

(1) Sampling to detect surface contamination shall be conducted around the base of the tank with at least one sample per 100 linear feet, and shall include expected areas of contamination based on soil discoloration/odors, history of

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repairs/replacement, soil beneath valves, or low areas where spills or leaks from valves may accumulate.

(2) Unless the tank has always been in compliance with N.J.A.C. 7:1E-2 and has no discharge history, at least one boring shall be located adjacent to or within two feet of the tank and continuous two foot split spoon sampling performed to the water table (if water table is less than 10 feet). The sample in each boring evidencing the highest apparent contamination based on soil discoloration, odor, field screening result or other field indicator shall be laboratory analyzed. If there is no evidence of contamination, samples shall be collected from the zero to six inch interval above the saturated zone. At least one boring shall be located in the expected downgradient ground water flow direction from the tank. For tanks in excess of 100 feet in circumference, at least three borings, spaced equidistantly, are required.

(3) In cases where the depth to ground water is greater than 10 feet, sampling shall be conducted to 10 feet as in (a)1i(2) above. If there is no evidence of contamination, samples shall be collected at 9.5 to 10 feet.

ii. Elevated tanks (that is, shell or bottom not in contact with ground) require soil sampling when there is any physical or documentary evidence of discharges, when soil discoloration is observed or when field monitoring or other evidence indicates that a discharge has occurred.

(1) At least one soil sample shall be taken below tanks which store or may have stored hazardous substances, hazardous wastes, or pollutants that do not cause obvious soil discoloration (such as volatile organics), in the area most likely to be contaminated, including without limitation, valve or former leak or rupture areas. If samples cannot be obtained from below the tank because soils are not accessible to sampling equipment, the sample may be located within two feet of the tank.

2. For above ground tanks over paved surfaces:

i. Soil around above ground tanks on paved surfaces shall be sampled pursuant to (b)1 below (Pads) if there are stained soils adjacent to pad or if the potential contaminant would not cause discoloration (volatile organics), or if there is a history of spillage or other evidence that a discharge has occurred.

ii. Tanks within a paved containment area shall be sampled at the drainage discharge point, if one exists, pursuant to (d) below (Drainage Areas).

iii. Soil sampling below the pavement shall be conducted only when the pavement has deteriorated so as to allow potential contaminant contact with the soil, or if pavement was not present over the life of the tank or former tanks.

iv. Instead of sampling soil beneath pavement, samples around the pad may be taken pursuant to (b)1 below or N.J.A.C. 7:26E-1.7.

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3. For underground storage tanks:

i. Underground storage tanks and distribution systems containing potential contaminants shall be evaluated to identify any past or present discharges. No sampling is required for tanks and distribution systems which have always had secondary containment and leak detection pursuant to N.J.A.C. 7:14B and no discharge history. At least four soil samples around each tank shall be collected. If tanks will be closed, refer to N.J.A.C. 7:26E-6.3(b) for requirements.

(1) The soil samples shall be collected within two feet of the tank with one sampling location located at each end, and additional sampling locations located along the length of the entire tank pursuant to (a)3i(2) below;

(A) If sampling within two feet of the tank is not possible due to the presence of bedding gravel, or there are safety considerations (such as danger of tank puncture), which have been identified through field investigations or review of as built plans, soil samples shall be taken as close as possible to the tank. However, no samples shall be collected from further than five feet from the tank and a ground water sample shall be collected within five feet and down-gradient of the tank.

(B) If, because of safety considerations, the distance between adjacent tanks precludes locating soil samples between the tanks, a ground water sample may be collected within five feet and down gradient of the tanks, at the appropriate depth in lieu of the required soil samples between the tanks;

(2) The total number of required sampling locations per tank are as follows:

<u>Total Tank Capacity (Gallons)</u>	<u>Approximate Tank Length (Feet)</u>	<u>Minimum Number of Sampling Locations</u>
56-2,000	to 10'	4
2,001-10,000	to 30'	6
10,001-25,000	to 40'	8
25,000+	to 40'+	10

(3) Soil samples collected for analysis shall be taken at zero to six inches below the tank bottom unless the tank is within the saturated zone (see (a)3i(5) below);

(4) Additional soil samples for volatile organics analysis shall be collected in accordance with the requirements at N.J.A.C. 7:26E-3.6(a) 4;

(5) For underground storage tanks within the saturated zone:

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(A) If volatile organic compounds are considered potential contaminants, either a soil investigation shall be conducted as stated in (B) below, or a ground water sample shall be collected at the appropriate depth pursuant to N.J.A.C. 7:26E-3.7(c) through (e);

(B) If volatile organic compounds are not considered potential contaminants, a soil investigation shall be conducted. For a soil investigation, samples shall be collected zero to six inches above the saturated zone if the potential contaminant's density is less than water, and zero to six inches below the depth of the tank bottom if the potential contaminant's density is greater than water;

ii. Precision tests pursuant to N.J.A.C. 7:14B-6.5(a)3 may be used in lieu of soil samples if tanks are beneath buildings or otherwise inaccessible and it is the original tank with no history of leaks or repairs, or if there is insufficient soil to collect a sample (for example, tank is located in bedrock).

iii. To verify tank contents for out of service tanks, one sample shall be taken of any product or residue remaining in the tank and analyzed using ASTM fingerprint method D3328 or other appropriate method.

4. For all above grade piping:

i. Sampling is necessary if there is evidence of a discharge (for example, discolored soil, etc.) or reports of past discharges.

ii. Any sampling conducted shall be pursuant to (e) below (Discharge/Disposal Areas).

5. For all below grade piping:

i. Below grade piping shall be evaluated to identify any past or present discharges using soil samples located zero to six inches below the piping and within two feet of piping unless the system has always had secondary containment with leak detection pursuant to N.J.A.C. 7:14B and no discharge history. Samples for volatile organic compounds shall be collected in accordance with the requirements at N.J.A.C. 7:26E-3.6(a)4. Precision tests pursuant to N.J.A.C. 7:14B-6.1(a)3 and 6.6(a)2 may be used if the piping is original and there is no history of discharges or repairs.

ii. For total piping length of one to 15 feet, a minimum of one soil sample shall be collected. An additional soil sample shall be collected for each additional 15 linear feet of piping or portion thereof from 16 to 50 feet of piping length. Sampling locations shall be biased to include joints, dispensers, and other potential discharge areas.

iii. Piping runs within two feet of another pipe run may be considered a single pipe run. Soil samples for multiple pipe lines shall be collected midway between/among the lines, or biased toward any pipe for which evidence of a discharge exists. For pipes that

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are separated by a distance greater than two feet vertically, soil samples shall be collected below each pipe, pursuant to (a)5i above.

iv. For total piping lengths in excess of 50 feet, sampling frequency may be reduced pursuant to N.J.A.C. 7:26E-1.7.

6. For all loading and unloading areas:

i. Exposed soils at loading or unloading areas associated with tanks shall be sampled at a minimum rate of one sample per fill connection or valved discharge point;

ii. For loading or unloading points located over impervious cover, sampling shall be conducted pursuant to (b)1 below (Pads).

(b) The site investigation shall also satisfy the following requirements for all storage and staging areas, dumpsters and transformers, whether temporary or permanent, including exposed soil areas adjacent to above ground vessels on pads; tank loading/unloading areas on pads; dumpster staging areas; electrical transformers, heat exchanger and other outdoor equipment and drum storage pads.

1. For all pads:

i. Pads shall have a minimum of one sampling location per side adjacent to exposed soil for sides up to 30 feet long; for sides greater than 30 feet long, one additional sample location is required for each additional 30 feet of length;

ii. Each sampling point shall be located immediately adjacent to the pad and biased toward the expected location of greatest contamination;

iii. If a pad shows evidence of deterioration that may allow contaminant contact with the soil, or its surface has been modified (repaved), or aerial photographs or site history indicate potential for previous discharges to the soil, soil samples beneath the pad shall be collected pursuant to (b)2ii below; and

iv. Bermed pads and pads surrounded by impermeable cover shall be sampled at any drainage discharge point pursuant to (d) below (Drainage Areas).

2. For all storage and staging areas over permeable cover:

i. Storage and staging areas with evidence of discharges which are or were used for storage of hazardous substances, hazardous wastes, or pollutants shall be sampled pursuant to (e) below (Spills/Disposal Areas).

ii. Sample frequency shall be one per 900 square feet of surface area to characterize soils below a storage or staging area up to 300 feet in perimeter with a minimum of one sample. Sampling locations shall be biased toward the suspected location of greatest

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contamination based on low points, drainage patterns, discoloration, stressed vegetation, field instrument measurements or other field indicators.

(c) The site investigation shall satisfy the following requirements for all surface impoundments, including without limitation, lagoons, fire ponds, waste ponds or waste pits, storm water detention basins, excavations, natural depressions or diked areas, which are designed to hold an accumulation of liquid substances or substances containing free liquids. Active surface impoundments with impermeable liners which may be damaged as a result of sample collection shall have liner integrity verified by physical inspection and/or evaluation of monitoring well water quality data associated with the surface impoundment, if available.

1. Sediments within all unlined surface impoundments shall be sampled if the impoundment receives runoff from areas of potential contaminant sources;
2. Sediment sample locations shall be biased towards inflow/outflow areas, and areas where sediments may be expected to accumulate;
3. Core samples shall be taken for contaminant analysis and to fully characterize sediment type, thickness of sediment layers, and vertical extent of sediment.
4. Distinct layers of sediments thicker than six inches, as evidenced by color, particle size, or other physical characteristics, shall be sampled individually.
5. Sediment quantity within the surface impoundment shall be estimated.

(d) The site investigation shall also satisfy the following requirements for all drainage systems.

1. For all floor drains and collection systems, if there is reason to believe contaminants were discharged into the floor drain or collection system:
 - i. The point of discharge for any floor drain or collection system shall be sampled if the system discharges or ever may have discharged to soil, ground water or surface water;
 - ii. If the point of discharge is unknown, tracer tests (for example, dye or smoke) shall be conducted to determine the discharge point(s);
 - iii. Collection system integrity shall be documented by representative soil sampling at potential leak areas, video inspection, hydrostatic test or pressure test; and
 - iv. Sampling soil below floor drains, or collection system laterals, shall be conducted when corrosives (as defined in N.J.A.C. 7:26 or, if plastic piping is or was used, organic solvents are considered corrosive) are or were discharged to floor drains or the collection system or there has been a history of collection system discharges, rupture or repairs. In such cases, representative soil sampling at known or suspected leak areas is required for potential contaminants.

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2. Soil at each roof leader discharge point shall be sampled if storage units or process operations using hazardous substances, hazardous wastes, or pollutants vent or may have vented to the roof;

3. For all swales and culverts:

i. Sampling shall be conducted when the swale/culvert receives or received runoff from other contaminated areas of concern;

ii. Sediment and soil sampling shall be conducted at the points where contamination from runoff/spills enter or have entered the drainage system; and

iii. If flow could have scoured sediments from the receiving structure, sampling shall be conducted at onsite downgradient structures laden with sediments;

4. For all storm sewer and spill containment collection systems:

i. Sampling shall be conducted when the collection system is or was the runoff/spill discharge point from other contaminated areas of concern;

ii. Sediment sampling shall be conducted at the manhole, catchbasin, sump, or other structure where contaminated runoff or discharges enter the drainage system;

iii. Sampling shall be conducted in the soils around catch basins, manholes, sumps or other structures which contain or may have contained hazardous substances, hazardous wastes, or pollutants, and are not hydraulically sound (that is, water percolates through the floor and walls), through the use of adjacent soil borings. A single boring located within two feet of the downstream side of the structure shall be sampled at a depth corresponding to the bottom of the structure. Samples for volatile organic compounds shall be collected in accordance with the requirements at N.J.A.C. 7:26E-3.6(a) 4; and

iv. Ground water discharging from storm sewer systems which contain dry weather flow (that is, five days following the most recent rainfall) shall be sampled at the discharge point and analyzed for potential contaminants discharged or potentially discharged into the system; and

5. For all boiler and compressor discharges, if there is reason to believe a potential contaminant discharge has occurred, sampling shall be conducted pursuant to (e) below (Discharge/Waste Disposal Areas).

(e) The site investigation shall also satisfy the following requirements for all discharge and waste disposal systems and areas.

1. For any discharge areas and areas of discolored soil or stressed vegetation where specific requirements are not otherwise provided in this section:

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- i. Each distinct area shall be evaluated independently as an area of concern; and
 - ii. Initial characterization samples shall be biased based on field indicators such as soil discoloration, stressed vegetation, or field instrument measurements toward those areas of greatest suspected contamination. Sample frequency shall be at least one sample for every 900 square feet for areas up to 300 feet in perimeter.
2. Above ground treatment systems shall be sampled pursuant to the requirements for the functional portions of the system pursuant to (a) above (Tanks). For example, any above ground waste treatment tanks over unpaved soil shall be sampled pursuant to (a)1 above.
3. For below grade wastewater treatment systems:
- i. For tanks, septic tanks, separators, and neutralization pits, two samples shall be collected from within the tank, one aqueous and one sludge sample, for analysis.
 - ii. For septic disposal fields:
 - (1) Soil borings shall be completed as specified below for onsite disposal fields.
 - (2) At least one boring per 500 square feet of field area shall be completed, with a minimum of four borings per disposal field.
 - (3) Borings shall be located within two feet of the edge of the bed area in active disposal fields, but shall be angled so that samples are taken below the infiltrative surface as defined in N.J.A.C. 7:9A-2.1, and directly below laterals within abandoned fields.
 - (4) Borings shall be located to include the first five feet of the infiltrative surface as defined in N.J.A.C. 7:9A-2.1 and shall be spaced so that samples are representative of the entire disposal field.
 - (5) Soil samples shall be taken at a depth corresponding to zero to six inches below the bottom of the infiltrative surface as defined in N.J.A.C. 7:9A-2.1.
 - (6) Samples for volatile organic compounds shall be collected in accordance with the requirements at N.J.A.C. 7:26E-3.6(a)4.
 - iii. For cesspools, seepage pits, as defined in N.J.A.C. 7:9A-2.1, and dry wells:
 - (1) Sampling shall be conducted in accordance with (e)3iii(2) through (5) below;
 - (2) One representative sample of sludge/sediment in each pit shall be obtained for laboratory analysis;

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(3) A soil boring shall be placed within two feet of the suspected downgradient side of the pit and shall extend to a minimum of two feet below the pit bottom. The soil shall be cored and inspected for evidence of discharge and samples collected in accordance with N.J.A.C. 7:26E-3.4(a) 1 and 2. Samples for volatile organic compounds shall be collected in accordance with requirements at N.J.A.C. 7:26E-3.6(a)4.

(4) If the pit bottom is within two feet of the saturated zone or bedrock, a ground water sample will be obtained within two feet of the suspected downgradient side of the pit; and

(5) At a minimum, the laboratory analysis shall target the contaminants suspected to have been discharged to the seepage pit.

iv. Collection lines shall be sampled pursuant to (d)1 above (Floor Drains).

(f) The site investigation shall also satisfy the following requirements for any other potentially contaminated areas away from process areas not otherwise addressed pursuant to (a) through (e) above:

1. The sample locations shall be biased toward suspected areas of the greatest contamination. If there is no basis for biasing, then random sampling of these areas is required as follows, except as provided in (f)2 below:

i. The area to be sampled shall be gridded and each grid node given an identification number;

ii. The grid nodes chosen for sampling shall be based on the numbers selected from a random number chart; and

iii. Areas of less than 10 acres shall be sampled at a rate of at least one sample for every two acres.

2. If the person responsible for conducting the remediation documents that the area is not and has not been used for any purpose which may have included hazardous substances, hazardous wastes, or pollutants, including, without limitation, the activities described in (a) through (e) above, then no samples are required. Such documentation shall be based upon the following:

i. An aerial photographic history pursuant to N.J.A.C. 7:26E-3.1(c) 1vi (Preliminary Assessment); and

ii. An affidavit signed by the person certifying the site investigation attesting that, based on diligent inquiry, no potential contaminants were discharged in the area.

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7:26E-3.10 Site investigation--background investigation in soil

(a) If during the site investigation, a suspected contaminant is found in any area of concern in excess of the applicable remediation standard, the following approach may be used to demonstrate to the Department that the contaminant concentration is due to natural background:

1. Demonstrate that a previous background investigation in the region of the site, conducted pursuant to (a)3 below, identified contaminant concentrations in soil in the region of the site at the same concentration as the soil found on the site under investigation;

2. Demonstrate that the contaminant concentrations at the site are due to natural background conditions as follows:

i. The contaminant of concern was never used, stored, or disposed on the site as documented pursuant to N.J.A.C. 7:26E-3.1;

ii. The chemical concentrations detected in the soil at the site are within the ranges reported in appropriate references for background levels for New Jersey;

iii. The distribution of the chemical in the soil does not follow a concentration gradient indicative of a discharge; and

iv. Soil boring logs indicate the samples were not collected from historic fill material; or

3. Conduct a background soil investigation as follows:

i. A minimum of 10 background samples shall be collected from onsite or in the region of the site. Two samples shall be collected from each of five locations with one sample collected at a depth of zero to six inches and one sample at a depth of greater than 12 inches at each location;

ii. Background samples shall be collected at locations unaffected by current and historic site operations as documented by the preliminary assessment, including aerial photographs. Wherever possible, background samples shall be collected from locations which are topographically upgradient and upwind of contaminant sources;

iii. Background samples shall not be collected from the following areas:

(1) Parking lots, roads, or roadside areas;

(2) Areas where potential contaminants were loaded, handled, or stored;

(3) Waste disposal areas;

(4) Areas near railroad tracks;

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(5) Areas of historic fill material;

(6) Areas receiving runoff from areas (a)3iii(1) to (5) above or from adjacent sites;

(7) Storm drains or ditches receiving runoff from the site or adjacent sites; or

(8) Any other area of concern;

iv. Background samples shall be collected and analyzed using the same methods as were used for area of concern samples;

v. Background samples shall be collected from soil types similar to the area of concern samples. Similar soil types shall be identified using standard classification systems pursuant to N.J.A.C. 7:26E-3.6(a)2ii;

vi. The background data set shall be examined for statistical outliers as follows:

(1) An outlier is defined as a concentration greater than 1.5 times the range of the 25th to 75th percentile, plus the concentration of the 75th percentile. For example, if the 75th percentile concentration in a data set is nine ppm and the 25th percentile is three ppm, subtract three from nine and multiply the result by 1.5. This would equal nine ppm. Add the result to the 75th percentile for a concentration of 18 ppm. Any sample point above 18 ppm would be considered an outlier. The background sample data shall be transformed to natural logarithms before performing the outlier test because it is assumed that natural background chemical concentrations are log normally distributed; and

(2) An outlier shall not be considered part of background unless the chemical concentration is confirmed with the analysis of an additional sample from the outlier location. If the difference between the original and confirmation sample results is no greater than 20 percent, the average concentration of the two samples shall be considered the highest background concentration;

vii. The highest contaminant concentration found in the background samples shall be applied as an upper limit for the contaminant concentrations found on the site. If contaminant concentrations are found at any sampling location on the site exceeding the highest concentration found in the background samples, a remedial investigation shall be conducted; and

viii. Samples collected for area of concern investigation shall not be averaged for background comparisons.

(b) If during the site investigation a contaminant concentration is found in any area of concern in excess of the applicable remediation standard, it may be demonstrated to the

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Department that the elevated contaminant concentration is not due to an onsite discharge on a case by case basis.

7:26E-3.11 Site investigation--ecological evaluation

(a) A baseline ecological evaluation shall be completed for each contaminated site or area of concern, except an area of concern that consists of an underground storage tank storing heating oil for on-site consumption in a one to four family residential building. This baseline evaluation shall be qualitative in nature and based on site investigation sample results and a site inspection by a person experienced in the use of techniques and methodologies for conducting ecological risk assessment in accordance with EPA guidance. This evaluation shall be used to determine when further sampling and evaluation is required, pursuant to N.J.A.C. 7:26E-4.7. The results of the baseline evaluation shall be included as part of the site investigation report submitted to the Department. The baseline ecological evaluation shall:

1. Evaluate all data identified or collected in the preliminary assessment and the site investigation to identify all of the site-specific contaminants that are of ecological concern. Contaminants of ecological concern shall include, without limitation, those that exhibit the ability to biomagnify or bioaccumulate, or contaminants with concentrations that exceed applicable standards, criteria or guidelines recommended by the Department, NOAA, U.S. Department of the Interior, EPA or other Federal natural resource agencies for use in conducting ecological assessments and investigations. Such standards, criteria and guidelines shall include, without limitation:

i. For sediments:

(1) EPA, Briefing Report to the EPA Science Advisory Board on the Equilibrium Partitioning Approach to Generate Sediment Quality Criteria, EPA 440/5-89-002;

(2) EPA, Technical Basis for Deriving Sediment Quality Criteria for Nonionic Organic Contaminants for the Protection of Benthic Organisms by Using Equilibrium Partitioning, EPA-822-R-93-011;

(3) Long, E.R., and D.D. MacDonald, S.L. Smith and F.D. Calder, Incidence of adverse biological effects within ranges of chemical concentrations in marine and estuarine sediments, Environmental Management 19:81-97, 1995; and

(4) Persaud, D., R. Jaagumagi, and A. Hayton, Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario, Environmental Monitoring and Reporting Branch, Ontario Ministry of the Environment, Ottawa, 24p., 1993;

ii. For surface water:

(1) Federal Surface Water Quality Criteria for Acute/Chronic Aquatic Life Protection, 40 C.F.R. Part 131; and

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(2) New Jersey Surface Water Quality Standards, N.J.A.C. 7:9B;

iii. For soil:

(1) Contaminant Hazard Reviews, Fish and Wildlife Service, U.S. Department of the Interior, various dates, Eisler, R.; and

(2) Toxicological Benchmarks for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants: 1994 Revision, Oak Ridge National Laboratory, Oak Ridge, TN, Will, M.E. and G.W. Suter II;

iv. Other peer-reviewed published literature on the impact that specific contaminants have on non-human species;

2. Identify environmentally sensitive natural resources within the site boundaries and on properties immediately adjacent to the site. The boundaries of these sensitive areas shall be defined to the extent necessary to estimate the sensitive area size and location with respect to the contaminated site or area of concern. The Department of Geographic Information System shall be used as a source of information for identifying these sensitive areas;

3. Identify potential contaminant migration pathways to any environmentally sensitive natural resources identified in (a)2 above; or any observations of potential impact to the identified environmentally sensitive natural resources that might be attributed to site contamination; such observations shall include, but not be limited to:

i. Stressed or dead vegetation;

ii. Discolored soil, sediment or water;

iii. Absence of biota in a specified area of the system as compared to other similar areas of the same system; or

iv. Presence of a seep or discharge; and

4. Draw conclusions regarding the need to conduct further investigations. Continued ecological investigations shall be required during the remedial investigation, pursuant to N.J.A.C. 7:26E-4.7, whenever the baseline evaluation indicates the co-occurrence of the following conditions:

i. Contaminants of ecological concern exist onsite;

ii. An environmentally sensitive natural resource exists on, or immediately adjacent to, the site; and

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iii. Potential contaminant migration pathways to an environmentally sensitive natural resource exist, or an impact to an environmentally sensitive natural resource is indicated based on visual observation.

7:26E-3.12 Site investigation--landfills and historic fill material

(a) If a landfill may be present at the site, the person responsible for conducting the remediation shall conduct a site investigation as follows:

1. Confirm whether a landfill is present;

2. Determine if buried containers including, but not limited to, drums, tanks, pressurized gas cylinders, munitions or explosives of concern, or unexploded ordnance are present by conducting a survey, by a person qualified and experienced in the use of geophysical sensing techniques, using an appropriately calibrated electro magnetometer or other appropriate geophysical sensing technique to detect potential buried containers as follows:

i. Use a 25-foot transect spacing across the landfill and around the perimeter of the landfill a sufficient distance beyond the potential landfill limits to ensure all areas with potential waste are surveyed; and

ii. Take and record readings every five feet along each transect; and

3. Evaluate the landfill and determine the presence and effectiveness of existing control systems, as applicable:

i. For each area of soil erosion and sediment deposition around the perimeter of the landfill:

(1) Collect and analyze soil and sediment samples from each area pursuant to N.J.A.C. 7:26E-3.6 and 3.8, respectively; and

(2) Bias samples to areas of likely contamination area pursuant to N.J.A.C. 7:26E-3.4;

ii. Collect a minimum of one leachate and one soil/sediment sample from each seep identified around the perimeter of the landfill. If evidence of seeps are identified, but leachate is not present at the time of sampling, then collect samples when leachate is present;

iii. Collect ground water samples from any existing monitoring wells pursuant to N.J.A.C. 7:26E-3.7;

iv. Analyze samples collected above for TCL/TAL, pH, ammonia (as N), nitrate (as N), total dissolved solids (TDS), and conductivity;

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v. Screen any existing vents for lower explosive level, volatile organic contaminants, methane and hydrogen sulfide using appropriate field analytical techniques such as photoionization detector (PID), flame ionization detector (FID), or other suitable instruments capable of detecting the contaminants pursuant to N.J.A.C. 7:26E-2.1(b); and

vi. Determine the type, extent, and condition of the landfill cap or cover including chemical analysis of soil for TCL/TAL pursuant to N.J.A.C. 7:26E-3.6.

(b) If historic fill material may be present at the site, the person responsible for conducting the remediation shall conduct a site investigation as follows:

1. Confirm whether historic fill material is present;

2. If historic fill material is confirmed, either:

i. Assume that the fill material is contaminated above the residential soil remediation standards and conduct a remedial investigation of historic fill material pursuant to N.J.A.C. 7:26E-4.6(b); or

ii. Demonstrate that the historic fill material is not contaminated above the residential soil remediation standards by sampling pursuant to N.J.A.C. 7:26E-3.4, 3.6 and 3.9, as applicable;

3. Investigate areas of concern located in historic fill material independently of the historic fill material. To differentiate between contaminants in fill and those from site discharges, conduct an evaluation of the contaminant type and concentration gradient in each area of concern and the contaminant distribution in the fill;

4. If historic fill material is assumed to be, or is determined to be contaminated, and the fill material is located within two feet of the seasonally high water table, collect a minimum of one ground water sample pursuant to N.J.A.C. 7:26E-3.7;

5. If the results of ground water sampling conducted pursuant to (b)4 above indicate contaminant concentrations are below the applicable ground water remediation standards, no further investigation of ground water as relates to impacts from historic fill is required; and

6. If the results of ground water sampling conducted pursuant to (b)4 above indicate contaminant concentrations are above an applicable ground water remediation standard:

i. For sites where the historic fill material extends beyond the property boundaries, the Department will establish a ground water classification exception area pursuant to N.J.A.C. 7:26E-6.3, using the footprint of the property as the boundaries of the classification exception area; or

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ii. For sites where the historic fill material is contained within the property boundaries, conduct a remedial investigation of the ground water pursuant to N.J.A.C. 7:26E-4.4.

7:26E-3.13 Site investigation report

(a) The site investigation report shall present and discuss all of the information identified or collected pursuant to N.J.A.C. 7:26E-3.3 through 3.12.

(b) The site investigation report shall include the following:

1. Historical information pursuant to N.J.A.C. 7:26E-3.2 (preliminary assessment report) unless the remediation is directed at either a specific discharge event, rather than a particular area of a site, or any underground tank or underground tank system;

2. A physical setting section which shall include descriptions of the following unless the remediation is directed at either a specific discharge event, rather than a particular area of concern, or any underground tank or underground tank system:

i. The physical conditions of the site and surroundings, including a general description of soils, geology, hydrogeology, and topography;

ii. Use of, distance to, flow direction, and names of surface water bodies within one-half mile of the site with emphasis upon water bodies topographically or hydraulically downgradient of the site that may receive site discharges or runoff;

iii. The results of the well search conducted pursuant to N.J.A.C. 7:26E-1.17 and the Department's Well Search Guidance; and

iv. The direction of ground water flow, as determined pursuant to N.J.A.C. 7:26E-3.7(e)3;

3. A technical overview which shall present a general profile of the site investigation execution and results. The following items shall be discussed in the technical overview:

i. Reliability of laboratory analytical data as indicated by compliance with sample holding times, ability to achieve method detection limits and precision and accuracy criteria for the analytical method, and other indicators of data quality;

ii. A summary of the overall nature of contamination on the site, including, without limitation, the numbers of areas of concern requiring further remediation; and

iii. Any significant events or seasonal variation which may have influenced sampling procedures or analytical results;

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4. Findings/recommendations which shall include;

i. A discussion, by area of concern, of the site investigation execution and analytical results. The discussion shall consist of specific findings at the areas of concern;

ii. A discussion of the following items, for each area of concern:

(1) A detailed description of each area of concern including dimensions, suspected and actual contamination, and suspected source of discharge;

(2) Results and implications of field measurements or area-specific changes in sampling protocol due to field conditions;

(3) Significance of information generated in the library search of tentatively identified compounds/unknown compounds; and

(4) Recommendations for either additional remediation or no further remediation for each area of concern; and

5. A completed a case inventory document prepared pursuant to the Department's Guidance for the Preparation of the Case Inventory Document. The case inventory document shall be provided at the front of the report.

(c) The site investigation report shall also include the following data and information:

1. Results of all analyses, copies of all laboratory data sheets and the required laboratory data deliverables pursuant to N.J.A.C. 7:26E-2.1 (Quality Assurance Requirements). Laboratory data deliverables may be submitted as a separate attachment;

2. A summary table of analytical methods and quality assurance indicators pursuant to N.J.A.C. 7:26E-2.2(a)1v;

3. A table summarizing all sampling results, including sample location, media, sample depth, field and laboratory identification numbers, analytical results, and comparison to applicable remediation standards organized by area of concern:

i. All contaminant concentrations exceeding the applicable remediation standards shall be identified;

ii. Samples with method detection limits (MDLs) (or practical quantitation levels (PQLs) if available) exceeding the applicable remediation standard shall be identified and an explanation provided in the table key;

iii. Soils/solids sample results shall be reported in milligrams per kilogram on a dry weight basis, and aqueous sample results shall be reported in micrograms per liter;

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iv. All ground water data for the same aquifer zone shall be located in the same section of the table; and

v. The data in the summary table shall be presented both as a hard copy and an electronic deliverable using the format outlined in detail in the Site Remediation Program's Electronic Data Interchange Manual in effect as of the date the report is submitted. The Electronic Data Interchange Manual may be obtained at <http://www.nj.gov/dep/srp/hazsite/docs/>. Electronic deliverables are not required if the summary table is prepared as part of the remediation of a specific discharge event or for an area of concern that consists of a storage tank storing heating oil for on-site consumption in a one to four family residential building where there has been no groundwater impact.

(1) The following locational information shall be submitted:

(A) Horizontal data points shall be reported in New Jersey state plane coordinates using the North American Datum of 1983 (NAD 1983), in accordance with the Department's Mapping and Digital Data Standards at N.J.A.C. 7:1D Appendix A, using units of U.S. survey feet;

(B) Locational information collected in latitude and longitude shall be converted to New Jersey state plane coordinates. Conversion programs can be obtained at <http://www.nj.gov/dep/srp/hazsite/help/software/>.

(2) All vertical data points should be reported as depth below ground surface, and in mean sea level using the North American Vertical Datum of 1988 (NAVD 1988) in accordance with the Department's mapping and digital data guidance which can be referenced at <http://www.state.nj.us/dep/gis/>.

(3) All submissions of electronic data which contain locational information should be also include a metadata file. For guidance in creating a metadata file, see the version of the Department's mapping and digital data guidance most recent to the time of submission. This guidance document is located at <http://www.state.nj.us/dep/gis/>.

4. Stratigraphic logs, which include soil/rock physical characteristics and field instrument readings detected during drilling for each soil boring, test pit and monitoring well;

5. Stratigraphic cross sections of the site using information from monitoring wells, test pits and borings, if available;

6. All soil boring, piezometer, and monitoring well records, including the State permit numbers and as-built specifications, if applicable;

7. The following information shall be reported for each monitoring well sampled for each ground water sampling event. All measurements shall be to the nearest 0.01 feet:

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i. Before purging:

- (1) The date, time, and weather conditions;
- (2) The well identification number and State well permit number;
- (3) The photoionization detector (PID) and/or flame ionization detector (FID) reading taken from the well immediately after the cap is removed;
- (4) The thickness of free product, if present, as determined pursuant to N.J.A.C. 7:26E-2.1(a)14;
- (5) pH, dissolved oxygen, temperature, and specific conductance;
- (6) The total depth of the well from the top of casing or surveyors mark if present;
- (7) The depth from the top of the casing to the top of the screen;
- (8) The depth from the top of the casing to the water; and
- (9) The estimated water volume in the well.

ii. After purging:

- (1) The start and end time for purging;
- (2) The purge method;
- (3) The purge rate(s);
- (4) The total volume purged;
- (5) The depth from the top of the casing to the water after purging; and
- (6) pH, dissolved oxygen, temperature, and specific conductance.

iii. Before sampling:

- (1) The depth from the top of the casing to the water before sampling.

iv. After sampling:

- (1) The start and end time for sampling;
- (2) pH, dissolved oxygen, temperature, and specific conductance; and

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(3) The sampling method.

v. Any comments concerning field observations during the ground water sampling event, such as slow recharge, turbidity, odor, sheen, PID and/or FID readings, model number and ionization potential of PID and/or FID used, shall also be reported; and

8. Any other data and information obtained pursuant to N.J.A.C. 7:26E-3.3 through 3.12.

(d) The site investigation report shall also include the following legible maps and diagrams:

1. Site and area of concern base maps pursuant to N.J.A.C. 7:26E-3.2(a)3i;

2. Sample location map(s), including:

i. All sample locations, sample depths and contaminant concentrations shall also be plotted on the map. Where an entire contaminant class is not detected or is less than the applicable remediation standard, contaminants need not be listed individually;

ii. Map scale (including bar scale) and orientation (including north arrow);

iii. Field identification numbers for all samples; and

iv. If more than one map is submitted, maps shall be presented as overlays, keyed to the base map in (d)1 above; sample locations may be superimposed on the site or area of concern map in (d)1 above. Alternatively, individual maps may be submitted which have a common coordinate system and common scale, provided each map details the features of the base map in (d)1, above;

3. If applicable, a map of the distribution of free product, and surface water, structure and airborne contaminants, including sample location numbers and contaminant concentrations;

4. Photos may be submitted to document the location of all soil and sediment sample locations; and

5. A groundwater elevation contour map and a Contour Map Reporting Form set forth in Appendix G, incorporated herein by reference, for each aquifer for which groundwater flow was determined. Each map shall indicate the direction of groundwater flow relative to site features, and include a north arrow and bar scale.

(e) If a vapor intrusion evaluation was conducted pursuant to N.J.A.C. 7:26E-1.18, the site investigation report shall also include the following:

1. A summary of the vapor intrusion evaluation including, a description of all structures that were sampled and those that where sampling was determined not to be necessary; and

2. A scaled map of the site and surrounding area that:

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i. Includes the locations of each structure and subsurface utility identified in relation to the areas of known ground water contamination;

ii. Includes the use of all structures and whether they are occupied; and

iii. Highlights each structure that is used as a residence, school, or child care center.

(f) The site investigation report shall also include the results of the baseline ecological evaluation.

(g) The site investigation report shall also include the results of all landfill and historic fill material investigations conducted pursuant to N.J.A.C. 7:26E-3.12, including:

1. A summary of all records pertaining to the nature of waste disposal at the landfill, and permit information; and

2. A copy of the records summarized in accordance with (g)1 above, as a separate attachment to the report.

(h) The site investigation report shall also include a summary and rationale for each variance from the requirements of this subchapter or guidance.

SUBCHAPTER 4. REMEDIAL INVESTIGATIONS

7:26E-4.1 Remedial investigation requirements

(a) A remedial investigation is necessary at each area of concern with contaminants which exceed any applicable remediation standard. The purposes of a remedial investigation are to:

1. Delineate the horizontal and vertical extent of contaminants in all media at the site pursuant to (b) below;

2. Determine the general surface and subsurface characteristics of the site, including, without limitation, the depth to ground water;

3. Identify the migration paths and actual or potential receptors of contaminants on or through air, soil, bedrock, sediment, ground water, surface water, and structures at a contaminated site;

4. Collect and evaluate all data necessary to evaluate remedial action alternatives. These data may be gathered through studies including, without limitation, treatability studies, bench scale studies and pilot scale studies (these studies may be conducted pursuant to EPA 540/2-89/058 "Guide for Conducting Treatability Studies Under CERCLA").

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i. Any such data collection, shall be initiated as soon as the general extent of contamination is known, usually after the first delineation phase and, at a minimum, these studies shall be initiated by the end of the second delineation phase;

5. Collect and evaluate all data necessary to evaluate the actual and potential ecological impacts and to characterize all natural resource injuries, including the nature and extent of injury to soil, water, flora and fauna, caused by the contaminants of potential ecological concern at the site;

6. Collect all data necessary to develop permit limitations for any discharge to an environmental medium which may be required for any remedial action alternative under consideration;

7. Identify 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.

(b) The person responsible for conducting the remediation shall delineate contamination in all media pursuant to the Department's Compliance Guidance. When the future use of an area under investigation is known to be restricted and the property owner has agreed to place a deed notice on the property appropriately restricting its use, the person responsible for conducting the remediation may delineate the horizontal and vertical limit of the soil contamination to the applicable restricted use standard or the applicable ground water impact soil cleanup criteria, whichever is lower. The person responsible for conducting the remediation at the site shall determine if soil contamination has migrated off the property, at any depth, above the applicable unrestricted use standard. Delineation samples shall be biased to identify any migration paths of the contaminant. Samples shall be biased based on professional judgment, area history, discolored soil, stressed vegetation, drainage patterns, field instrument measurements, odor and other field indicators. Delineation shall be accomplished by either:

1. Presentation of sample data that indicates contamination is below the applicable remediation standard. This may be accomplished after a remedial action has been implemented; or

2. By establishment of a contaminant gradient as follows:

i. Contaminant levels decrease by:

(1) Ten percent or more between the initial characterization sample and each of two sequential delineation samples; or

(2) A factor of five or more between the initial characterization sample and a single delineation sample; and

ii. Once a contaminant gradient has been established, the approximate limits of contamination may be reasonably estimated by extrapolation in order to complete the

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remedial investigation. However, when a contaminant gradient is used to estimate the limits of contamination, the extent of contamination above the applicable unrestricted use remediation standard shall be confirmed using laboratory analyses prior to the completion of a remedial action; and

3. If a vertical soil contaminant gradient has not been established to the water table:

i. For contaminants having water solubility greater than 100 milligrams per liter at 20 degrees Celsius to 25 degrees Celsius, saturated zone soil shall be delineated for residual product pursuant to N.J.A.C. 7:26E-2.1(a)14, and for direct contact soil cleanup criteria; and

ii. For other contaminants, delineate for direct contact soil cleanup criteria.

(c) The person responsible for conducting the remedial investigation shall conduct notification and public outreach pursuant to N.J.A.C. 7:26E-1.4.

7:26E-4.2 Remedial investigation workplan

(a) The person responsible for conducting the remediation shall prepare a remedial investigation workplan prior to conducting the remedial investigation. The remedial investigation workplan shall be in a format that corresponds to the outline of this section.

(b) The remedial investigation workplan shall include:

1. A detailed schedule for all remedial investigation activities, including timelines and target dates for:

i. The start and completion of all field activities;

ii. Receipt of analytical results required in N.J.A.C. 7:26E-4.1 and 4.3 through 4.7; and

iii. Submission of all reports to the Department;

2. A description of the role of principal personnel who will participate in the remedial investigation:

i. The information in (b)2i(1) and (2) below about project personnel, including the project manager and, if applicable, a facility contact, legal contact, and contractor and subcontractor contacts, shall be provided. In addition, the telephone number of the project manager shall be provided.

(1) Responsibilities; and

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(2) Authority on the project.

ii. If the principal personnel designated on the project change, information for the new personnel shall be submitted to the Department within 30 calendar days of such change;

3. The following historical information, unless the remediation is directed at either a specific discharge event, rather than a particular area of concern at a site, or any underground tank or underground tank system:

i. Historical site plans, if available, after completion of a due diligence search, and facility as-built construction drawing detailing, at a minimum, all information pursuant to N.J.A.C. 7:26E-3.2(a) and, in addition, topography using two-foot contours, potential contaminant conduits including all subsurface utilities. Maps depicting the entire site shall be scaled at one inch to 200 feet or less and individual area of concern maps shall be scaled at one inch to 40 feet or less. If more than one map is submitted, maps shall be presented as overlays, keyed to a base map; and

ii. An interpretive aerial history pursuant to N.J.A.C. 7:26E-3.1(c) 1vi including all photos. Matched pairs shall be provided, if available, to allow for stereo viewing. Photos shall include a north arrow, bar scale, date and source of photo, and site boundaries. Matte finish reproductions are preferred;

4. Descriptions of the following unless the remediation is directed at either a specific discharge event, rather than a particular area of concern at a site, or any underground tank or underground tank system. If applicable, the Department Geographic Information System shall be used as a source of information for (b)4i through vi below:

i. The physical conditions of the site and surroundings, including a general description of soils, geology, hydrogeology, and topography;

ii. The usage, distance to, flow direction, and names of surface water bodies within one-half mile of the site boundary, with emphasis upon water bodies topographically or hydraulically downgradient of the site that may receive site discharges or runoff;

iii. A copy of the United States Geologic Survey (USGS) 7.5 minute topographic quadrangle that includes the site and an area of at least a one mile radius around the site shall be required. This map shall be that USGS revision in effect at the time of the report and shall clearly note the facility location and property boundaries. When a portion of the USGS quadrangle is used, the scale (including a bar scale), north arrow, contour interval, longitude and latitude, along with the name and date of the USGS quadrangle shall be noted on the map;

iv. In addition, a wetlands map from the "National Wetlands Inventory" which provides a wetlands map superimposed on a USGS 7.5 minute topographic quadrangle shall be included;

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- v. Copies of boring logs from on-site construction; and
 - vi. Land use within a 1,000 foot radius of the site boundary including proximity of the site to environmentally sensitive areas and/or sensitive human receptors (for example, residences, schools, parks);
5. A description of each area of concern including dimensions, suspected contaminants, and suspected source of discharge;
6. An area of concern sampling summary table of proposed sampling and analysis shall be presented in the remedial investigation workplan text or on the sample location map specified in (b)7 below, according to the following headings (a suggested format is included in Table 4-1):
- i. Location: Use the same alpha or numeric designation as shown on the scaled sampling location map;
 - ii. Matrix: Waste, soil, surface water, ground water, or sediment;
 - iii. Sample depth:
 - (1) Soil/sediment--depth of sample increment which will be analyzed;
 - (2) Ground water--indicate water bearing zone to be sampled (water table, confined, and semi-confined) and sample depth;
 - (3) Surface water--indicate depth of water sample.
 - iv. Analytical parameters for each sample (for example, target analyte list metals, full target analyte list/target compound list scans); and
 - v. Sampling method;
7. Proposed sample locations shall be indicated on a sample location map, scaled as in (b)3i above. Sample locations may be superimposed on maps presented pursuant to (b)3i above;
8. Other sampling proposals including any proposals to conduct the following studies:
- i. Treatability, bench scale, pilot studies pursuant to N.J.A.C. 7:26E-4.1(a)4i;
 - ii. Data necessary to develop discharge permit effluent limitations; and
 - iii. Ecological investigations for the purposes of characterizing natural resource injuries pursuant to N.J.A.C. 7:26E-4.7;

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9. Quality assurance project plan including proposed sampling/analytical methods pursuant to N.J.A.C. 7:26E-2.2;

10. Health and safety plan pursuant to N.J.A.C. 7:26E-1.10; and

11. A completed case inventory document prepared pursuant to the Department's Guidance for the Preparation of the Case Inventory Document. The case inventory document shall be provided at the front of the workplan.

TABLE 4-1

Suggested Format Sampling Summary Table

<u>Location</u>	<u>Medium</u>	<u>Sample Depth</u>	<u>Analytical Parameters</u>	<u>Sampling Method</u>
Area T:	Seepage Pit			
MWT-1	Ground Water	Water Table (20')	Priority Pollutants	Bailer
MWT-2	Ground Water	Water Table (20')	Priority Pollutants	Bailer
MWT-3	Ground Water	Water Table (20')	Priority Pollutants	Bailer
MWT-4	Ground Water	Confined (50')	Priority Pollutants	Bailer
Area S:	Drum Storage		Pad	
S-1	Soil	0-6"	Priority Pollutants Metals and Cyanide	Trowel
S-2	Soil	0-6"	Priority Pollutants Metals and Cyanide	Trowel
		18-24"	Priority Pollutant Volatile Organics	
S-3	Soil	0-6"	Priority Pollutants Metals and Cyanide	Coring Device Trowel

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7:26E-4.3 Remedial investigation of soil

(a) The remedial investigation shall include an investigation of all soil which may contain contaminants above the applicable soil remediation standards.

(b) The remedial investigation of the soil shall be conducted for the purposes of a remedial investigation pursuant to N.J.A.C. 7:26E-4.1 according to:

1. The quality assurance and quality control requirements pursuant to N.J.A.C. 7:26E-2; and

2. The technical requirements for soil investigation pursuant to N.J.A.C. 7:26E-3.6.

7:26E-4.4 Remedial investigation of ground water

(a) A remedial investigation of groundwater for an area of concern shall be conducted if:

1. A ground water sample previously collected from that area of concern contains a contaminant above the applicable ground water remediation standard;

2. A soil sample collected from that area of concern within two feet of the saturated zone or bedrock contains a contaminant above the applicable soil remediation standard;

3. A soil sample collected in the area of concern anywhere in the soil column contains a contaminant above the applicable soil remediation standard and the contaminant is not going to be actively remediated or removed;

4. Any contaminant in an area of concern has a water solubility greater than 100 milligrams per liter at 20 degrees Celsius to 25 degrees Celsius as listed in a peer reviewed reference; and

- i. All of the soil between the contaminant and the saturated zone is less than 15 percent silt and/or clay; or

- ii. Any part of the area of concern at which the soil contamination was detected is located within 2,000 feet of a public supply well, as determined from a map of public supply wells which is available from the Department Bureau of Revenue, Maps and Publications (609-777-1038) or through the Department's Internet home page (<http://www.state.nj.us/dep/njgs>, then select "Digital Data"). A groundwater sample is not required if documentation acceptable to the Department is provided in the remedial investigation report (N.J.A.C. 7:26E-4.8) specifying why such sampling was not considered necessary.

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(b) A ground water sample may not be necessary in a remedial investigation for a particular area of concern if the person responsible for conducting the remediation documents that ground water contamination from the discharge is unlikely based on the following criteria:

1. The date and duration of the discharge is known;
2. The identity and the volume of the contaminants are known;
3. The date the remediation in response to the single discharge was completed;

4. Post remediation soil sampling data establish that the remediation meets all applicable remediation standards at the time of the remedial action workplan approval or, in cases where the remedial action workplan did not require Department approval prior to initiation of the remedial action, in the approved remedial action report; and

5. Any other data or information that is relevant to the determination of the likelihood of ground water contamination.

(c) The remedial investigation of ground water shall be conducted for the purposes of a remedial investigation pursuant to N.J.A.C. 7:26E-4.1 according to:

1. The quality assurance and quality control requirements pursuant to N.J.A.C. 7:26E-2; and
2. The requirements in (d) through (i) below.

(d) Ground water samples shall be taken pursuant to acceptable professional methods, such as those described in the NJDEP Field Sampling Procedures Manual in effect as of the date the samples were taken. The person responsible for conducting the investigation may implement an alternate sampling method not described in the Manual, subject to the Department's review of documentation pursuant to N.J.A.C. 7:26E-1.7.

(e) All initial ground water sampling points shall be located in:

1. The excavation of each source of a contaminant, if possible, including without limitation, tanks and tank distribution systems, and Underground Injection Control (UIC) units such as seepage pits, septic systems, dry wells or other injection wells regulated under N.J.A.C. 7:14A-8; or

2. The expected downgradient flow direction of the area of concern and within 10 feet of the area of concern; ground water flow direction shall be predicted based on topographic relief, the location of surface water bodies, structural controls in the bedrock or soils, location of pumping wells and subsurface conduits at or below the water table.

(f) The minimum number of ground water samples collected shall be as follows:

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1. At least one ground water sample for each area of concern which is classified as an Underground Injection Control (UIC) unit including, without limitation, seepage pits, septic systems, dry wells or other injection wells regulated under N.J.A.C. 7:14A-8;

2. At least one ground water sample for sites with leaking underground storage tanks and tank fields containing up to three tanks with a maximum capacity of 10,000 gallons per tank. If a leaking tank is excavated, the ground water sampling point shall be located within the excavation, if possible;

3. Pump islands and associated piping greater than 25 feet from the tank field shall be considered separate areas of concern and shall require a separate ground water sample location; and

4. At least one ground water sample for all other areas of concern unless the area of concern is within 10 feet hydraulically upgradient of a ground water sampling location.

(g) All ground water monitoring wells and piezometers shall:

1. Be constructed pursuant to N.J.A.C. 7:9D. Failure to install a well or piezometer in accordance with current well construction specifications in N.J.A.C. 7:9D can result in rejection of results, and requirements to decommission the well or piezometer;

2. Be installed after the required well drilling permits are obtained pursuant to N.J.A.C. 7:9D;

3. Be installed by a licensed New Jersey well driller pursuant to N.J.A.C. 7:9D;

4. Have split spoon samples collected during drilling through unconsolidated or overburden material using American Society of Testing Materials (ASTM) Method D1586-84, incorporated herein by reference, if appropriate. Split spoon samples shall be logged every five feet and at any change in soil lithology and at all zones that show obvious signs of contamination. At least one drilling location per area of concern shall include continuous split spoon samples to define the subsurface stratigraphy. Drilling logs shall include all data required pursuant to N.J.A.C. 7:26E-3.6, Soil investigations. Other methods may be used if documentation acceptable to the Department is provided indicating that the methods were appropriate;

5. Have a sufficient number of rock cores collected during the drilling of bedrock monitoring wells, piezometers and other borings, if appropriate, to obtain a general understanding of the fracture patterns beneath the site. The corings shall be conducted using the ASTM D2113 Diamond Drilling Method, as amended and supplemented, incorporated herein by reference. Other methods may be used if documentation acceptable to the Department is provided indicating that the methods were appropriate. The core logs shall include:

i. Lithology;

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- ii. Fracture frequency;
 - iii. Degree of weathering;
 - iv. Fracture spacing;
 - v. Orientation of fractures;
 - vi. Odors and discoloration in the rock core;
 - vii. Percent recovery; and
 - viii. Any other information appropriate for the investigation.
6. If appropriate, an evaluation of the bedrock structure at the site including strike and dip of the bedding planes, orientation of faults, joints and fractures; plunges and trends of folds, must be completed through a field evaluation. Published geologic literature may be used if appropriate.
7. Be surveyed by a New Jersey licensed surveyor as follows:
- i. The inner well casing must be surveyed to the nearest hundredth (0.01) foot in relation to the permanent, on-site datum and horizontally to an accuracy of one-tenth of a second latitude and longitude; and
 - ii. A permanent water level measurement mark shall be etched onto the top of the inner well casing to allow for accurate, consistent and comparable water level measurements over time.
8. Be developed to yield a non-turbid discharge, when possible;
9. Be decommissioned upon completion of the investigation in accordance with N.J.A.C. 7:9D unless otherwise approved by the Department;
10. Have the monitoring well permit number and site specific well identification number prominently displayed and permanently affixed to the monitoring well; and
11. Be constructed with a locking cap and generally protected from damage and vandalism. The person responsible for conducting the remediation shall, within 14 days after discovering the damage, properly repair or decommission the damaged monitoring well or piezometer in accordance with N.J.A.C. 7:9D.
- (h) The results of initial ground water analyses shall be evaluated as follows:

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1. If the contaminant concentrations found in all ground water samples are below the applicable remediation standards, no further remediation is necessary for ground water;

2. If the contaminant concentrations found in any ground water samples exceed the applicable remediation standard, the ground water may be resampled to confirm the presence of contamination. This confirmation sampling shall include at least two additional samples taken over a 30 day period, the results of which may be averaged with the original result to determine compliance with the applicable remediation standard; and

3. If ground water contamination above the applicable remediation standards has been confirmed, the person responsible for conducting the remediation shall perform the requirements in (h)3i through ix below. If the person responsible for conducting the remediation claims that groundwater contamination is from an offsite source, then a background ground water investigation shall be performed pursuant to N.J.A.C. 7:26E-3.7(g).

i. Delineate the vertical and horizontal extent of ground water contamination and the sources of ground water contamination, including, but not limited to, the extent of free and/or residual product as determined pursuant to N.J.A.C. 7:26E-2.1(a)14;

ii. Confirm the direction of groundwater flow in each affected aquifer or water bearing zone, using all monitoring wells located within each specific aquifer or water bearing zone pursuant to N.J.A.C. 7:26E-3.7(e)3; and

iii. Conduct aquifer tests, which may include pumping tests, packer tests, and slug tests or other appropriate analysis to adequately characterize the impacted aquifer at the site. At a minimum, this shall include the site water table gradient, hydraulic conductivity (K), and an estimate of the rate of ground water and contaminant flow in the aquifer. If pumping the aquifer is determined to be a feasible option for remediation, then additional aquifer characteristics such as transmissivity (T) and storativity (S) must be determined through the use of a pumping test;

iv. If a model to further define characteristics of the ground water flow system is used, documentation acceptable to the Department shall be provided in the remedial investigation report (N.J.A.C. 7:26E-4.8) indicating that the model was appropriate. Specific details on the type of model, input parameters used and referenced, boundaries and limitations of the model shall be submitted to the Department upon request along with a justification as to why the model was selected;

v. Perform an updated well search pursuant to N.J.A.C. 7:26E-1.17, based on the results of:

(1) The delineation performed in (h)3i above; and

(2) The confirmed groundwater flow direction determined in (h)3ii above;

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vi. Sample any existing potable and supply wells identified pursuant to the well search which are suspected to be contaminated by the site in question;

vii. Evaluate any surface water body that may be impacted by the contaminated ground water pursuant to N.J.A.C. 7:26E-3.8 and 4.5 (Surface Water Investigations);

viii. Evaluate any subsurface utilities, basements or other structures to determine whether vapor hazards as a result of the ground water contamination may exist for receptors associated with the utility or structure. Measurement of oxygen levels, lower explosive limits (LEL) and the presence of organic vapors should be included in this evaluation; and

ix. Evaluate the current and potential ground water uses using a 25-year planning horizon utilizing municipal and water purveyor planning data.

(i) If geologic conditions are suitable, soil gas studies shall be conducted to locate sources of ground water contamination when ground water contamination by volatile organic compounds is identified but no apparent source is identified. If geologic conditions are not suitable for soil gas studies, other suitable field investigation techniques shall be used for source identification.

7:26E-4.5 Remedial investigation of surface water, wetlands and sediment

(a) The remedial investigation shall include an investigation of any surface water, wetlands and sediments which may have been impacted by contamination emanating from the site.

(b) The remedial investigation of surface water, wetlands and sediment shall be conducted for the purposes of a remedial investigation pursuant to the requirements for the appropriate media in N.J.A.C. 7:26E-3.4 and 4.1 according to the quality assurance and quality control requirements pursuant to N.J.A.C. 7:26E-2.

(c) The surface water investigation shall be conducted pursuant to (d) below to evaluate the relationship between contaminated ground water, sediments and surface waters, unless:

1. If the person responsible for conducting the remediation determines that this migration pathway is not considered significant, that person shall provide a technical rationale supporting that conclusion in the remedial investigation report; or

2. The Department approves a less stringent water quality analysis:

i. Based on site-specific conditions; and

ii. Supported by appropriate supporting documentation.

(d) The surface water investigation shall include:

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1. Sampling designed to account for seasonal or short-term flow and water quality fluctuations (dry vs. wet weather), system hydraulics (obtaining flow proportioned samples) and potential contaminant characteristics (density, solubility).

2. A receiving water body analysis on any surface water body to which contaminated groundwater is discharging, including a water quality analysis program with sampling stations upstream and downstream of the contaminated site, any existing point source discharges at that site, and any proposed discharge locations as follows:

i. Procedures in accordance with the methods identified in (d)2ii below, including, without limitation:

(1) Water quality sampling for each constituent of concern potentially emanating from a site;

(2) At least two sample sets must be taken during critical, low flow conditions;

(3) At least one sediment sample shall be taken and analyzed for the appropriate parameters identified in (d)2i(1) above, during one of the sampling events;

(4) For non-tidal water bodies, samples shall be taken at the area of discharge, and at least one location downstream;

(5) For tidal water bodies, samples shall be taken at the area of discharge at high, low, and slack tides; and

(6) Depending upon site-specific conditions, additional samples may be necessary to define loads from other point sources, tributaries, and other non-point sources; and

ii. All methods shall be consistent with generally accepted professional methods, such as those described in the NJDEP "Field Procedures Manual For Water Data Acquisition," or the EPA Handbook "Instream Sampling for Waste Load Allocation Applications;" any deviations from these two documents shall be documented pursuant to N.J.A.C. 7:26E-1.7.

7:26E-4.6 Remedial investigation of landfills and historic fill material

(a) The person responsible for conducting the remediation shall conduct a remedial investigation of a landfill as follows:

1. Determine the horizontal extent of the landfill without regard to the location of property boundaries, as follows:

i. Use aerial photography, local government records, and the Department's Geographical Information System;

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- ii. Install test pits at a minimum of one every 100 linear feet around the perimeter of the landfill;
- iii. Install test pits and/or borings perpendicular to the landfill until no waste is found; and
- iv. Use borings to determine the horizontal extent of the landfill if the landfill material is buried too deep for the use of test pits. Borings shall be of a sufficiently large diameter so that samples from the boring will clearly identify the recovered material;

2. Determine the vertical extent of the landfill as follows:

- i. Install test pits or borings through the landfill material to native soil, meadow mat or bedrock without regard to the depth of the water table;
- ii. Install test pits equally distributed across the landfill unless locations can be biased based on landfill records or geophysical sensing results or site observations;
- iii. Use borings to determine the vertical extent of the landfill if the landfill material is buried too deep for the use of test pits. Borings shall be of a sufficiently large diameter so that samples from the boring will clearly identify the recovered material; and
- iv. Install test pits or borings at the following minimum frequency:

<u>Acreage of Land Fill</u>	<u>Number of Test Pits or Borings</u>
1 to 10	One per acre (minimum of three)
10 to 50	One per two acres (minimum of six)
51-100	One per three acres (minimum of 17)
101-200	One per four acres (minimum of 25)
Over 201	One per five acres (minimum of 40)

3. Delineate the location, condition, and contents of buried containers identified in the landfill pursuant to N.J.A.C. 7:26E-3.12(a)2 using test pits as follows:

- i. Determine the general physical characteristics of the waste material including the presence of free product pursuant to N.J.A.C. 7:26E-2.1(a)14;
- ii. Log the waste material, soils, and all buried containers encountered in the test pits or borings; and
- iii. Record the location of each test pit or borings using a format compatible with the Department's Geographic Information System (see N.J.A.C. 7:1D Appendix A) and the Department's GIS Guidance;

4. Evaluate each test pit or boring required pursuant to (a)1 through 3 above as follows:

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i. Determine the general physical characteristics of the waste material including the presence of free product pursuant to N.J.A.C. 7:26E-2.1(a)14;

ii. Log the waste material, soils, and all buried containers encountered in the test pits or borings;

iii. Record the location of each test pit or borings using a format compatible with the Department's Geographic Information System (see N.J.A.C. 7:1D Appendix A) and the Department's GIS Guidance;

iv. Collect leachate or ground water samples, when present;

v. Collect soil samples from below any waste material;

vi. Screen for lower explosive level (LEL), volatile organic contaminants, methane and hydrogen sulfide using appropriate field analytical techniques such as photoionization detector (PID), flame ionization detector (FID), or other suitable instruments capable of detecting the contaminants pursuant to N.J.A.C. 7:26E-2.1(b);

vii. Conduct a radiation survey of the test pits/borings using a hand-held gamma meter. The survey shall be conducted by a person qualified and experienced in the use of radiation survey techniques; and

viii. Analyze samples collected above for TCL/TAL, pH, ammonia (as N), nitrate (as N), total dissolved solids (TDS), and conductivity;

5. Conduct ground water and leachate sampling pursuant to N.J.A.C. 7:26E-3.7 and as follows:

i. Determine ground water flow direction and submit a Ground Water Contour Map Reporting form;

ii. Determine if ground water mounding is occurring by installing a minimum of one shallow monitoring well within the landfill. The well(s) shall be biased toward topographically high points in the central portion of the landfill;

iii. Install monitoring wells based on the contour map at a minimum of one for every 150 linear feet along the sides of the landfill where ground water flows from the landfill;

iv. Install monitoring wells just beyond the perimeter of the landfill with a minimum of one well in the upgradient direction of ground water flow and three wells in the downgradient direction with additional wells installed if flow extends radially from the landfill;

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v. Analyze ground water samples collected from test pits installed pursuant to (a)1 through 3 above, if potential in lieu of shallow ground water monitoring wells required in (a)2 and 3 above. Bias sampling towards test pits where contamination is indicated by visual observations, odors, free product, and field instrument readings;

vi. Collect ground water or leachate samples at the water table from monitoring wells installed pursuant to (a)5ii through iv above; and

vii. Analyze ground water and leachate samples for TCL/TAL, pH, ammonia (as N), nitrate (as N), total dissolved solids (TDS), and conductivity; and

6. Delineate sources of contaminants within and beyond the limits of the landfill based on the results of the screening of vents, test pits, or borings for lower explosive limit, volatile organic contaminants, methane, and hydrogen sulfide.

(b) The person responsible for conducting the remediation shall determine the extent of the on-site location of the historic fill material and characterize the fill material, including a determination of the presence of any contaminated non-historic fill material and any free and/or residual product pursuant to N.J.A.C. 7:26E-2.1(a)14, as follows:

1. The remedial investigation of historic fill material shall be conducted to identify the location, vertical limits, and physical characteristics of the historic fill material using borings, test pits, or trenches. All contaminated fill material, including both historic and non-historic fill, shall be logged and mapped. The investigation shall include:

i. At least four borings or test pits per acre of historic fill material with a minimum of four borings or test pits per site. The location of the borings or test pits shall be representative of the areal extent of the fill and shall be advanced through the fill material to native soil, meadow mat, or bedrock so that the vertical limit of the fill material is established. If the contaminated fill material extends below the water table, borings or test pits shall extend below the water table as necessary to establish the vertical limit of the fill material;

2. The remedial investigation of historic fill material shall identify the horizontal boundaries of the contaminated fill material area as follows:

i. A minimum of four borings or test pits shall be installed in non-fill areas spaced equidistantly around the perimeter of the contaminated fill material area;

ii. If fill material is known to be ubiquitous in the vicinity of the site, aerial photos or other applicable documentation, such as information obtained from the Department's Geographic Information System, may be submitted in lieu of perimeter borings or test pits to verify that historic fill is site-wide; and

iii. Delineation of historic fill material is not required beyond the property boundary;

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3. The historic fill material may be characterized by using the optional historic fill database maximum and average contaminant levels for historic fill material as set forth in Table 4-2 below or by collecting and analyzing contaminant characterization samples from each type of historic fill present (for example, ash and demolition debris are considered to be different types of fill material) to determine the site specific contaminant levels, as follows:

- i. At least four samples per acre, per fill type are required;
- ii. The actual number and location of samples collected shall be based on the variability of fill types and contaminant ranges present in a historic fill area and selected in accordance with N.J.A.C. 7:26E-3.4(a);
- iii. At least one sample for laboratory analysis shall be collected from each boring and analyzed as follows:
 - (1) Analysis of rubble, ash, cinders, and dredge spoils shall be conducted for total petroleum hydrocarbons and target analyte list metals in all samples, polynuclear aromatic hydrocarbons (per the Target Compound List) and PCB analysis required on 25 percent of the samples, biased to samples having the highest total petroleum hydrocarbon levels, and field screening for volatile organic compounds shall be conducted during the installation of all exploratory borings and test pits with volatile organic laboratory analysis performed on all samples with elevated field instrument measurements (greater than five times background);
 - (2) Any other fill material shall be analyzed for total petroleum hydrocarbon in all samples, and EPA Target Compound List/Target Analyte List analysis shall be conducted for 25 percent of all samples;
 - (3) In addition to contaminant analysis required in (b)3iii(1) and (2) above, samples shall also be analyzed for any other suspected contaminants based on diligent inquiry of the origin of the fill material and site history; and
 - (4) If more than one type of historic fill material is encountered in any boring or test pit, one sample is required for each type of fill material encountered. For example, if ash and demolition debris are encountered in the same boring, one sample of each is required from that boring; and

4. Areas of concern located in historic fill material shall be investigated independently of the historic fill material. To differentiate between contaminants in fill and those from site discharges, an evaluation of the contaminant type and concentration gradient in each area of concern and the contaminant distribution in the fill shall be conducted. If this evaluation is not conclusive the Department may require additional data or information; and

5. If at any time during the remedial investigation of fill material the person responsible for conducting the remediation encounters materials that do not meet the definition of historic fill material because it includes material which is substantially chromate chemical

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production waste or any other chemical production waste or waste from processing of metal or mineral ores, residues, slag or tailings, free and/or residual product, as determined pursuant to N.J.A.C. 7:26E-2.1(a)14, or containerized waste, the remediation of each such area shall be conducted as a separate area(s) of concern pursuant to N.J.A.C. 7:26E-4.

TABLE 4-2

Summary of Target Contaminant Concentrations in Typical Historic Fill

Contaminant (ppm)	Material (mg/kg)	
	Maximum	Average
Benzo(a)anthracene	160	1.37
Benzo(a)pyrene	120	1.89
Benzo(b)fluoranthene	110	1.91
Benzo(k)fluoranthene	93	1.79
Indeno(1,2,3-cd)pyrene	67	1.41
Dibenz(a,h)anthracene	25	1.24
Arsenic	1098	13.15
Beryllium	80	1.23
Cadmium	510	11.15
Lead	10700	574
Zinc	10900	575

7:26E-4.7 Remedial investigation of ecological receptors

(a) If further ecological investigation is required pursuant to N.J.A.C. 7:26E-3.11(a)4, additional investigation shall be conducted during the remedial investigation to characterize the extent of contamination along contaminant migration pathways and within an environmentally sensitive natural resources. Neither an ecological investigation nor an ecological risk assessment is required for contaminated ground water, but see N.J.A.C. 7:26E-4.8(c)12 for reporting requirements. Ecological investigations and risk assessments shall be conducted by a person experienced in the use of techniques and methodologies for conducting ecological risk assessments in accordance with EPA guidance. Ecological investigations and risk assessments shall be conducted in accordance with EPA and other Federal guidance, as applicable, including, without limitation, the following, incorporated herein by reference:

1. "Ecological Assessment of Hazardous Waste Sites: A Field and Laboratory Reference," EPA/600/13-89/013;
2. "Risk Assessment Guidance for Superfund, Volume II, Environmental Evaluation Manual," EPA/540/1-89/001, and the associated supplementary guidance Ecological Update Series--Volumes 2 and 4; and
3. "Framework for Ecological Risk Assessment," EPA/630/R-92/001;

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4. Eisler, R., "Contaminant Hazard Reviews," Fish and Wildlife Service, U.S. Department of Interior, various dates;
5. EPA, "Wildlife Exposure Factors Handbook," Vol. I and II, EPA 600/R-93/187a, b;
6. EPA, "BTAG Forum," Intermittent Bulletin published by USEPA, Office of Emergency and Remedial Response;
7. EPA, "ECO Update," Intermittent Bulletin published by USEPA, Office of Emergency and Remedial Response;
8. Opresko, D.M., B.E. Sample and G.W. Suter, "Toxicological Benchmarks for Wildlife: 1994," Oak Ridge National Laboratory, Oak Ridge, TN; and
9. Will, M.E. and G.W. Suter II, "Toxicological Benchmarks for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants: 1994 Revision," Oak Ridge National Laboratory, Oak Ridge, TN.

(b) A site specific ecological risk assessment report, in accordance with (a) above, shall be completed during the remedial investigation and shall be submitted as part of the remedial investigation report. The ecological risk assessment report shall:

1. Describe actual impacts and potential risks to identified environmentally sensitive natural resources;
2. Present appropriate ecologically-based, site specific remediation standards for site contaminants of ecological concern, if applicable; and
3. Recommend measures for incorporation into the remedial action workplan, pursuant to N.J.A.C. 7:26E-6.2, to mitigate actual impact or ecological risks, if applicable.

7:26E-4.8 Remedial investigation report

(a) The remedial investigation report shall comply with all requirements in N.J.A.C. 7:26E-3.13 (site investigation report) and in addition shall present and discuss any additional information collected pursuant to N.J.A.C. 7:26E-4.1 through 4.7 and the remedial investigation workplan as outlined in N.J.A.C. 7:26E-4.2. The remedial investigation report shall be accompanied by a Remedial Investigation Report form and be presented in a format that corresponds to the outline of this section.

(b) The remedial investigation report shall include the following:

1. A copy of the remedial investigation workplan required pursuant N.J.A.C. 7:26E-4.2;
2. Historical information pursuant to N.J.A.C. 7:26E-4.2(b)3;

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3. Physical setting pursuant to N.J.A.C. 7:26E-4.2(b)4, including, but not limited to the results of the ground water flow direction confirmation conducted pursuant to N.J.A.C. 7:26E-4.4(h)3ii;

4. Technical overview pursuant to N.J.A.C. 7:26E-3.13(b)3 and, in addition, the following items shall be discussed:

i. A summary of the results of any treatability, bench scale, or pilot studies conducted to support remedy selection;

ii. A summary of the results of any data collected to develop permit limitations for any permits which may be required during potential remedial actions; and

iii. A summary of the results of any ecological assessments conducted;

5. Findings/recommendations pursuant to N.J.A.C. 7:26E-3.13(b)4 and shall include a determination whether remedial action is required for soil pursuant to the Department's Compliance Guidance; and

6. A completed case inventory document prepared pursuant to the Department's Guidance for the Preparation of the Case Inventory Document. The case inventory document shall be provided at the front of the report.

(c) The remedial investigation report shall include the following data and information:

1. Results of all analyses, copies of all laboratory data sheets and the required laboratory data deliverables pursuant to N.J.A.C. 7:26E-2.1 (Quality Assurance Requirements). Laboratory data deliverables may be submitted as a separate attachment;

2. A summary table of analytical methods and quality assurance indicators pursuant to N.J.A.C. 7:26E-2.2 (Quality Assurance Workplan);

3. Sampling Results Summary Table(s) of all analyses, including sample location, media, sample depth, and field and lab identification numbers pursuant to N.J.A.C. 7:26E-3.13(c)3 and, in addition:

i. All summary tables shall be organized by area of concern. For each area of concern, average concentrations for each contaminant shall be presented along with individual sample results if averaging will be used for compliance with applicable remediation standards.

(1) All contaminant concentrations exceeding the applicable remediation standard shall be identified; and

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(2) Samples with MDLs (or PQLs if available) exceeding the applicable remediation standard shall be identified and an explanation provided in the table key; and

(3) If some contaminants are detected and quantified and some contaminants are "estimated" or non-detectable, for purposes of calculating the average, the person submitting the site investigation report shall substitute one half the reported method detection limit for all contaminants reported as non-detectable, and "estimated" values shall be included in the contaminant average "as is."

(4) "Non-detectable" values for contaminants in samples which have been diluted shall not be included in the area of concern average for those contaminants. "Detectable" values for contaminants in diluted samples shall be included in the area of concern average for those contaminants.

(5) The average shall be calculated for the contaminated area only, and shall not include clean zone data (data from outside the boundaries of the contaminated area as defined by samples contaminated greater than the applicable remediation standard). For example, if data points within a 50 foot "clean" buffer zone around an area of concern were identified during pre-remedial sampling, this clean zone shall not be included in the average. Samples from different depth intervals shall not be averaged together to determine compliance with applicable remediation standards.

(6) Post excavation sample data shall not be averaged for compliance with applicable remediation standards.

ii. The data in the Sampling Results summary table shall be presented pursuant to N.J.A.C. 7:26E-3.13(c)3.

4. Stratigraphic logs, which include soil/rock physical descriptions and field instrument readings detected during drilling for each soil boring, test pit and monitoring well, if applicable:

i. For fill material and historic fill material the logs shall include a description of fill type, any layering of the fill material, texture and size of materials, an assessment of fill homogeneity, field indicators of contamination including, without limitation, odors, staining or other discoloration, and field measurements of organic vapors using a calibrated PID/FID or other suitable instrument. The presence of any process waste including metal processing waste such as slag, tailings or free and/or residual product determined pursuant to N.J.A.C. 7:26E-2.1(a)14 shall be noted;

5. Stratigraphic cross sections of the site using information from monitoring wells, test pits and borings;

6. All soil boring, piezometer, and monitoring well records, including the State permit numbers and as-built specifications, if applicable;

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7. For each monitoring well sampled, the information required pursuant to N.J.A.C. 7:26E-3.13(c)7 shall be reported for each ground water sampling event.

8. If applicable, ground water elevation, for each monitoring well, to the nearest hundredth (0.01) foot relative to a permanent, on-site datum taken prior to evacuation, from the top of well casing with locking cap removed;

9. A summary of the review of inventory control records to identify product loss and any actions taken to investigate potential discharge areas;

10. Results of any treatability, bench scale, or pilot studies or other data collected to support remedy selection;

11. Any data collected to develop permit limitations;

12. The results of any ecological assessments and evaluations conducted, including, without limitation, characterization of natural resource injuries, in accordance with N.J.A.C. 7:26E-4.7(b). This information shall be submitted in a format compatible with the Department's Geographic Information System (see N.J.A.C. 7:1 Appendix A. For additional guidance, see the version of the Department's "Guidance for the submission and use of Data in GIS Compatible Formats" most recent to the time of submission. This guidance document may be found at <http://www.nj.gov/dep/srp/guidance/techgis/>.) In lieu of an ecological investigation or an ecological risk assessment for groundwater, the person responsible for conducting the remediation shall include the following information in the remedial investigation report:

i. The area of contaminated ground water plume;

ii. The degradability of the individual ground water contaminants; and

iii. The period during which the ground water is estimated to exceed the applicable ground water quality standards;

13. For landfills, a summary of any records pertaining to the nature of waste disposed at the landfill. Copies of the records shall be submitted as a separate attachment to the report;

14. For historic fill material, the following documentation shall be submitted:

i. A statement that, based on diligent inquiry of the history of the parcel of land, including use of the Department's Geographic Information System, the fill material is non-indigenous material, was used to replace soil in an area or raise the topographic elevation of the site, was contaminated prior to emplacement, and was in no way connected with the operations at the location of emplacement; and

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ii. A statement that, based on the results of the remedial investigation, the historic fill material does not include any material which is substantially chromate chemical production waste or any other chemical production waste or waste from processing of metal or mineral ores, residues, slag or tailings; and

15. Any other data and information obtained pursuant to N.J.A.C. 7:26E-4.1 through 4.7.

(d) The remedial investigation report shall include the following legible maps and diagrams:

1. Site and area of concern base maps pursuant to N.J.A.C. 7:26E-4.2(b) 3i. If more than one map is submitted pursuant to (d)2 below, maps shall be presented as overlays, keyed to the base map or each map shall include all the information shown on the base map. Sample locations may be superimposed on the base maps.

2. Sample location map(s), including:

i. All ground water, soil, sediments and other sample locations; sample depth and contaminant concentration shall also be plotted on the map;

ii. Map scale (including bar scale) and orientation (including north arrow);

iii. Field identification numbers for all samples;

iv. A groundwater elevation contour map and a completed Contour Map Reporting Form (see Appendix G) for each set of static water level measurements for each aquifer for which groundwater flow was determined, indicating the direction of groundwater flow and site features, and including a north arrow and appropriate bar scale;

v. Top of bedrock contour map if bedrock was encountered in a sufficient number of borings to prepare a map;

vi. Isopleth maps for ground water contaminant concentrations for each round of sampling; isopleth maps for soil sample results may also be provided;

vii. Maps depicting the horizontal and vertical extent of any free and/or residual product zones in ground water or soil, as determined pursuant to N.J.A.C. 7:26E-2.1(a)14, for each round of sampling;

viii. If data for more than 25 samples are presented for an area of concern, soil, ground water and sediment contaminant isopleth maps and cross section diagram(s) showing concentrations of potential contaminants shall be submitted, including:

(1) Horizontal and vertical distribution of contaminants in the soil and sediment, with sample point location numbers and contaminant concentrations; and

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(2) Horizontal and vertical distribution of contaminants in the ground water, with sample point location numbers and contaminant concentrations; and

ix. All monitoring well, piezometer, or other ground water sampling point locations including depth of the open borehole interval and/or screened interval;

3. If applicable, map of the distribution of surface water, structure and airborne contaminants, including sample location numbers and contaminant concentrations;

4. The same alpha or numeric labels, if assigned in the remedial investigation workplan, shall be used in the remedial investigation report; and

5. Photos may be submitted to document the location of all soil and sediment sample locations.

(e) If the person responsible for conducting the remediation conducted a vapor intrusion evaluation during the remedial investigation, the person shall include the results of that evaluation as a part of the remedial investigation report required pursuant to N.J.A.C. 7:26E-3.13(e).

(f) The person responsible for conducting the remediation shall submit an updated receptor evaluation pursuant to N.J.A.C. 7:26E-1.15 on a Receptor Evaluation form provided by the Department.

(g) The remedial investigation report shall also contain the results of all other remedial investigations conducted pursuant to this subchapter.

7:26E-4.9 (Reserved)

SUBCHAPTER 5. REMEDIAL ACTION SELECTION

7:26E-5.1 Remedial action selection

(a) The purpose of remedial action selection is to select, develop and implement the most appropriate action for a particular contaminated site or area of concern being investigated pursuant to N.J.A.C. 7:26E-3 and 4.

(b) A person selecting a remedial action shall first establish the remedial action objectives/goals for the site or area of concern by:

1. Identifying all media of concern;

2. Selecting applicable remediation standards based on the current and future land use for the site;

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3. For each media of concern, selecting between active treatment versus containment and exposure controls; and

4. For contaminated soil, selecting among an unrestricted use, limited restricted use or restricted use remedial action.

(c) The person responsible for conducting the remediation shall select a remedial action that reduces contamination to below all applicable remediation standards or eliminates exposure to contamination above the applicable remediation standards based on the current and future land use for the site and all of the following:

1. The health risk and environmental standards established pursuant to N.J.S.A. 58:10B-12;

i. The indoor air standards adopted by the Department of Health and Senior Services pursuant to N.J.S.A. 52:27D-130.4; and

ii. Any other applicable standards adopted pursuant to law;

2. All applicable New Jersey regulations, including, without limitation:

i. This chapter; and

ii. The remediation standards promulgated by the Department at N.J.A.C. 7:26D;

3. The Department's technical guidelines concerning site remediation at www.nj.gov/dep/srp/srra/guidance; and

4. If there is no specific requirement provided by any technical standard the Department has adopted, or the Department's guidance is not appropriate or necessary, the person responsible for conducting the remediation may use the following additional technical guidance to make decisions regarding remediation, shall specifically identify all such guidance used, and set forth the rationale for such use:

i. Relevant guidance from the United States Environmental Protection Agency or other states; and

ii. Other relevant, applicable, and appropriate methods and practices that ensure the protection of the public health and safety, and the environment.

(d) In determining the appropriate remedial action that will reduce or eliminate exposure to contaminants above the applicable remediation standard, the person responsible for conducting the remediation shall also select, develop, and implement a remedial action that is based on the following factors:

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1. The ability of the remedial action to protect the public health and safety and the environment, including:

i. The technical performance and effectiveness of the remedial action in attaining compliance with the applicable remediation standards;

ii. The reliability of the remedial action in maintaining compliance with the applicable remediation standards;

iii. The degree to which the remedial action reduces toxicity, mobility, or volume of contaminants through treatment, reuse or recycling;

iv. The degree to which the remedial action minimizes risks and short-term impacts associated with the implementation of the remedy and with any contamination left on-site, while still providing long-term protection; and

v. The degree to which the potential for off-site migration of contamination through erosion, subsurface migration or other migration pathways is mitigated or eliminated;

2. The implementability of the remedial action, including:

i. The engineering and scientific feasibility and availability of the technologies that the remedial action would employ. If treatability, bench scale, or pilot studies have been conducted pursuant to N.J.A.C. 7:26E-4.1(a)4, these results shall be utilized to determine whether or not the remedial action is technically feasible; or

ii. The property owner's written agreement to the implementation of the limited restricted use or restricted use remedial action including all requirements for engineering and institutional controls pursuant to N.J.A.C. 7:26E-8;

3. The consistency of the remedial action with other applicable Federal, State, and local laws and regulations, including, without limitation, the provisions of the Pinelands Protection Act, P.L. 1979, c.111 (N.J.S.A. 13:18A-1 et seq.), any rules promulgated pursuant thereto, and the provisions of section 502 of the National Parks and Recreation Act of 1978, 16 U.S.C. § 4711;

4. The potential impacts of the remedial action on the local community, including, without limitation:

i. The potential impacts to the community identified by the responses that the person responsible for conducting the remediation receives from the notices provided in accordance with N.J.A.C. 7:26E-1.4; and

ii. The degree to which the remedial action is consistent with the local land use Master Plan; and

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5. The potential for the selected action to cause natural resource injury.

i. Examples of remedial actions that may cause natural resource injury include, without limitation:

(1) Pumping ground water that deprives a wetland of its primary water source;

(2) Capping a landfill which involves destroying adjacent wetland; and

(3) Pump and treat ground water remedial action with discharge to surface water.

ii. Examples of information that would be evaluated when assessing a ground water remedial action include, without limitation:

(1) Whether the site is located in a water supply surplus or deficit area as defined in the State's Water Supply Master Plan (New Jersey Department of Environmental Protection, "Water for the 21st Century: The Vital Resource," August 1996) or the version most recent to the submission;

(2) Whether the remedial action will be active or passive; and

(3) If a pump and treat remedial action is proposed, the volume of water to be pumped over the life of the action, the estimated duration of pumping, and where the treated water would be discharged.

(e) The person responsible for conducting the remediation may select an innovative remedial action technology for any site, area of concern, or contaminated media. The selection of an innovative remedial action technology shall include:

1. Information demonstrating that the proposed technology has been verified by:

i. The U.S. Environmental Protection Agency;

ii. Another state regulatory agency that has a current reciprocity agreement with the Department for technology acceptance;

iii. An independent verification organization which maintains a current agreement with the Department for technology acceptance; or

iv. The Department; and

2. A report that includes a detailed description of the following shall be submitted with the remedial action selection report, the remedial action workplan or the feasibility study, as applicable:

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i. The technology, including, without limitation, a process flow diagram, and a detailed description of the operational and environmental data of the technology under a full range of conditions, including, without limitation, laboratory scale and pilot test scale operational results clearly demonstrating the effectiveness and efficiency of the technology under various conditions;

ii. The sampling and analytical methods including the quality assurance/quality control protocols to generate the data to verify or certify that the technology will operate as claimed and achieve acceptable and reproducible results;

iii. The resource requirements, natural resource impacts, discharges and by-products and co-products generated through implementation of the technology and description of the environmental controls to be utilized to address impacts; and

iv. The demonstrated performance range of the technology, including, without limitation, the anticipated reduction of contaminant concentrations achieved for each constituent and for each media of concern;

(f) The person responsible for conducting the remediation that is remediating a site that is subject to direct Department oversight pursuant to N.J.S.A. 58:10C-27 shall submit a feasibility study, consistent with the USEPA guidance, with a remedial investigation report instead of submitting a remedial action selection report, or as the Department otherwise directs.

(g) A person responsible for conducting the remediation who selects a limited restricted use or restricted use remedial action for soil contamination shall comply with the Department's requirements for the use of engineering and institutional controls at N.J.A.C. 7:26E-8.

(h) Nothing in this subchapter shall be construed to limit the requirements to conduct a feasibility study pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (42 U.S.C. §§ 9601 et seq.) or a corrective measures study pursuant to the Resource Conservation and Recovery Act (42 U.S.C. §§ 6901 et seq.).

(i) If new construction of, or a change in use to, a residence, a school, or child care center will occur at a site that is undergoing remediation, under the circumstances listed in (i)1 below, the person responsible for conducting the remediation shall select a remedial action from the list of remedial actions in (i)2 below.

1. For any remediation initiated:

i. Before May 7, 2010, and the Department directs the person to do so; or

ii. On or after May 7, 2010.

2. List of remedial actions;

i. An unrestricted use remedial action;

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ii. A presumptive remedial action consistent with the Department's Presumptive Remedy Guidance on presumptive remedial actions; or

iii. An alternative remedy pursuant to (j) below.

(j) The person responsible for conducting the remediation shall not implement an alternative remedy for a site that will be used as a residence, a school, or a child care center without the Department's prior written approval.

(k) The person responsible for conducting the remediation shall request the Department's approval of an alternative remedy, pursuant to (j) above, by submitting all of the following to the Department:

1. A written analysis explaining why the presumptive remedial action is impractical due to site conditions if the basis for proposing an alternative remedy is that the presumptive remedies published by the Department are impractical; and

2. A written analysis that the alternative remedy is protective of the public health and safety.

7:26E-5.2 Remedial action selection report

(a) The person responsible for conducting the remediation shall prepare and submit a remedial action selection report with the remedial action workplan and the Remedial Action Workplan form, except as provided in (c) below.

(b) The remedial action selection report shall be presented in a format that corresponds to the outline of this section and shall include:

1. A detailed description of the selected remedial action including, without limitation, specifications for engineering and institutional controls, and a plan for monitoring of such controls pursuant to N.J.A.C. 7:26E-8;

2. A list of the remediation standards that the remedial action will comply with for each media of concern at each area of concern;

3. A discussion of how the remedial action satisfies all of the criteria pursuant to N.J.A.C. 7:26E-5.1(c) through (e) as applicable;

4. A discussion of why the alternative remedy is equally protective as the applicable presumptive remedy pursuant to N.J.A.C. 7:26E-5.1(j). An alternative remedy shall be approved by the Department prior to its implementation at a site;

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5. A completed case inventory document prepared pursuant to the Department's Guidance for the Preparation of the Case Inventory Document. The case inventory document shall be provided at the front of the report; and

6. Any additional information regarding remedial action selection that is necessary for the Department to determine if the remedy is appropriate.

(c) The person responsible for conducting the remediation is not required to submit a remedial action selection report when:

1. The remediation is limited to an unregulated heating oil tank system;

2. The person is required to submit a feasibility study pursuant to CERCLA, or is required to submit a corrective measures study pursuant to the Resource Conservation and Recovery Act (RCRA);

3. The person is subject to the Department's direct oversight pursuant to N.J.S.A. 58:10C-27; or

4. That person is using a licensed site remediation professional to oversee the remediation unless a remedy that is an alternative to the presumptive remedy is proposed.

APPENDIX

(RESERVED)

SUBCHAPTER 6. REMEDIAL ACTION

7:26E-6.1 Remedial action requirements

(a) The person responsible for conducting the remedial action shall notify the Department and the local governing body pursuant to N.J.A.C. 7:26E-1.4.

(b) Except as provided in N.J.A.C. 7:26E-6.2(b), the person responsible for conducting the remediation shall ensure that each remedial action implemented at a contaminated site shall:

1. Be approved by the Department or a licensed site remediation professional prior to implementation;

2. Comply with the requirements of this subchapter;

3. Not in itself cause an uncontrolled or unpermitted discharge or transfer of contaminants from one media to another;

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4. Comply with all applicable remediation standards in effect at the time the remedial action workplan is approved by the Department or was prepared by a licensed site remediation professional, provided, however, that if an applicable numeric remediation standard decreases by an order of magnitude or more prior to the issuance of a final remediation document for the site being remediated, the person shall be responsible for additional necessary remediation to achieve the new remediation standard; and

5. Use institutional controls whenever a restricted use remedy or a limited restricted use remedy is used to remediate a site.

(c) Single phase remediations, where the remedial action is conducted concurrently with sampling to delineate the contamination and to confirm contaminant removal, are acceptable.

(d) Free and/or residual product determined to be present pursuant to N.J.A.C. 7:26E-2.1(a)14 shall be treated or removed when practicable, or contained when treatment or removal are not practicable. Likewise, natural ground water remediation for dissolved phase contamination may be implemented if it is determined by the Department that active ground water remediation for the dissolved phase is impracticable or not cost-effective. Decisions regarding the practicability of a remedial decision shall be made by the Department on a case by case basis. Natural remediation of free and/or residual product will not be allowed.

(e) Institutional controls shall be required whenever a restricted use remedy or a limited restricted use remedy is used to remediate a site.

(f) The person responsible for conducting the remediation of historic fill material shall do so pursuant to N.J.A.C. 7:26E-6.2(d). Remedies for any other fill material, not meeting the definition of historic fill material, shall be selected pursuant to N.J.A.C. 7:26E-5.1.

7:26E-6.2 Remedial action workplan

(a) The person responsible for conducting the remediation shall prepare and submit a remedial action workplan in a format that corresponds directly to the outline of this section with a Remedial Action Workplan form. The workplan shall include:

1. The remedial investigation report, pursuant to N.J.A.C. 7:26E-4.8, shall be presented as the first section of the remedial action workplan. If the remedial investigation report was previously submitted to the Department, either a summary of the report or a copy of the findings/recommendation section of the report may be submitted;

2. A sampling summary table for post remediation samples pursuant to N.J.A.C. 7:26E-4.2 (remedial investigation workplan).

3. A proposal to complete all requirements in N.J.A.C. 7:26E-6;

4. The identification of all applicable remediation standards;

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5. A detailed description of the remedial action and the remedial technology to be conducted for each area of concern;

6. The identification of all areas where remedial action will be conducted on a scaled site map pursuant to N.J.A.C. 7:26E-4.8 (remedial investigation report). In addition, the map shall specify:

- i. The location of remedial treatment units;
- ii. The volume of each environmental medium to be remediated;
- iii. The vertical and horizontal extent of area to be remediated;
- iv. The location, depth and concentration of all contaminants in excess of the remediation standard; and
- v. Sample locations, depths and parameters for all post-construction samples;

7. A quality assurance project plan including proposed sampling and analytical methods pursuant to N.J.A.C. 7:26E-2.2;

8. A list of all required permits;

9. If any construction activity is planned, the following items shall be provided in the workplan:

- i. The location of any such construction facilities with additional details describing construction design;
- ii. All applicable requirements and standards relating to construction for onsite remedial units including inspection and professional engineer certification.

10. A description of soil and sediment erosion control and monitoring, and dust and odor control and monitoring procedures to be implemented during remedial activities, if applicable;

11. A health and safety plan pursuant to N.J.A.C. 7:26E-1.10;

12. A detailed description of site restoration plans to comply with N.J.A.C. 7:26E-6.4 (post-remediation action requirements);

13. A description of procedures for dismantling and removal of remedial structures and equipment from the site, if applicable;

14. A cost estimate of the remedial action;

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15. The proposed completion date of the remedial action and a schedule of the remedial action as required pursuant to N.J.A.C. 7:26E-6.5;

16. The following documentation whenever a deed notice is required as a component of the remedial action:

- i. A copy of the property owner's written agreement to record the deed notice, pursuant to N.J.A.C. 7:26E-8.2(b); and
- ii. A draft deed notice, including all of the exhibits, pursuant to N.J.A.C. 7:26E-8.2(c) unless a licensed site remediation professional has been hired;

17. All documentation required pursuant to N.J.A.C. 7:26E-8.3 whenever a classification exception area is to be established;

18. A plan for the monitoring, maintenance and evaluation of all engineering and institutional controls pursuant to N.J.A.C. 7:26E-6.3, 8.5, 8.6, and 8.7, as applicable; and

19. A completed case inventory document prepared pursuant to the Department's Guidance for the Preparation of the Case Inventory Document. The case inventory document shall be provided at the front of the workplan.

(b) The person responsible for conducting the remediation subject to N.J.A.C. 7:26C-2.3 may implement a soil remedial action without the prior Department approval of a remedial action workplan if that person:

1. Can complete the soil remedial action within five years from the commencement of the implementation of the remedial action; or
2. Is implementing a soil remediation which meets the established residential or nonresidential use soil remediation standards.

(c) The person responsible for conducting the remediation who proposes to reuse contaminated soil as part of a remedial action shall include in the remedial action workplan a reuse soil plan pursuant to the Department's Guidance Document for the Remediation of Contaminated Soils and that includes all of the following:

1. A description of the originating site or area of concern by the submission of a remedial investigation report or, as applicable, a remedial action report for the contaminated soil. If the reports were previously submitted to the Department, a summary of the report may be submitted;
2. A determination in accordance with N.J.A.C. 7:26G-5 as to the waste classification of the soil, including any supporting data requested by the Department; and

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3. A detailed description of the proposed reuse and conditions at the site of reuse including:

- i. The location of the site including state, county, municipality, block and lot numbers;
- ii. The volume of soil to be reused;
- iii. Identification of the specific location on the site where the reuse will be conducted on a scaled maps pursuant to N.J.A.C. 7:26E-3.2(a)3i through iii;
- iv. The depth to ground water on the receiving site, including the method of determination;
- v. The receiving site use;
- vi. A discussion of the performance, effectiveness and reliability of the proposed reuse and any potential negative impacts to human health, safety or the environmental as a result of the reuse; and
- vii. All other applicable data and information required pursuant to (a)8 through 15.

(d) If historic fill material will not be treated or removed from the site, engineering and institutional controls shall be proposed in accordance with the Department's procedures in effect at the time of proposal, provided that the information is pursuant to N.J.A.C. 7:26E-4.8(c)14 and the following documentation is presented in the remedial action workplan:

1. A statement that all other areas of concern located in the historic fill material area have been addressed as separate areas of concern. Remedies for any such areas, not meeting the definition of historic fill material, shall be selected pursuant to N.J.A.C. 7:26E-5.1.

7:26E-6.3 Specific remedial action requirements

(a) As a first priority during remedial action, contaminants in all media shall be contained and/or stabilized to prevent contaminant exposure to receptors and to prevent further movement of contaminants through any pathway.

(b) The following requirements shall be followed for the closure of an underground storage tank:

1. The associated piping shall be drained and the tanks pumped out and cleaned thoroughly using the American Petroleum Institute's recommended Practice for the Abandonment or Removal of Used Underground Service Tanks, as amended and supplemented. Copies can be obtained from the American Petroleum Institute, 1220 L Street Northwest, Washington, DC 20005;

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2. All of the openings in the tank shall be plugged except for one vent hole;
3. The soil around the tank shall be excavated and the tank shall be removed and secured;
4. After the tank is secured, it shall be examined for holes and the Department hotline at 1-877 WARNDEP or (877) 927-6337 shall be called if any holes are discovered and/or a discharge has been confirmed pursuant to N.J.A.C. 7:14B-7.3, unless a discharge from the tank was previously reported to the Department;
5. The tank shall then be prepared for disposal by labeling the tank regarding its site of origin, ultimate destination site and the substance(s) that were stored in it during its use as a storage tank; and
6. The tank shall be removed from the site according to all applicable laws and regulations.
 - i. During tank removal, the following observations shall be made and documented:
 - (1) A description of tank condition (with photographic documentation);
 - (2) The excavation floor and sidewalls shall be examined for any physical evidence of soil contamination;
 - (A) When tanks that contained volatile organics, including No. 2 fuel oil, diesel fuel, gasoline, kerosene, jet fuel, waste oil, are removed, the excavation floor and sidewalls shall be field screened with a properly calibrated flame ionization detector (FID), or photoionization detector (PID) along transects spaced no more than five feet apart.
 - (B) If the tank did not contain volatile organics (for example, No. 4, No. 6 fuel oil), the excavation shall be examined visually for evidence of a discharge.
 - (3) If there is no evidence of a discharge, soil samples for laboratory analysis shall be taken immediately after tank removal as follows:
 - (A) If there is no ground water in the excavation, center line soil samples are required at a frequency equal to the total length of the tank divided by five (minimum of one sample), provided that samples are spaced equidistantly and that the outermost samples obtained are no greater than 2.5 feet from each respective end of the tank. If the total length of a tank is not evenly divisible by five, one additional sample shall be obtained for any fraction remaining;
 - (B) If there is ground water in the excavation, soil samples shall be taken as follows:

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(I) If potential contaminants have a specific gravity of one or less, independent of the number of tanks in the excavation, one sample shall be taken from the zero to six inch interval above the water table from each excavation sidewall for every 30 linear feet of sidewall (minimum of one sample per sidewall); except that, for no. 2 fuel oil or diesel oil tanks of 550 gallon capacity or less, one sample, biased to the suspected location of greatest contamination, shall be taken from one excavation sidewall at the zero to six inch interval above the water table;

(II) If potential contaminants have a specific gravity of more than one, samples shall be taken pursuant to (b)6i(3)(A) above; or

(III) If the tanks contained mixed substances such that some contaminants had a specific gravity of more than one and some contaminants had a specific gravity of less than one (for example no. 6 fuel, or waste oil potentially contaminated with chlorinated solvents), samples shall be taken below the water table pursuant to (b)6i(3)(A) above, and, independent of the number of tanks in the excavation, from the zero to six inch interval above the water table from each excavation sidewall for every 30 linear feet of sidewall (minimum of one sample per sidewall); and

(IV) Soil samples taken from below the water surface shall be taken using appropriate sediment sampling methods; and

(4) If there is evidence of a discharge and a soil remedial action will occur, refer to N.J.A.C. 7:26E-6.4. If there is evidence of a discharge, but there is insufficient soil to conduct a soil remedial action, (for example, tank is located in bedrock) or any portion of the tank is located within or immediately above the ground water table, a ground water sample shall be taken pursuant to N.J.A.C. 7:26E-3.7(c);

(5) If there is any evidence of ground water contamination, including without limitation, a sheen or odor, a ground water sample shall be collected pursuant to N.J.A.C. 7:26E-3.7; and

(6) A description of product type and quantity spilled from tank or tank system during excavation.

ii. The following requirements shall be followed for the abandonment in-place of a physically accessible underground storage tank. If contamination is detected above an applicable remediation standard and remedial action will occur, the tank system shall be removed to facilitate remedial action, if feasible. If it is not feasible to remove the tank system, a certification shall be submitted, signed and sealed by a licensed New Jersey professional engineer, stating why the removal is not feasible;

(1) The tank system and associated piping shall be drained and the system pumped out and cleaned thoroughly using American Petroleum Institute guidance

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applicable at the time of cleaning. Because vapors in the tank atmosphere will be displaced during the tank cleaning and abandonment operation, particular emphasis shall be placed on health and safety concerns;

(2) After the tank is cleaned, the tank shall be inspected and any areas of questionable integrity, including, without limitation, any cracks or corrosion, or evidence of discharge, shall be documented. Photographs may be submitted to document that the integrity of the system has been breached, if the evidence is clearly visible in the photograph;

(3) Upon completion of tank cleaning, soil sampling shall be conducted by completing borings through the bottom of the tank, along the center line, at a frequency equal to the total length of the tank divided by five (minimum of one sample), provided that the samples are spaced equidistantly and that the outermost samples obtained are no greater than 2.5 feet from each respective end of the tank. If the total length of a tank is not evenly divisible by five, one additional sample shall be obtained from any fraction remaining;

(4) Additional soil samples for volatile organics analysis shall be collected in accordance with the requirements at N.J.A.C. 7:26E-3.6(a) 4;

(5) If ground water has been determined to be in contact with the tank invert and there is no evidence of a discharge, sampling shall be conducted in accordance with N.J.A.C. 7:26E-3.9(a)3i(5);

(6) Decommissioning of the tank system, including all fill pipes, shall be completed by completely filling the tank system with sand, cement or other inert material with similar physical/chemical properties;

(7) All fill pipes shall be removed to a depth of a minimum of one foot below ground surface; and

(8) Procedures shall comply with all local ordinances;

iii. If the underground storage tank is located under a permanent structure or is physically inaccessible or a certification is submitted, signed and sealed by a licensed New Jersey professional engineer, stating that the sampling requirements at (b)6ii(3), (4), and (5) above for closure of the underground storage tank will cause damage to an adjacent structure, an alternate method for documenting the integrity of the tank may be submitted pursuant to N.J.A.C. 7:26E-1.7;

iv. No sampling is required for the closure (removal or abandonment) of an underground storage tank system which has always had secondary containment and leak detection pursuant to N.J.A.C. 7:14B, provided that there is no evidence of a discharge during tank closure and no history of any leaks or repairs; and

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v. All piping systems associated with the underground tank shall be remediated in accordance with N.J.A.C. 7:26E-3.9(a)5.

(c) The person responsible for conducting the remediation of a landfill shall:

1. Obtain and comply with all permits required by N.J.A.C. 7:26-2A; and
2. If any drums, tanks or other waste containers are identified in the landfill, evaluate whether:
 - i. The integrity of the landfill containment system would be threatened if the drum, tanks or other waste containers are left in place; and
 - ii. Excavation and treatment of these materials would be practicable and result in a reduction in risk at the site.

(d) When submitting a remedial action workplan for natural ground water remediation, the person responsible for conducting the remediation shall demonstrate to the Department that:

1. Ground water contaminant concentrations will decrease to applicable remediation standards pursuant to N.J.A.C. 7:26D through degradation, retardation, or dispersion under present site conditions.

i. The person responsible for conducting the remediation shall evaluate the following site conditions to determine the viability of natural remediation:

- (1) Contaminant mass, as determined by free or residual product and dissolved phase delineation and dissolved contaminant concentrations;
- (2) Dissolved oxygen content of ground water;
- (3) Presence or absence of microorganisms in soil and ground water;
- (4) Ground water flow velocity; and
- (5) Applicable physical and chemical characteristics of contaminants and contaminant degradation products present in both soil and ground water;

ii. The person responsible for conducting the remediation may evaluate the following site conditions to determine the viability of natural remediation, if applicable:

- (1) Sorptive and desorptive characteristics of the soil; and
- (2) Other applicable physical and chemical characteristics of soil;

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2. Free and/or residual product in the unsaturated and saturated zones, as determined pursuant to N.J.A.C. 7:26E-2.1(a)14, is treated or removed, if practicable, or contained if treatment or removal are not practicable;
3. All soil contamination in the unsaturated zone has been or will be remediated to the applicable numeric soil remediation standard in accordance with a schedule approved by the Department;
4. Groundwater contamination has been delineated to the remediation standard applicable to the nearest downgradient receptor;
5. Ground water contaminated above the applicable standard will not reach the nearest downgradient receptor, as estimated by an appropriate ground water flow/contaminant transport model selected pursuant to N.J.A.C. 7:26E-4.4(h) 3iv;
6. The fate of the contaminant plume has been documented pursuant to N.J.A.C. 7:26E-8.3(b)2;
7. Contaminant levels in ground water do not present a vapor risk to any receptors;
8. Predicted impacts to potential receptors are consistent with the current and potential ground water uses based on a 25-year planning horizon as projected by local and county land use documents. This shall include, without limitation, information pertaining to the existence of water lines, proposed future installation of water lines, local and/or county ordinances restricting installation of potable wells;
9. All necessary access agreements needed to monitor the ground water quality pursuant to (e) below have been obtained; and
10. If a classification exception area needs to be established, the person responsible for conducting the remediation has provided the Department all necessary information in accordance with N.J.A.C. 7:26E-8.

(e) Monitoring and performance requirements for natural remediation are as follows:

1. A ground water monitoring program shall be implemented to monitor plume characteristics and movement, to calibrate the model used to estimate the eventual extent of the plume, and to assess the effectiveness of the natural ground water remediation. This program shall consist of the following:

- i. Sampling shall be conducted on a quarterly basis at monitoring wells associated with the natural remediation, for a minimum of eight quarters, including:

- (1) At least one area of concern monitoring well located at the source area to monitor plume conditions at the source area;

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(2) At least one plume sampling point located downgradient of the source area but within the contaminant plume except as provided in (e)1i(3) below;

(3) At least one plume fringe monitoring well located at the limit of the plume, as determined pursuant to (d)4 above. Depending on the areal extent of the contaminant plume, the Department may determine that one monitoring well may satisfy the requirements of both (e)1i(2) above and this subparagraph; and

(4) At least one downgradient sentinel well located beyond the zone delineated pursuant to (d)4 above. Contaminant levels in this sentinel well shall remain below the applicable standard. The sentinel well shall be located no closer than three years travel time to the nearest potential downgradient receptor and no further than five years travel time from the delineated downgradient extent of the contaminant plume;

2. A classification exception area shall be established for the area of the aquifer impacted by the migrating contaminant plume, pursuant to N.J.A.C. 7:26E-8;

3. Data collected pursuant to (e)1 above shall be evaluated and the person responsible for conducting the remediation shall document the effectiveness of that natural ground water remediation as follows:

i. No further remediation is required for ground water if:

(1) Contaminant levels in the sentinel well do not exceed the applicable standards at any time during the monitoring program. A proposal regarding the duration of the monitoring program at the sentinel well may be made by the person responsible for conducting the remediation, based upon site specific data;

(2) The contaminant levels at the source area monitoring well(s) are at or below the applicable standards for two consecutive seasonal high water table monitoring events; and

(3) The contaminant concentrations at all plume monitoring wells are at or below the applicable standards for two consecutive quarterly monitoring events;

ii. Additional remediation will be required if:

(1) Contaminant levels in the sentinel well exceed the applicable standards;

(2) The contaminant levels detected in any of the plume or plume fringe monitoring wells installed pursuant to (e)1i(2) and/or (3) above are not reflective of the contaminant levels predicted by the ground water flow/contaminant transport model; or

(3) Contaminant levels are not decreasing in any area of concern monitoring well, as demonstrated by applying the statistical Mann-Whitney U-Test to eight

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consecutive quarters of ground water sampling data. The test shall be applied to individual contaminants detected in each area of concern monitoring well, pursuant to Appendix C, incorporated herein by reference; and

iii. Proposals to sample the monitoring wells at a decreased frequency for the purpose of monitoring the Classification Exception Area shall be considered by the Department if:

(1) Contaminant levels in the sentinel well do not exceed the applicable standards at any time during the monitoring program. A proposal regarding the duration of the monitoring program at the sentinel well shall be made by the person responsible for conducting the remediation, based upon site-specific data;

(2) The contaminant levels detected in the plume or plume fringe monitoring wells above are reflective of the contaminant levels predicted by the ground water flow/contaminant transport model; and

(3) Contaminant levels above the applicable remediation standard remain, but a decreasing trend of contaminant levels is demonstrated in, at a minimum, the area of concern monitoring well(s). The decreasing trend shall be demonstrated by applying the statistical Mann-Whitney U-Test to eight consecutive quarters of ground water sampling data. The test shall be applied to individual contaminants detected in each monitoring well pursuant to Appendix C; and

4. Ground water sample data shall not be averaged for the purpose of the Mann-Whitney U-Test.

5. Alternative non-parametric statistical tests may be proposed. The Department shall determine the acceptability of such tests on a case by case basis.

(f) The person responsible for conducting the remediation that is implementing an active ground water remediation shall include a monitoring plan in the remedial action workplan with a schedule designed to demonstrate that:

1. There is a decreasing trend of contaminant concentrations in the ground water and that the ground water remediation standards will be attained in the treatment zone using the Mann-Whitney U test using Appendix C or the Department's Response Action Outcome guidance shall be used make this determination;

2. The plume is not migrating horizontally or vertically into an uncontaminated aquifer zone below and adjacent to the contaminant plume;

3. The plume is contained and not reaching the sentinel wells. Contaminant levels in sentinel wells shall remain below the applicable standard. The sentinel wells shall be located no closer than three years contaminant travel time to the nearest potential downgradient receptor and no further than five years contaminant travel time from the delineated downgradient extent of the contaminant plume; and

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4. The ground water remedial action is performing as designed.

(g) The person responsible for conducting the remediation that is implementing an active ground water remediation shall include a ground water monitoring plan, with a schedule, designed to evaluate the ground water remedial action in order to:

1. Optimize the system's performance as the remediation progresses; and
2. Optimize the ground water quality monitoring program as remediation progresses.

(h) The person responsible for conducting the remediation subject to (e) and (g) above shall apply for a ground water remedial action permit by submitting the following to the Department with the monitoring plan pursuant to (e) and (g) above:

1. A completed Ground Water Remedial Action Permit form;
2. A completed CEA/Well Restriction Area (WRA) Permit Fact Sheet form; and
3. A ground water remedial action permit application fee pursuant to N.J.A.C. 7:26C-4.4.

7:26E-6.4 Additional remedial action requirements

(a) The person responsible for conducting the remediation shall document the effectiveness of the remedial action as follows:

1. All sampling shall be conducted pursuant to N.J.A.C. 7:26E-3.3 through 3.12 and 4.1 through 4.7.

2. For soils, if excavation is conducted, the minimum post remediation sampling frequency shall be:

i. For excavations less than 20 feet in perimeter, at least one bottom sample and one sidewall sample biased in the direction of surface runoff.

ii. For excavations 20 to 300 feet in perimeter:

(1) For surface spills, one sample from the top of each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.

(2) For subsurface spills, one sample from the bottom of each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.

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iii. For larger excavations, sampling frequency may be reduced if documentation acceptable to the Department is provided in the remedial action progress report (N.J.A.C. 7:26E-6.6) or the remedial action report (N.J.A.C. 7:26E-6.7) if the remedial action is completed in less than three months. Documentation shall specify why the reduced sample frequency was considered adequate.

iv. For volatile organics bottom samples taken within 24 hours of excavation, samples shall be taken from the zero to six inch interval at the excavation floor. Samples taken after 24 hours shall be taken at six to 12 inches. For excavations open longer than two weeks, volatile organics sample depth for bottom samples shall be in accordance with N.J.A.C. 7:26E-3.6(a) 4 (site investigation requirements).

v. Each excavation within a larger excavation shall be considered a separate excavation and shall comply with (a)2i through iv above.

vi. For tanks, if contaminated soil is removed, post remediation soil samples for laboratory analysis shall be taken immediately after contaminated soil removal pursuant to N.J.A.C. 7:26E-6.3(b)6i(3). If the excavation is enlarged horizontally beyond the immediate tank removal area, additional soil samples shall be taken pursuant to (a)2i through iv above.

3. For soils, if in situ remediation is conducted, the minimum post-remediation sampling frequency shall be one sample per 900 square feet of contaminated area. Where the contaminated zone exceeds two feet in depth, one additional sample per 900 square feet of contaminated area shall be taken for each two feet of depth.

4. Post-remediation sample locations and depth shall be biased towards the areas and depths of highest contamination identified during previous sampling episodes unless field indicators such as field instrument measurements or visual contamination identified during the remedial action indicate that other locations and depths may be more heavily contaminated. In all cases, post-remediation samples shall be biased toward locations and depths of the highest expected contamination.

5. If the extent of contamination above the applicable residential soil remediation standard was estimated during the remedial investigation, the extent of contamination above the applicable residential soil remediation standard shall be confirmed using laboratory analysis prior to the completion of a remedial action or the execution of a deed notice.

6. If the Department established a groundwater classification exception area as part of the remedial action, sampling shall be conducted pursuant to N.J.A.C. 7:26E-8.6(b)7i.

(b) The person responsible for conducting the remediation shall restore all areas of concern to the extent practicable, to pre-remediation conditions with respect to topography, hydrology and vegetation as follows:

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1. Sites located adjacent to or in wetlands or in or near other environmentally sensitive natural resources, may have further requirements under N.J.A.C. 7:7E (Coastal Zone Management) or N.J.A.C. 7:7A (Wetlands Act).

2. Fill material used to restore a site after the remediation has been completed shall be similar in physical properties to the material removed unless otherwise approved in advance by the Department. Fill used for new building foundations or other construction in remediated areas are exempt from this requirement.

i. If the excavated material is native soil, the fill shall be of equal or less permeability than the soil removed.

ii. If the excavated material is not native soil, the fill material shall be of equal or less permeability than the native soil in or adjacent to the area of concern or, at a minimum, have a permeability equal to or less than that of loam.

iii. Fill shall be uncontaminated pursuant to any applicable remediation standard and free of extraneous debris or solid waste.

iv. Documentation of the quality of the fill shall be provided by a certification stating that it is virgin material from a commercial or noncommercial source or decontaminated recycled soil.

v. Uncontaminated soil from the site pursuant to any applicable remediation standard may be returned to excavations or may be used elsewhere on the site.

vi. The bills of lading shall be provided to the Department to document the source(s) of fill. The documentation shall include:

(1) The name of the affiant and relationship to the source of the fill;

(2) The location where the fill was obtained, including the street, town, lot and block, county, and state, and a brief history of the site which is the source of the fill; and

3. A statement that to the best of the affiant's knowledge and belief the fill being provided is not contaminated pursuant to any applicable remediation standards and a description of the steps taken to confirm such.

(c) After completion of remediation all monitoring and extraction wells shall be decommissioned in accordance with N.J.A.C. 7:9D unless otherwise approved by the Department.

(d) If contaminated soils will be reused at a site, the person responsible for conducting the remediation shall prepare a soil reuse plan pursuant to the Department's Guidance Document for the Remediation of Contaminated Soils that complies with the following sampling requirements:

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1. The contaminated soil intended for reuse shall be fully characterized and delineated pursuant to the site investigation, N.J.A.C. 7:26E-3, and remedial investigation, N.J.A.C. 7:26E-4, or, if the soil has not been fully characterized and delineated, the soil shall be sampled in accordance with all applicable requirements at N.J.A.C. 7:26E-1, 2, 3.4, and 3.6, at the following frequencies:

i. Field screening methods, if available pursuant to N.J.A.C. 7:26E-2.1(b), shall be used to determine sample locations. Each 20 cubic yards of soil shall be screened with borings or test pits throughout the depth of the soil pile, at two foot intervals. Two samples shall be collected for laboratory analysis for the first 100 cubic yards of excavated material and one sample for each additional 100 cubic yards; or

ii. If contamination is not detectable by field screening methods, samples shall be collected for laboratory analysis from mid-depth in the pile at a frequency of one sample per 20 cubic yards for the first 100 cubic yards of soil and one sample for each additional 100 cubic yards; and

iii. For quantities of soil greater than 1,000 cubic yards, a lower sampling frequency may be acceptable;

2. When soils are excavated to access underground storage tank systems or other subsurface structures and there is no evidence of a discharge pursuant to N.J.A.C. 7:26E-6.3(b), soil analysis of the excavated soil is not required prior to reuse. The results of post-remedial sampling required pursuant to N.J.A.C. 7:26E-6.3 shall be evaluated prior to reuse of the soils to confirm that no discharge occurred at the underground storage tank system; and

3. Excavated soil from drill cuttings or test pit excavations, may be returned to the original location provided that:

i. The activity was performed in accordance with the Subsurface and Percolating Waters Act, N.J.S.A. 58:4A-4.1;

ii. Neither free nor residual product is present, as determined pursuant to N.J.A.C. 7:26E-2.1(a)14;

iii. The contamination present shall be addressed as part of the remediation of the area of concern; and

iv. The replacement of the soil shall not pose any additional threat to public health, safety or the environment.

(e) If the person responsible for conducting the remediation required for real property not owned by that person does not obtain the property owner's written consent to implement the

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institutional and/or engineering control at the property and to record a deed notice, the person shall remediate the property to an applicable residential soil remediation standard.

(f) The person responsible for conducting the remediation shall implement, when contaminant levels in the source monitoring wells are at or below the applicable standards for two consecutive high seasonal water table monitoring events, a post remedial action implementation monitoring plan to determine whether the achieved ground water remediation standards are sustainable and not subject to concentration rebound after remediation standards are met.

7:26E-6.5 Remedial action schedule

(a) The person responsible for conducting the remediation shall prepare a schedule of the remedial action pursuant to this section if the remedial action requires more than three months to complete.

(b) The person responsible for conducting the remediation shall include the following in the remedial action schedule:

1. Monthly time frames, for the initiation and completion of each remedial action task;
2. Time frames for contractor bidding/review/acceptance process;
3. A critical path schedule for all Federal, State, and local permit applications and final permit approvals;
4. A listing of all anticipated report submittals to the Department;
5. A timeframe for submitting a request for a waste classification to the Department for disposal or treatment of waste generated during implementation of the remedial action;
6. A timeframe for site restoration pursuant to N.J.A.C. 7:26E-6.4(b); and
7. A schedule for the submission of a ground water remedial action permit application, pursuant to N.J.A.C. 7:26E-6.3(h).

(c) Within 30 calendar days after the Department approves the remedial action workplan, the person responsible for conducting the remediation shall revise the remedial action schedule to identify the projected month/year for each task, and submit the revised schedule to the Department.

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7:26E-6.6 Remedial action progress reports

(a) The person responsible for conducting the remediation who does not have a remedial action permit, shall submit remedial action progress reports to the Department pursuant to this section and according to the remedial action schedule pursuant to N.J.A.C. 7:26E-6.5.

(b) The person responsible for conducting the remediation shall include the following in each remedial action progress report, as appropriate:

1. A description of each remedial action:
 - i. Scheduled to be initiated or completed during the reporting period;
 - ii. Actually initiated or completed during the reporting period; and
 - iii. Scheduled but not initiated or not completed during the reporting period, including the reasons for the noncompliance with the Department approved schedule;
2. Discussion of problems and delays in the implementation of the remedial action workplan, including proposals for corrections;
3. Any proposal for a deviation from, or modification to, the approved remedial action workplan. The Department must approve proposed modifications in writing prior to implementation;
4. A revised schedule pursuant to N.J.A.C. 7:26E-6.5, to reflect the changes described pursuant to (b)1 through 3 above;
5. The status of all permit applications relative to the critical path schedule for permits in the remedial action schedule pursuant to N.J.A.C. 7:26E-6.5(b)3;
6. A list of each remedial action to be performed during the next reporting period;
7. The cost of each remedial action, including:
 - i. An annual summary of all remediation costs incurred to date; and
 - ii. A revised cost estimate for remedial actions remaining to be performed;
8. A tabulation, pursuant to N.J.A.C. 7:26E-3.13(c)3, of all sampling results received during the reporting period and a summary of the data and any conclusions in a format consistent with N.J.A.C. 7:26E-4.8;
9. For ground water remedial actions:

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i. Groundwater elevation contour maps representative of groundwater flow conditions immediately preceding initiation of the active groundwater remedial action and during the active groundwater remedial action;

ii. Graphs depicting changes in contaminant concentrations over time for all contaminated monitoring wells and all downgradient delineation monitoring wells;

iii. A summary, in narrative and table format, of the volume of groundwater treated since the last reporting period, and the total volume of groundwater treated since the active remedial action commenced; and

iv. A summary regarding groundwater contamination stating that either:

(1) Contamination remains at concentrations above the applicable remediation standards, and a proposal detailing what additional remedial actions will be taken to address this contamination; or

(2) All contamination concentrations are at or below the applicable remediation standards;

10. For natural remediation groundwater remedial actions:

i. A summary table of the groundwater monitoring results collected; and

ii. If applicable, conclusions whether data indicate that natural remediation is no longer appropriate, and submit a revised remedial action workplan, pursuant to N.J.A.C. 7:26E-6.2;

11. A description of all wastes generated as a result of the remedial action, including:

i. Tabulation of waste classification and/or characterization samples collected, including the physical state of the material (solid, liquid, sludge), the volume of material, number of samples collected, analyses performed and results;

ii. A listing of all types and quantities of waste generated by the remedial action during the reporting period and to date;

iii. The name of the disposal facility used;

iv. The transporters' dates of disposal; and

v. If appropriate, the manifest numbers of each waste shipment; and

12. Any additional support documentation that is available (for example, photographs).

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7:26E-6.7 Remedial action report

(a) The person responsible for conducting the remediation shall prepare a remedial action report and submit with a Remedial Action Report form, in a format that corresponds directly to the outline of this section, when the remedial action is completed, except as noted in (e) below.

(b) The person responsible for conducting the remediation shall include the following in the remedial action report:

1. All information contained in the remedial investigation report pursuant to N.J.A.C. 7:26E-4.8; or if previously submitted to the Department, a summary of the following information from that report:

- i. General history of the site;
 - ii. A description of the physical setting of the site; and
 - iii. A summary, by area of concern, of the concentration of contaminants with a comparison to the applicable remediation standards;
2. A summary, by area of concern, of all remedial actions completed;
3. A list of the remediation standards achieved for each remedial action;
4. "As-built" diagrams for any permanent structures including, without limitation, caps or other remediation structures and engineering controls;
5. A detailed description of site restoration activities, if applicable, pursuant to N.J.A.C. 7:26E-6.4(b);
6. A report of the remediation costs, including a cost estimate to monitor, maintain, and certify the protectiveness of each engineering and/or institutional control pursuant to N.J.A.C. 7:26E-8;
7. A copy of a deed notice, stamped "Filed" if applicable pursuant to N.J.A.C. 7:26E-8.2(d), along with a Remedial Action Permit form and a remedial action permit application fee pursuant to N.J.A.C. 7:26C-4.4; and
8. Information pursuant to (c) through (g) below, as applicable.

(c) The person responsible for conducting the remediation shall include the following in the soil remedial action section and sediment remedial action section of the report:

1. Tables and figures pursuant to N.J.A.C. 7:26E-4.8 containing all pre-and post-remedial data keyed appropriately so that:

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- i. Completion of the remedial action is documented; and
 - ii. The volume of contaminated soil or sediment which was remediated is clearly indicated;
 2. Fully executed manifests documenting any offsite transport of waste material; and
 3. A copy of the final draft deed notice, including all of the exhibits, pursuant to N.J.A.C. 7:26E-8.2, if applicable.
- (d) The person responsible for conducting the remediation shall include graphs depicting changes in contaminant concentrations over time for all monitoring wells in the active groundwater remedial action section of the report.
- (e) The person responsible for conducting the remediation shall, upon satisfying the requirements of N.J.A.C. 7:26E-6.3(e)3, include the following in the natural remediation groundwater remedial action section of the report:
1. A summary table of the groundwater monitoring results collected pursuant to N.J.A.C. 7:26E-6.3(e)1;
 2. A discussion of the results of the Mann-Whitney U-Test applied pursuant to N.J.A.C. 7:26E-6.3(e)3;
 3. A conclusion that either:
 - i. The groundwater quality is now in compliance with the applicable remediation standards and, therefore, the groundwater classification exception area is no longer necessary; or
 - ii. The groundwater contamination is expected to decrease over time and to be in compliance with the applicable remediation standards consistent with the model used to estimate the eventual extent of the plume, and, therefore, that the groundwater classification exception area is still necessary; and
 4. If the groundwater classification exception area is still necessary, a plan for the monitoring, maintenance, and certification of the protectiveness of each classification exception area pursuant to N.J.A.C. 7:26E-8.
- (f) The person responsible for conducting the remediation shall submit an updated receptor evaluation pursuant to N.J.A.C. 7:26E-1.15(d) on a Receptor Evaluation form provided by the Department.
- (g) A completed a case inventory document prepared pursuant to the Department's Guidance for the Preparation of the Case Inventory Document. The case inventory document shall be provided at the front of the report.

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SUBCHAPTER 7. PERMIT IDENTIFICATION, PERMIT APPLICATION SCHEDULE AND DISCHARGE TO GROUND WATER PROPOSALS

7:26E-7.1 Permit identification

(a) Any person conducting a remedial action shall identify all relevant Federal, State and local permits or permit modifications or certifications needed to implement the selected remedial action including, but not limited to:

1. Soil Erosion and Sediment Control Plan Certification for Land Disturbance Control (N.J.A.C. 2:90);
2. Permit to Construct/Install/Alter Air Quality Control Apparatus/Equipment (N.J.A.C. 7:27-8);
3. Certificate to Operate Air Quality Control Apparatus/Equipment (N.J.A.C. 7:27-8);
4. Coastal Area Facility Review Act (CAFRA) Permit (N.J.S.A. 13:19-1 et seq.);
5. Waterfront Development/Upland Waterfront Permit (N.J.S.A. 12:5-3);
6. Wetlands Permit (N.J.S.A. 13:9A-1 et seq.);
7. Freshwater Wetlands/Open Water Fill Permit (N.J.S.A. 13:98-1 et seq.);
8. Flood Hazard Area Control Act Permits (N.J.S.A. 58:16A-50 et seq.; N.J.A.C. 7:13);
9. State Water Quality Certificate (N.J.S.A. 58:10A-1 to 13; 33 U.S.C. 1251, § 401);
10. Dewatering Permit and/or Water Diversion Permit (N.J.S.A. 23:5-29);
11. U.S. Army Corps of Engineers Dredge and Fill Permit;
12. Delaware River Basin Commission Docket Approval (N.J.S.A. 32:20-1 et seq.);
13. Hackensack Meadowlands Development Commission--Zoning Certificate (N.J.S.A. 13:17-1 et seq.);
14. New Jersey Pinelands--Letter of Approval (N.J.S.A. 13:18A-1 et seq.);
15. Discharge Prevention and Discharge Cleanup and Removal Plans (Pertaining to Storage and Transfer of Petroleum and other Hazardous Substances) (N.J.S.A. 58:10-23.11 et seq.; N.J.A.C. 7:1E);

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16. Registration of Underground Storage Tank; UST Installation Permit and Closure Approval (N.J.S.A. 58:10A-21 et seq.);

17. Water Quality Management Plan Consistency Determination (N.J.S.A. 58:11A-1 et seq.; N.J.A.C. 7:15);

18. New Jersey Pollutant Discharge Elimination System (NJPDES) (N.J.S.A. 58:10A-1 et seq.; N.J.A.C. 7:14A);

i. NJPDES--Discharge to Surface Water (DSW)--Industrial (N.J.S.A. 58:10A-1 et seq.; N.J.A.C. 7:14A);

ii. NJPDES--Significant Indirect User (SIU) (N.J.S.A. 58:10A-1 et seq.; N.J.A.C. 7:14A); and

iii. NJPDES--Discharge to Ground Water (DGW) (N.J.S.A. 58:10A-1 et seq.; N.J.A.C. 7:14A and N.J.A.C. 7:26E-7.2);

19. Treatment Works Approval (TWA) (N.J.S.A. 58:12A-1 et seq.; N.J.A.C. 7:14A-22 and 23);

20. Employer License (Asbestos) (N.J.A.C. 8:60-4), (N.J.A.C. 12:120-4);

21. Asbestos Worker or Asbestos Supervisor Permit Certification of Training Agencies (Asbestos) Asbestos Work Notification Requirements (N.J.A.C. 8:60-6), (N.J.A.C. 12:120-6);

22. National Emission Standards for Hazardous Air Pollutants (NESHAPs) Written Notification Requirements;

23. Landfill Disruption/Closure Approval (N.J.S.A. 13:1E-1 et seq.; N.J.A.C. 7:26-2A.8; N.J.A.C. 7:26-2A.9);

24. Hazardous Waste Facility Registration (N.J.S.A. 13:1E-1 et seq.; N.J.A.C. 7:26G);

25. Short Term Water Use Report;

26. Well Drilling Permit, and Well Certification Forms A & B; (N.J.S.A. 58:4A-14; N.J.A.C. 7:9D);

27. Well Abandonment Form;

28. Exemption of Waste Flow Rule (Soil Reuse);

29. Hazardous Waste Generator Identification Number (N.J.A.C. 7:26G);

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30. Hazardous Waste TSD Facility Permit, except that hazardous waste treatment, storage, or disposal facility permits pursuant to the Solid Waste Management Act, N.J.S.A. 13:1E-1 et seq., and the Hazardous Waste rules at N.J.A.C. 7:26G, shall not be required for any remediation conducted on site pursuant to the Administrative Requirements for the Remediation of Contaminated Sites rules, N.J.A.C. 7:26C; and

31. Any other Federal, State or local approvals that may be required.

(b) Any person conducting a remedial action shall apply for and obtain all required permits prior to initiating the remedial action.

(c) The person responsible for conducting the remediation shall develop a permit application schedule to identify the timeframes for application and issuance/approval pursuant to N.J.A.C. 7:26E-6.5(b)3.

7:26E-7.2 Requirements for discharge to ground water proposals

(a) For each discharge to ground water (DGW) that is subject to the New Jersey Pollutant Discharge Elimination System rules at N.J.A.C. 7:14A-7.5(b), the person responsible for conducting the remediation shall comply with this section and the Department's Guidance NJPDES Discharges to Ground Water Technical Manual for the Site Remediation Program.

(b) The person responsible for conducting the remediation shall submit a DGW proposal with a form available from the Department to the address provided on the form. The person shall include a detailed description of the following with the DGW proposal:

1. How the DGW would comply with the Ground Water Quality Standards, N.J.A.C. 7:9C, and the Surface Water Quality Standards, N.J.A.C. 7:9B, as applicable;

2. Why the proposed ground water treatment system would be appropriate for the DGW;

3. The type, location, volume and duration of the discharge proposed for the remediation of ground water or soil, and the effect that the proposed discharge would have on ground water or any other receptor;

4. The concentrations of all contaminants expected to be present, prior to any treatment, in the fluid to be discharged;

5. The chemical content of all fluids and substances to be discharged and/or placed into, or onto the ground to implement remedial action;

6. A monitoring plan, including but not limited to, the monitoring wells to be sampled, the frequency of sampling for wells, and if applicable, monitoring of the fluid to be discharged, and a list of all the analytes to be monitored;

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7. A proposal to establish a Classification Exception Area for the area impacted by the DGW pursuant to the Department's Discharge to Ground Water Technical Manual, if applicable;

8. A schedule for the submission of reports of all discharge-related activities; and

9. Specifications for the design of an underground injection system pursuant to N.J.A.C. 7:14A-8, as applicable.

(c) Except as provided in (f) below, the person responsible for conducting the remediation shall:

1. Prior to publication of the public notice, submit a draft public notice, using the model in chapter Appendix H, to the address provided on the form, for the Department's approval;

2. After obtaining the Department's approval of the draft public notice and prior to publishing the public notice, the person responsible for conducting the remediation shall provide a copy of:

i. The approved public notice to the clerk for each municipality in which the contaminated site is located, and to the designated local health official;

ii. The DGW proposal to the clerk for each municipality in which the contaminated site is located and to the designated local health official, if requested; and

iii. The approved public notice and DGW proposal to the Pinelands Commission, if the contaminated site is located within its jurisdiction as defined pursuant to N.J.S.A. 13:18A, at the address specified at N.J.A.C. 7:26E-1.4(s);

3. Publish the approved public notice of the DGW in a daily or weekly newspaper of general circulation in the vicinity of the contaminated site, at least 35 days prior to the proposed startup date of the ground water discharge; and

4. Submit to the Department the proof of publication for the public notice within 15 days after the notice is published, and provide the names and addresses of everyone that was sent a copy of the public notice and DGW proposal.

(d) The Department shall hold a public hearing on the DGW proposal if there is, or may be, a significant degree of public interest in favor of holding a public hearing. The Department may hold a public hearing if it determines that a hearing is likely to clarify legal or factual issues regarding the DGW proposal and that oral testimony is essential to adequately express all issues and concerns. If the Department decides to hold a public hearing on the proposed DGW, the Department shall:

1. Publish a notice of a public hearing at least 30 days prior to the hearing;

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2. Extend the public comment period to the close of the public hearing;

3. Consider comments received during the public comment period and respond to the comments when it issues the written decision to approve or reject the DGW proposal; and

4. Provide a copy of the decision to each commenter and to each person or entity to whom the notice was sent pursuant to (c)2 above.

(e) After the Department approves the DGW, the person responsible for conducting the remediation shall comply with the applicable requirements of N.J.A.C. 7:14A-6, this section and the Department's guidance NJPDES Discharges to Ground Water Technical Manual for the Site Remediation Program.

(f) The person responsible for conducting the remediation is exempt from the notification provisions of this section:

1. When the proposed discharge is for the remediation of an unregulated heating oil storage tank; or

2. When the discharge will not exceed 180 days.

SUBCHAPTER 8. ENGINEERING AND INSTITUTIONAL CONTROLS

7:26E-8.1 General requirements

(a) The purpose of this subchapter is to present the requirements for the use of engineering and institutional controls as part of remedial actions for contaminated sites.

(b) The person responsible for conducting the remediation that will use an engineering and/or institutional control as part of a remedial action shall:

1. Prepare a deed notice, pursuant to N.J.A.C. 7:26E-8.2, whenever:

i. Soil contamination will remain above a concentration that would allow for the unrestricted use of the property, and may include engineering controls such as a cap or fencing;

ii. A ground water remedial action includes containment, such as a ground water pump and treat system or a slurry wall; or

iii. A landfill is being remediated;

2. Demonstrate in the remedial action workplan submitted to the Department pursuant to N.J.A.C. 7:26E-6.2(a), that:

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i. The selected remedial action will remain protective of the public health and safety and of the environment for as long as the contamination exists above a concentration that would allow for the unrestricted use of the property;

ii. Access to the site or area of concern, and human exposure to the contamination at the site or area of concern, can both be controlled when necessary to ensure the protectiveness of the remedial action; and

iii. The current and planned future uses of the site or area of concern will be consistent with all engineering and institutional controls; and

3. Monitor each engineering and institutional control.

(c) In evaluating the protectiveness of a remedial action that includes an engineering and/or institutional control, the person responsible for conducting the remediation shall document in the remedial action workplan, how each of the following criteria has been evaluated to ensure that the remedial action is protective of the public health and safety and of the environment:

1. The concentration of contaminants;

2. The mobility and toxicity of the contaminants;

3. The presence of free and/or residual product, off-spec or discarded product or by-product from a manufacturing or industrial process, containerized wastes, or buried waste;

4. The current surrounding land uses;

5. The implementability of the control over the long term; and

6. Any other factors that are relevant to evaluating the protectiveness of the remedial action.

7:26E-8.2 Deed notice requirements

(a) The person responsible for conducting the remediation of a site that will use a deed notice pursuant to N.J.A.C. 7:26E-8.1(b) shall:

1. If that person is the owner of the site, record a deed notice for the site pursuant to (c) and (d) below; or

2. If that person is not the owner of the site, document the owner's consent to record the necessary deed notice pursuant to (b) below.

(b) The person responsible for conducting the remediation that will implement a remedial action that includes a deed notice shall include a copy of the property owner's consent to record a

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deed notice as part of the remedial action workplan pursuant to N.J.A.C. 7:26E-6.2(a)16, as follows:

1. If the property owner is any local, county, State or Federal government agency, and a deed is not associated with the property, such as roads and sidewalks, the person responsible for conducting the remediation shall submit written documentation of the owner's agreement to provide notice pursuant to (c) below as follows:

i. For a municipality, the written agreement shall be in the form of a formal resolution by the municipal government;

ii. For a county, the written agreement shall be in the form of a formal resolution by the county freeholders; or

iii. For a State or Federal governmental agency, the head of the agency or their designee shall sign the written agreement; or

2. If the property owner is any other person than the person responsible for conducting the remediation, the person responsible for conducting the remediation shall provide the Department with written documentation of the owner's agreement to record a deed notice for the site.

(c) The person responsible for conducting the remediation that will implement a remedial action that requires the owner of any real property to record a deed notice shall comply with the following procedures:

1. For a property that is owned by a local, county, State or Federal government agency (except as provided in (c)2 below), and no deed is associated with the property, the person responsible for conducting the remediation shall prepare a notice worded pursuant to (d) below, to serve as the notice in lieu of a deed notice;

2. For a property that is owned by the U.S. Department of Defense, and no deed is associated with the property, the person responsible for conducting the remediation shall prepare an amendment to the Base Master Plan or Land Use Control Assurance Plan worded pursuant to (d) below, to serve as the notice in lieu of a deed notice; or

3. For a property that is owned by any person not described in (c)1 or 2 above, the person responsible for conducting the remediation shall prepare a deed notice pursuant to (d) below.

(d) The person responsible for conducting the remediation that will use a deed notice as part of a remedial action for a contaminated site shall prepare a deed notice that:

1. Is worded exactly as the model document in N.J.A.C. 7:26E Appendix E and the Department's Deed Notice Guidance; and

2. Includes copies of all required maps that:

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i. Are GIS compatible and are prepared using the Department's GIS guidance at <http://www.state.nj.us/dep/srp/srra/regs/techgis>;

ii. Are on 8.5 inch by 11 inch paper (using multiple sheets if necessary);

iii. Are scaled at one inch to 200 feet or less;

iv. Are clean, clear, and legible; and

v. Include:

(1) A bar scale;

(2) A north arrow;

(3) A legend;

(4) The applicable Program Interest name and number (Preferred ID);

(5) Tax Block and Lot numbers; and

(6) The date prepared.

(e) The person responsible for conducting the remediation that will use a deed notice as part of a remedial action for a contaminated site shall comply with the following, as applicable:

1. If there is a deed for the property, the person shall have the owner of the property record the deed notice with the office of each county recording officer responsible for recording deeds for each county in which the property is located;

2. If the property to which the notice applies is a local, county or State roadway, the person shall provide a paper copy of the document referenced in (c)1 above, and an electronic copy in a read only format, including all of the exhibits, to the following, as applicable:

i. Each road department of each municipality in which the property is located;

ii. Each road department of each county in which the property is located;

iii. The New Jersey Department of Transportation; and

iv. Utility companies with easements on the roadway, and

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3. In all other circumstances, the person shall provide a paper copy of the recorded deed notice, stamped "Filed," or notice, as applicable, and an electronic copy in a read only format, including all of the exhibits, to those individuals and groups listed in (f) below.

(f) The person responsible for conducting the remediation that will use a deed notice prepared pursuant to (d) above, as part of a remedial action for a contaminated site, shall provide, as applicable, a paper copy of the recorded deed notice or document referenced in (c)1 above, and an electronic copy in read only format, including all exhibits, to the following:

1. The Department;

2. The municipal clerk, mayor and town council of each municipality in which the property is located;

3. The local, county, and regional health department in each municipality and county in which the property is located;

4. Each gas, electric, water, sewer, cable company and all other utilities that service the property or have a license or easement to cross the property;

5. The Pinelands Commission if the property is located within an area subject to the jurisdiction of the Pinelands Commission; and

6. Any other person who requests a copy.

(g) Any person who chooses to redevelop or change the use of real property in a manner inconsistent with a remedial action that includes an engineering and/or institutional control, or conduct additional remediation or other activities that would result in the need to file a new deed notice or replace a declaration of environmental restrictions associated with the real property, shall comply with N.J.A.C. 7:26C-2.4.

7:26E-8.3 Ground water classification exception areas

(a) A groundwater classification exception area serves as an institutional control by providing notice that there is groundwater pollution in a localized area caused by a discharge at a contaminated site. The area and depth of groundwater pollution will be determined based on actual groundwater contamination, as well as fate and transport modeling. The Department will establish a groundwater classification exception area as part of a remedial action for groundwater at a contaminated site when the groundwater does not meet the groundwater quality standards, pursuant to N.J.A.C. 7:9C.

(b) The person responsible for conducting the remediation shall submit to the Department a completed CEA/Well Restriction Area (WRA) Permit Fact Sheet form, and the following information:

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1. For each ground water sampling point used to define the CEA, or the subset of those points on the maps required by (b)3 below, provide data tables that include the following data and information as applicable:

i. All contaminants and their concentrations, that exceed the ground water quality standards, from the most recent 24 months of ground water sampling;

ii. If ground water contaminants in the CEA may discharge to a surface water body, include the surface water quality standards applicable to that surface water body pursuant to the Surface Water Quality Standards, N.J.A.C. 7:9B;

iii. The applicable vapor intrusion ground water screening levels pursuant to the Department's Vapor Intrusion Guidance, or site-specific vapor intrusion screening levels for ground water; and

iv. The depth below ground surface to the water table, the approximate depth of the ground water contamination and, where it is known that the top of ground water contamination is below the water table, the thickness of the clean water lens above the contamination;

2. A description of the fate and transport of the contaminant plume, using all available data for the most mobile and persistent contaminants present that exceed the ground water quality standards, including the fate and transport of contaminants in the plume that may volatilize and migrate in the vapor phase. For a classification exception area (CEA) involving chlorinated volatile organic compounds, the description shall address sequential reductive dechlorination of the contaminants. The production of degradation products must be considered when calculating duration and extent of the CEA. The CEA shall be the sum of each individual contaminant duration and extent in ground water. The fate and transport description shall also include:

i. The horizontal and vertical distances that the contaminated ground water plume is expected to travel before contaminant concentrations decrease to or below the applicable ground water quality standards, including, but not limited to:

(1) A brief conceptual site model description; and

(2) A summary and description of all data, information, interpretations, and software used to describe the plume fate and transport and to produce the map required pursuant to (c)3iii below;

ii. The expected duration of the CEA; and

iii. For volatile contaminants in ground water, include a discussion of how changes in property use or conditions could effect the fate and transport of the ground water contamination or vapors emanating from the ground water contamination pursuant to the Department's Vapor Intrusion Guidance;

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3. The following maps and a cross section, as paper copies and in the electronic formats indicated in this paragraph, consistent with Department GIS guidance found on the Department's web site, using data for the most mobile and persistent contaminants from the most recent 24 months:

i. A United States Geological Survey (USGS) Quadrangle map in electronic pdf format indicating the location of the site;

ii. A map in electronic pdf format showing all properties, according to tax block and lot with a reference to the year of the tax map used, under which the contaminant plume is located and is expected to migrate;

iii. A map in both electronic pdf format and GIS compatible format indicating the known and predicted extent of the most mobile and persistent ground water contaminants, the prevailing ground water flow direction, the proposed CEA boundary, and the locations and identifying name/number of each monitoring well or ground water sampling points and any sentinel wells required by N.J.A.C. 7:26E-6.3. Identify the subset of wells that define the furthest downgradient extent of the contamination, the greatest width of the contamination, and at least one well representative of the highest levels of ground water contamination;

iv. A cross section map in both electronic pdf format and GIS compatible format drawn along the prevailing ground water flow direction and the approximate ground water contaminant plume centerline indicating the location of wells and borings used to draw the cross section, the generalized location of the water table, generalized hydrostratigraphy and the known and predicted extent of the contaminant plume, and the proposed CEA boundaries; and

v. A map in both electronic pdf format and GIS compatible format, separate or combined with a map required pursuant to (b)3iii above, showing the location of any area(s) of concern that caused the ground water contamination and the location and name/number of each downgradient monitoring well(s) closest to the area(s) of concern. The North American Industry Classification System (NAICS) code for the operations that caused the contamination, if known, shall be indicated on the CEA/WRA Fact Sheet Form and the attribute table for the GIS map;

4. Documentation of current and projected use of the ground water in the aquifer(s) in which the ground water CEA is located, as follows:

i. The current ground water use based on the most recent well search conducted pursuant to this chapter; and

ii. The future ground water use for a 25-year planning horizon based on the following, without limitation:

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(1) Municipal master plans;

(2) Zoning plans;

(3) Local water purveyor plans and planning data pertaining to the existence of water lines and proposed future installation of water lines;

(4) Local planning officials;

(5) County and local boards of health; and

(6) Local and/or county ordinances restricting installation of potable wells; and

5. Notification, using the CEA/WRA Fact Sheet Form, that certified letters, return receipt requested, have been sent informing the following persons of the need to establish the ground water CEA and a list of the names and addresses of those persons, based on the proposed boundaries of the CEA:

i. The municipal and county clerks for each municipality and county in which the ground water classification exception area will be located;

ii. The local, county and regional health department for each municipality and county in which the ground water classification exception area will be located;

iii. The designated County Environmental Health Act agency for each county in which the ground water classification exception area will be located;

iv. The county planning board for each county in which the ground water classification exception area will be located;

v. The Pinelands Commission if the ground water classification exception area will be located within the jurisdiction of that Commission;

vi. New Jersey Department of Environmental Protection, Water Supply Administration:

(1) Bureau of Safe Drinking Water; and

(2) Bureau of Water Systems and Well Permitting of Water Allocation; and

vii. Each owner of any real property that will be within the foot print of the ground water CEA.

(c) The Department will establish a ground water CEA based upon the actual and projected area and depth of the contaminant plume in the ground water, pursuant to (b) above. A final

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CEA/WRA Permit Fact Sheet issued by the Department will contain the effective date establishing the CEA and its expiration date.

(d) The Department may revise or reestablish a ground water CEA at any time to more accurately reflect ground water conditions using any relevant data, including any data submitted along with the certification required by N.J.A.C. 7:26E-8.6. The Department will issue an updated CEA/WRA Permit Fact Sheet if the CEA is revised or reestablished.

(e) The Department will remove a ground water CEA based upon ground water data, collected pursuant to N.J.A.C. 7:26E-8.6 that indicate that the contaminant concentrations in the ground water meet all of the applicable ground water quality standards.

7:26E-8.4 Monitoring, maintenance, and biennial certification--who has obligation and when

(a) The persons responsible for monitoring the protectiveness of a remedial action that includes an engineering and/or institutional control and for submitting the biennial certifications pursuant to this subchapter include, without limitation, each of the following:

1. Any person with a legal obligation to conduct the remediation, including, without limitation, each of the following:

i. A person in any way responsible, pursuant to the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11a et seq., for the hazardous substance that was the subject of the remedial action that includes the engineering and/or institutional control;

ii. The owner of the site of the discharge at the time of the remedial action that includes the engineering and/or institutional control;

iii. An owner or operator that triggered the Industrial Site Recovery Act, N.J.S.A. 13:1K-6 et seq., for the industrial establishment that was the subject of the remedial action that includes the engineering and/or institutional control;

iv. An owner or operator of an underground storage tank that was the subject of the remedial action that includes the engineering and/or institutional control;

v. A holder of a security interest in the site, who actively participated in the management of the site or underground storage tank facility, that was the subject of the remedial action that includes the engineering and/or institutional control; or

vi. A holder of a security interest in the site, who negligently caused a new discharge at the site after the date of foreclosure on a security interest in the site or the underground storage tank facility, that was the subject of the remedial action that includes the engineering and/or institutional control; and

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2. Once the engineering or institutional control is in place, each owner, lessee and operator of any property that is subject to an engineering or institutional control; this obligation may be limited to the period of that person's ownership, tenancy, or operation depending on that person's continuing liability of the remediation pursuant to the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11gd.

(b) The obligations in this subchapter for the monitoring, maintenance and certifying the protectiveness of remedial actions that include engineering and/or institutional controls apply to all of the persons described in (a) above, for sites with an engineering or institutional control that continues in effect after February 3, 2003, regardless of the date the control was established.

(c) The persons responsible for monitoring the protectiveness of a remedial action that includes an engineering and/or institutional control as part of a remediation shall submit to the Department a certification, pursuant to this section and consistent with N.J.A.C. 7:26E-1.5 on a Remedial Action Protectiveness Certification form provided by the Department, according to the following schedule:

1. For a deed notice and any engineering controls that are described in the deed notice, every two years on the anniversary of the date stamped on the deed notice that indicates when the deed notice was recorded;

2. For a groundwater classification exception area, every two years on the anniversary of the date that the Department established the groundwater classification exception area; and

3. For all other engineering and institutional controls, every two years on the anniversary of when the engineering or institutional control was in place for the site.

(d) The persons responsible for submitting biennial certifications for sites with multiple engineering and/or institutional controls for the remediation of contaminated soil at a site shall:

1. Submit one biennial certification for all remedial actions and all engineering and institutional controls for the site; and

2. Submit to the Department the first biennial certification when the first biennial certification is due to the Department pursuant to (c) above, and biennially thereafter on that same date.

(e) Submissions required pursuant to this subchapter shall be made to the Department as follows:

1. For deed notices and related engineering controls as follows:

i. If the Department continues to oversee any aspect of the remediation at the site, submit information to the following address:

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Department of Environmental Protection
Division of Remediation Management and Response
(Insert name of Bureau overseeing the remediation)
PO Box 028
401 E. State Street
Trenton, NJ 08625-0028

ii. If the Department has issued no further action letters for all areas of concern at the site, submit information to the following address:

Department of Environmental Protection
Division of Remediation Management and Response
Bureau of Operation, Maintenance and Monitoring
Deed Notice Inspection Program
PO Box 413
401 E. State Street
Trenton, NJ 08625-0413

2. For groundwater classification exception areas, submit information to the Bureau that established the groundwater classification exception area as follows:

Department of Environmental Protection
Division of Remediation Management and Response
(Insert name of appropriate Bureau)
PO Box 028
401 E. State Street
Trenton, NJ 08625-0028

7:26E-8.5 Monitoring, maintenance, and biennial certification--requirements for deed notices and declarations of environmental restrictions

(a) The persons responsible for monitoring the protectiveness of a remedial action that includes a deed notice or declaration of environmental restrictions shall:

1. Determinate whether any actual or pending zoning or land-use change is consistent with the use restrictions in the deed notice or declaration of environmental restrictions or could undermine the protectiveness of the remedial action that includes a deed notice or declaration of environmental restrictions in a manner such that could prevent:

i. The remedial action which includes the engineering and/or institutional controls from meeting the applicable health risk standard (see N.J.S.A. 58:10B-12g(3)(b)); and

ii. The remedial action, which includes the engineering and/or institutional controls, from continuing to be protective of public health, safety, and of the environment (see N.J.S.A. 58:10B-12g).

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2. Conduct periodic inspections of the site to identify whether:

i. Any excavation or other disturbance activities have taken place within the restricted areas; and

ii. Any disturbances of the soil at the site have resulted in unacceptable exposure to the soil contamination;

3. Compare New Jersey laws, remediation standards, and other regulations applicable at the time the engineering or institutional control was established with any relevant subsequently promulgated or modified laws, regulations or remediation standards to determine whether:

i. Any changes in applicable laws, regulations, or remediation standards have occurred; and

ii. Each engineering and/or institutional control comply with the requirements of the new laws and regulations; and

4. Develop a detailed log of how the persons responsible for monitoring the protectiveness of the remedial action have maintained and evaluated the engineering control in compliance with this section. The log shall be completed for the time since the first certification due date pursuant to N.J.A.C. 7:26E-8.4, or the last certification and monitoring report was submitted to the Department, whichever is more recent.

(b) The persons responsible for monitoring the protectiveness of a remedial action shall prepare a biennial certification report along with a Remedial Action Protectiveness Certification form, available from the Department, which includes the following information:

1. The name, address and telephone number of the person responsible for maintaining the engineering and institutional controls;

2. Site identifiers (as applicable):

i. Program Interest Name;

ii. Program Interest Number (Preferred ID);

iii. The ISRA ID Number;

iv. The Case Number or Incident Report Number;

v. The UST Registration Number;

vi. The date of each no further action letter for the site;

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vii. The name of the Department's case manager for the site at the time of each no further action letter;

viii. The street address;

ix. The tax block and lot number;

x. The name of each municipality and county in which the site is located; and

xi. The name and license number of the licensed site remediation professional, if applicable;

3. A description of:

i. The physical characteristics of the site; and

ii. The current site operations;

4. A description of each remedial action for the site that included the deed notice or declaration of environmental restrictions;

5. The results of the comparison of applicable laws and regulations pursuant to (a)3 above;

6. The maintenance and evaluation log for each engineering control pursuant to (a)4 above;

7. The dates and results of inspections and maintenance, including all test and sampling results, of each engineering and/or control;

8. A description of any changes in applicable laws, regulations or remediation standards and a proposal for all changes in the remedial action to comply with those changes;

9. A description of any additional action taken to ensure the protectiveness of the remedial action; and

10. A conclusion as to whether each remedial action that includes an engineering and/or institutional control remains protective of the public health and safety and the environment.

(c) The persons responsible for monitoring the protectiveness of a remedial action shall:

1. Certify to the Department that:

i. The deed notice or declaration of environmental restrictions, including all engineering controls, is being properly maintained; and

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ii. The remedial action that includes the deed notice or declaration of environmental restrictions continues to be protective of the public health and safety and the environment;

2. Include with the certification a written monitoring report pursuant to (b) above, along with an electronic copy of the monitoring report and certification, in a read only format acceptable to the Department with a Remedial Action Protectiveness Certification form available from the Department; and

3. Submit the certification and the report required by (c)2 above, according to the schedule in N.J.A.C. 7:26E-8.4(c), to:

i. The municipal and county clerks for each municipality and county in which any property included in the deed notice or declaration of environmental restrictions is located;

ii. The local, county and regional health department for each municipality and county in which any property included in the deed notice or declaration of environmental restrictions is located;

iii. Each owner of the property which is included in the deed notice or declaration of environmental restrictions; and

iv. The Department, at the appropriate address as indicated in N.J.A.C. 7:26E-8.4(e), along with the name and address of each person that was sent a copy of the certification pursuant to (c)3i through iii above.

(d) If the person(s) having the obligation for complying with this section pursuant to N.J.A.C. 7:26E-8.4(a)2 changes:

1. The person who is relinquishing the obligation shall notify the Department of the name, address and telephone number of the person assuming the responsibility and the effective date of the change;

2. The person who is assuming the obligation to comply with (c) above shall submit a letter signed and certified pursuant to N.J.A.C. 7:26E-1.5, stating that he or she is assuming the obligation for compliance with (a) through (c) above; and

3. The letters required by (d)1 and 2 above shall be submitted to the Department within 30 days of the effective date of the change.

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7:26E-8.6 Monitoring, maintenance, and biennial certification--specific requirements for ground water classification exception areas

(a) The person responsible for conducting the remediation shall conduct the monitoring and maintenance of a ground water remedial action, and submit a biennial certification, as required by this section, unless the Department has established a ground water classification exception area for a site pursuant to N.J.A.C. 7:26E-3.12(b)6i.

(b) The persons responsible for monitoring the protectiveness of a remedial action that includes a ground water classification exception area shall:

1. Compare the laws, Ground Water Quality Standards, and other regulations applicable at the time the Department established the groundwater classification exception area, with any relevant subsequently promulgated or modified laws or regulations to determine whether:

i. Any subsequently promulgated or modified laws or regulations apply to the site; and

ii. Each groundwater classification exception area complies with the requirements of the new laws and regulations;

2. Determine whether there are any planned changes within a 25-year water use planning horizon for the aquifer(s) in which the ground water classification exception area is located since the Department established the ground water classification exception area or the last completed biennial review, whichever is more recent, based upon a review of the following:

i. Municipal master plans;

ii. Local zoning plans;

iii. Local water purveyor plans and planning data pertaining to the existence of water lines and proposed future installation of water lines, wells or well fields;

iv. Local planning officials;

v. Local and county ordinances restricting installation of potable wells; and

vi. County and local boards of health;

3. Identify whether there have been any actual changes in the ground water use in the water use planning area since the Department established the ground water classification exception area or the last completed biennial review, whichever is more recent. Changes shall be identified by:

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i. Completing a well search using the Department's CEA Biennial Certification Compliance: Tools for Performing Well Searches for CEA Biennial Certifications for all wells within one mile up-gradient, side-gradient and down-gradient of the ground water classification exception area; and

ii. Identifying all wells, other than ground water monitoring wells, installed within one mile up-gradient, side-gradient and down-gradient of the ground water classification exception area since the Department established the ground water classification exception area or the last completed biennial review, whichever is more recent, using the well search information available on the Department's web site;

4. Inspect all ground water monitoring wells associated with the ground water classification exception area and maintain a log for each monitoring well as follows:

i. Inspect the physical integrity of each well including, determining:

(1) The identification, integrity, and location of the well;

(2) The presence of a functioning pad lock; and

(3) The presence of any additional security measures such as a fence or patrolling of the site;

ii. Identify any damaged or vandalized monitoring wells and either repair or decommission damaged monitoring wells pursuant to N.J.A.C. 7:9D or replace the monitoring wells, as necessary; and

iii. For monitoring wells used to establish the groundwater classification exception area that have been decommissioned pursuant to N.J.A.C. 7:9D, a copy of the well closure report shall be included with the first report, pursuant to (c)6 below, submitted after each well is decommissioned;

5. Identify any land use disturbance, such as the installation of a detention basin, that may intercept the water table within the area of the groundwater classification exception area that could result in a contaminated discharge to surface water. If any such disturbances are identified, sample the groundwater/surface water downgradient and proximate to the land use disturbance to determine whether the groundwater meets the more stringent of either:

i. The New Jersey Surface Water Quality Standards, N.J.A.C. 7:9B; or

ii. The Federal Surface Water Quality Criteria, 40 CFR Part 131;

6. Determine whether:

i. Any of the actual or proposed changes in the ground water use identified pursuant to (b)2 and 3 above have influenced or may influence the protectiveness of the remedial

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action that includes the ground water classification exception area and, if necessary, conduct additional remediation, modify the remedial action, or propose a revision to the ground water classification exception area, and apply for a modification of the ground water remedial action permit to ensure that the remedial action remains protective of the public health and safety and the environment;

ii. There is a need to reevaluate the fate and transport of the ground water contaminant plume or the contaminants in the plume with regard to the risk of vapor intrusion, and, if necessary, conduct additional remediation, modify the remedial action, or propose a revision to the ground water classification exception area, and apply for a modification of the ground water remedial action permit to ensure that the remedial action remains protective of the public health and safety and the environment; and

iii. There are any changes in property use that increase the risk of vapor intrusion from volatile ground water contaminants such that the remedial action is no longer protective of public health and safety. If such changes are identified, perform additional public outreach, consistent with the notification requirements at N.J.A.C. 7:26E-8.3(b)5, and any additional remediation, and apply for a modification of the ground water remedial action permit necessary to address the vapor intrusion risk using the NJDEP Vapor Intrusion Guidance on the Department's web site; and

7. Assess ground water quality as follows:

i. Within 180 calendar days after the projected expiration of the ground water classification exception area, collect at least two rounds of ground water samples such that the time between sampling events shall account for seasonal fluctuations in the ground water table and the number of ground water samples collected are representative of the entire horizontal and vertical extent of the ground water classification exception area;

ii. Evaluate the results of the groundwater sampling conducted pursuant to (a)7i above, to determine whether the contaminant concentrations in the groundwater have either:

(1) Decreased to or below the applicable groundwater quality standards throughout the entire classification exception area; or

(2) Not decreased to or below the applicable groundwater quality standards throughout the entire classification exception area; and

iii. At any other time prior to the projected expiration of the ground water classification exception area, ground water sampling may be performed to determine whether the ground water meets the applicable ground water quality standards. The number of samples collected and the time between sampling events shall be consistent with (b)7i above. If ground water samples indicate that contaminant concentrations have decreased to or below the applicable ground water quality standards throughout the

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ground water classification exception area, then any person may request that the Department remove the ground water classification exception area.

(c) The persons responsible for evaluating the protectiveness of a remedial action that includes a ground water classification exception area shall prepare a Biennial Certification Report using the form, available from the Department, that includes the following:

1. The name, address and telephone number of the person responsible for preparing the report;

2. Site identifiers, as applicable:

i. Program Interest Name and number (Preferred ID);

ii. The ISRA ID Number;

iii. The Case Number or Incident Report Number;

iv. The UST Registration Number;

v. The date of each no further action letter for the site;

vi. The street address;

vii. The tax block and lot number and the year of the tax map from which this information is obtained; and

viii. The name of each municipality and county in which the site is located; and

ix. The name and the license number of the licensed site remediation professional if applicable;

3. A description of:

i. The physical characteristics of the site;

ii. The current site operations; and

iii. Each remedial action that includes a groundwater classification exception area;

4. The results, in table format, of the comparison of applicable laws and regulations pursuant to (b)1 above;

5. The results of the evaluation of the changes in ground water use conducted pursuant to (b)2 and 3 above, including locating and identifying on a scaled map all wells and/or

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waterlines found within one mile from any part of the boundaries of the ground water classification exception area;

6. The maintenance and evaluation log for each monitoring well pursuant to (b)4 above, including:

i. A description of any well damage or vandalism identified or repairs completed pursuant to N.J.A.C. 7:26E-4.4(g)11; and

ii. A copy of the Well Abandonment Report for each monitoring well used to establish the ground water classification exception area that has been decommissioned pursuant to N.J.S.A. 58:4A-1 et seq. and N.J.A.C. 7:9D since the Department established the ground water classification exception area or the last completed biennial review, whichever is more recent;

7. For each land use disturbance identified pursuant to (b)5 above:

i. A description of the disturbance;

ii. The results of all groundwater sampling required pursuant to (b)5, above; and

iii. A discussion of whether the groundwater meets the more stringent of either:

(1) The New Jersey Surface Water Quality Standards, N.J.A.C. 7:9B; or

(2) The Federal Surface Water Quality Criteria, 40 CFR Part 131;

8. A discussion of:

i. Actual or proposed changes in the ground water use pursuant to (b)6i above, including any additional remediation conducted, modification of the remedial action, or proposed revision to the ground water classification exception area, and apply for a modification of the ground water remedial action permit to ensure that the remedial action remains protective of the public health and safety and the environment;

ii. The reevaluation of the fate and transport of the ground water contamination plume pursuant to (b)6ii above, including any additional remediation conducted, modification of the remedial action, or proposed revision of the ground water classification exception area, and apply for a modification of the ground water remedial action permit to ensure that the remedial action remains protective of the public health and safety and the environment; and

iii. The evaluation of any changes in property use that increase the risk of vapor intrusion from volatile ground water contaminants pursuant to (b)6iii above, including any additional remediation conducted to address the vapor intrusion risk using the

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Department's Vapor Intrusion Guidance, and apply for a modification of the ground water remedial action permit.

9. When groundwater sampling is required pursuant to (b)7 above, present and evaluate the contaminant concentrations in the groundwater to determine whether the concentrations have either:

i. Decreased to or below the applicable groundwater quality standards throughout the entire classification exception area; or

ii. Not decreased to or below the applicable groundwater quality standards throughout the entire classification exception area;

10. A revised ground water classification exception area application consistent with the requirements of N.J.A.C. 7:26E-8.3, if ground water monitoring pursuant to this subchapter indicates that a revision to the ground water classification exception area is necessary;

11. The dates and results of inspections and maintenance, including all ground water sampling results for each ground water classification exception area;

12. A description of any additional remediation or action taken to ensure the protectiveness of the remedial action that includes the ground water classification exception area;

13. For the first biennial certification required after the projected expiration of the ground water classification exception area, if the contaminant concentrations in the ground water have not decreased to or below the applicable ground water quality standards throughout the classification exception area, the person responsible for evaluating the protectiveness shall submit:

i. A narrative, detailing why ground water contamination is still present;

ii. A description of any additional remediation conducted; and

iii. A revised ground water classification exception area application pursuant to (c)10 above; and

14. A certification, in a format as specified in the Department's CEA Guidance and based on the evaluation required by this section, that the remedial action continues to be protective of the public health and safety and the environment.

(d) The persons responsible for monitoring the protectiveness of a remedial action that includes a ground water classification exception area shall submit the certification required by (c)14 above, with a form available from the Department, to the entities listed in (d)1 and 2 below, and according to the schedule at N.J.A.C. 7:26E-8.4(c). The persons shall include in the notification a statement that the biennial certification report supporting the certification is

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available upon request from the persons responsible for monitoring the protectiveness of a remedial action and include appropriate contact information. The entities to notify are:

1. Each external agency that was notified about the ground water classification exception area pursuant to N.J.A.C. 7:26E-8.3(b)5; and
2. Each property owner notified about the ground water classification exception area pursuant to N.J.A.C. 7:26E-8.3(b)5vii.

7:26E-8.7 Monitoring, maintenance, and biennial certification--engineering and institutional controls

(a) The persons responsible for monitoring the protectiveness of a remedial action that includes any other engineering or institutional control not included in N.J.A.C. 7:26E-8.5 or 8.6 shall:

1. Monitor each institutional control by:

i. Conducting periodic inspections of the site to ensure that:

(1) The use of the site is consistent with any restrictions in the institutional control; and

(2) The institutional control and the remedial action of which it is a part continue to be protective of the public health and safety and of the environment; and

ii. Evaluating any actual or pending zoning or land-use changes that could undermine the protectiveness of any remedial action for the site;

2. Monitor each engineering control by:

i. Periodically reviewing the documented operation and maintenance records for each engineering control according to the requirements included in the deed notice;

ii. Conducting periodical inspections of each engineering control to determine:

(1) The integrity, operability, and effectiveness of the engineering control; and

(2) Whether the engineering control and the remedial action, of which it is a part, continue to be protective of the public health and safety and of the environment;

3. Compare the laws, remediation standards and other regulations applicable at the time the engineering or institutional control was established with any subsequently promulgated or modified laws, regulations or remediation standards to determine whether or not:

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i. Any subsequently promulgated or modified laws or regulations apply to the site; and

ii. Each engineering and/or institutional control in place for the site meet those new laws and regulations; and

4. Develop a detailed log of how the persons responsible for monitoring the protectiveness of the remedial action that includes an engineering control have maintained and evaluated the engineering controls in compliance with this section, since the first certification due date pursuant to N.J.A.C. 7:26E-8.4(d), or the date the persons responsible submitted the last certification and monitoring report to the Department, whichever is more recent.

(b) For each engineering and institutional control, the persons responsible for monitoring the protectiveness of a remedial action that includes any other engineering or institutional control not included in N.J.A.C. 7:26E-8.5 or 8.6 shall prepare a monitoring report that includes the following information:

1. The name, address and telephone number of each person responsible for maintaining the engineering and/or institutional control;

2. Site identifiers (as applicable):

i. Program Interest Name;

ii. Program Interest Number (Preferred ID);

iii. The ISRA ID Number;

iv. The Case Number or Incident Report Number;

v. The UST Registration Number;

vi. The date of each final remediation document for the site that included an engineering and/or institutional control;

vii. The name of the Department's case manager, if applicable, for the site at the time of each final remediation document;

viii. The street address;

ix. The tax block and lot number;

x. The name of each municipality and county in which the site is located; and

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xi. The name and the license number of the licensed site remediation professional, if applicable;

3. A description of:

i. The physical characteristics of the site; and

ii. The current site operations;

4. A description of each remedial action for the site that included an engineering or institutional control:

5. The results of the comparison of applicable laws and regulations pursuant to (a)3 above;

6. The maintenance and evaluation log for each engineering control pursuant to (a)4 above;

7. The dates and results of all inspections and maintenance, including all test and sampling results, of each engineering and/or institutional control;

8. A description of any additional action taken to ensure the protectiveness of the remedial action that includes the engineering and/or institutional control; and

9. A conclusion as to whether each remedial action that includes an engineering and/or institutional control remains protective of the public health and safety and of the environment.

(c) The persons responsible for monitoring the protectiveness of a remedial action that includes any other engineering or institutional control not included in N.J.A.C. 7:26E-8.5 or 8.6 shall:

1. Certify to the Department that:

i. Each engineering and institutional control is being properly maintained; and

ii. The remedial action that includes the engineering and institutional controls continues to be protective of the public health and safety and of the environment;

2. Include with the certification a written monitoring report pursuant to (b) above, along with an electronic copy of the monitoring report and certification, in a read only format acceptable to the Department; and

3. Submit the certification to the Department pursuant to N.J.A.C. 7:26E-1.5(a)2.

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APPENDIX A - Laboratory Data Deliverables Formats

I. Full Laboratory Data Deliverables--USEPA/CLP Methods

Full laboratory data deliverables for USEPA/CLP analyses may be requested when the following Statements of Work are employed:

"USEPA Contract Laboratory Program Statement of Work for:

A) Organics Analysis, Multi-Media, Multi-Concentration"

B) Inorganics Analysis, Multi-Media, Multi-Concentration"

C) Organics Analysis, Multi-Media, High-Concentration"

D) Inorganics Analysis, Multi-Media, High-Concentration"

E) Low Concentration Water for Organic Analysis"

F) Low Concentration Water for Volatile Organic Analysis"

G) Low Concentration Water for Inorganic Analytes"

H) Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans"

The Full laboratory data deliverables required for USEPA/CLP analyses are listed in the versions of the above noted Statements of Work in effect as of the date of sample analysis by the laboratory. Additionally, mass spectral negative proofs¹ are required where applicable, "clean" soil method blanks² for nonaqueous samples are not permitted, and laboratory internal chain of custody documentation is required.

II. Full Laboratory Data Deliverables--Non-USEPA/CLP Methods

These deliverables shall be the "Regulatory Format" data deliverables listed in the version of the Professional Laboratory Analytical Services contract issued by the N.J. Department of Treasury, Division of Purchase and Property in effect as of the date of sample analysis by the laboratory.

III. Reduced Laboratory Data Deliverables--USEPA/CLP Methods

Reduced laboratory data deliverables for USEPA/CLP analyses may be required when the "USEPA Contract Laboratory Program Statement of Work for Organic Analyses, Multi-Media, Multi-Concentration"; the "USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, Multi-Media, Multi-Concentration"; "USEPA Contract Laboratory Program Statement of Work for Organics Analysis, Multi-Media, High Concentration"; and/or the

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"USEPA Contract Laboratory Program Statement of Work for Inorganics Analysis, Multi-Media, High Concentration are employed. Data generated via the other above noted Statements of Work may NOT be delivered in the reduced format.

A. Organics

All laboratory data deliverables required for USEPA CLP analyses for organics via the appropriate Statement of Work are the same as those listed above in the Full Laboratory Data Deliverables--USEPA/CLP requirements and must be submitted with the following exceptions:

1. Chromatograms of standards (calibrations) are not required.
2. Chromatograms and spectra for matrix spikes and matrix spike duplicates are not required.

B. Inorganics

The Reduced laboratory data deliverables required for USEPA/CLP analyses for inorganics are all the Inorganics Data Reporting Forms as specified in the version of the above noted Statement of Work for Inorganics in effect as of the date of sample analysis by the laboratory.

IV. Reduced Laboratory Data Deliverables--Non-USEPA/CLP Methods

This attachment presents reduced laboratory data deliverables requirements for Non-USEPA/CLP Methods. The deliverable package is divided into six (6) sections:

1. General Requirements
2. GC/MS Requirements
3. GC Requirements
4. Metals Requirements
5. General Chemistry Requirements
6. Petroleum Hydrocarbons Requirements

1. General Requirements

A. The data deliverable package shall be bound and paginated with margins, bindings and of reproduction quality such that all pages are legible.

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B. Title/Cover Page

The format for QA/QC documentation shall be simplified as much as possible for ease of review and reference. The report shall begin with a cover page that includes the laboratory certification number, if applicable, facility name, address and date of report preparation.

The report shall include a summary table that cross-references the field identification number to the laboratory identification number for each sample. This table is needed to locate laboratory information for specific field samples. Sample numbers used in the field are always different than those used in the laboratory and therefore shall be reconciled before submitting the results to Department.

C. Chain of Custody

The Chain of Custody (COC) shall ensure the secure and appropriate handling of samples from the site to the laboratory as well as the movement of the sample within the laboratory until analysis is completed. The COC remains with the samples at all times and bears the name of the person assuming responsibility of the samples and the date. The COC is acceptable when there are no lapses in sample custody.

D. Methodology Review

The Methodology Review shall list method numbers, with a detailed discussion of any method modification.

E. Laboratory Chronicle

The laboratory chronicle shall detail actual sample holding times and specify the sample condition upon receipt at the laboratory (including sample temperature and pH when pH adjustment is required). Holding time begins at the time of sample collection.

F. Conformance/Non-Conformance Summary

A non-conformance summary shall be completed and signed by the laboratory. This summary states that the laboratory has reviewed the quality assurance and quality control measures for sample analysis. It identifies any deviations from the accepted practices or results.

2. GC/MS Requirements

A. Analytical Results Summary--An analytical results summary form shall be submitted for each sample and for each GC/MS analytical fraction (i.e., volatiles and semi-volatiles). Each form shall contain the following information: date sample received, date sample extracted, date sample analyzed, sample weight/volume, sample moisture

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content, dilution factor, GC column used, list of analytes, method detection limit, practical quantitation level and detected analyte concentrations. In addition a separate form for tentatively identified compounds (TICs) shall be submitted for each sample and for each GC/MS analytical fraction. Each TIC shall be identified by compound name or class (if it can be determined) and CAS number along with its retention time and estimated concentration.

B. Tuning Results Summary--Tuning results for all initial and continuing calibrations that are associated with all samples shall be submitted for each GC/MS analytical fraction. Each form shall contain the following information: laboratory file ID, instrument ID, injection date and time, the m/e (mass to ion charge) listing for the key ions, the reported ion relative abundance, the ion abundance criteria and a listing of all standards, blanks, QC samples and field samples (including date and time of analysis) associated with the tune.

C. Method Blank Results Summary--An analytical results form shall be submitted for all method blanks associated with all field samples for all analytical fractions. Each form shall contain the information listed in Section 2A above, as well as a listing of all field and QC samples associated with each method blank. In addition, a separate form for TICs shall be submitted which contains the information listed in Section 2A above.

D. Calibration Summary--A summary of all initial and continuing calibrations that are associated with all samples and blanks shall be submitted for each GC/MS analytical fraction. The following information shall be provided for each initial calibration: instrument ID, calibration date and time, listing of standard concentrations used, laboratory file ID for each calibration standard, listing of all associated field samples, QC samples and blanks, retention times for each target analyte and surrogate compound, listing of the relative response factor (RRF) for each target analyte and surrogate compound, the average RRF for each target analyte and surrogate compound, and percent relative standard deviation for each target analyte and surrogate compound. The following information shall be provided for each continuing calibration: instrument ID, calibration date and time, date and time of the associated initial calibration, the standard concentration used, the laboratory file ID for the calibration standard, listing of all associated field samples, QC samples and blanks, retention times for each target analyte and surrogate compound, the average RRF for each target analyte and surrogate compound from the associated initial calibration, the RRF for each target analyte and surrogate compound from the continuing calibration and the percent difference for each target analyte and surrogate compound.

E. Surrogate Compound Recovery Results Summary--If required by the analytical method, a summary form shall be submitted which contains the following information for all field samples, method blanks and QC samples for each GC/MS analytical fraction: sample identification number, sample matrix, surrogate compound names, concentration of surrogate compounds used, surrogate compound recoveries and QC limits for each surrogate compound.

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F. Matrix Spike/Matrix Spike Duplicate Results Summary--If required by the analytical method, a summary form shall be submitted for each sample matrix and each GC/MS analytical fraction which contains the following: sample identification number for the sample selected for spiking, list of compounds being spiked, concentration of each spiked compound, matrix spike concentration, matrix spike percent recovery, matrix spike duplicate concentration, matrix spike duplicate percent recovery, relative percent difference and QC limits for percent recovery and relative percent difference.

G. Internal Standard Summary--A summary form shall be submitted which contains the following information for all standards, field samples, method blanks and QC samples for each analytical fraction: sample ID number, ID of laboratory calibration standard, internal standard compound names, concentration of internal standards compounds, retention times of each internal standard, area of each internal standard, and QC criteria (where applicable) for internal standard areas and retention times.

H. Chromatograms--The total ion chromatograms for all field samples and method blanks. All peaks on the chromatograms shall be identified as either an internal standard, surrogate compound, target compound or non-target compound. All peaks on a chromatogram shall also be associated with retention times, either directly on the chromatogram or identified and cross-referenced in tabular form.

3. GC Requirements

A. Analytical Results Summary--An analytical results form shall be submitted for each sample. Each form shall contain the information contained in Section 2A above.

B. Method Blank Results Summary--An analytical results form shall be submitted for all method blanks as well as a listing of all field and QC samples associated with each method blank. Each form shall contain the information contained in Section 2A above.

C. Standards Summary--A summary form containing GC standards information for all associated samples shall be submitted for both primary and confirmation (if applicable) analyses. This summary shall contain the following information: instrument ID number, GC column used and notation if primary or confirmation analysis, date and time of standard(s) analysis, listing of all associated field, QC and method blank samples, listing of target compounds, retention time windows of each target compound and calibration factor for each target compound.

D. Surrogate Compound Recovery Results Summary--If required by the analytical method, a summary form shall be submitted which contains the following information for all field samples, method blanks, and QC samples: sample identification number, sample matrix, surrogate compound names, concentration of surrogate compounds used, surrogate compound recoveries and QC limits for each surrogate compound.

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E. Matrix Spike/Matrix Spike Duplicate Results Summary--If required by the analytical method, a summary form shall be submitted for each sample matrix which contains the information contained in Section 2F above.

F. Retention Time Shift Summary--If required by the analytical method, a summary form containing retention time shift results shall be submitted for both the primary and confirmation (if applicable) analyses. The form shall contain the following information: instrument ID number, GC column used and notation if primary or confirmation column analysis, name of retention time shift marker compound, list of all field samples, method blanks and QC samples, date and time of analysis of all field samples, method blanks and QC samples, percent difference of the retention time shift and QC limits for the retention time shift.

G. Chromatograms--The primary analysis chromatograms and confirmation analysis chromatogram (when applicable) for all field samples and method blanks shall be submitted. All peaks on the chromatogram attributable to target and surrogate compounds shall be identified as such along with the retention time for each peak. The reference standard chromatogram for all multi-peak target compounds (e.g., toxaphene, PCBs) for both the primary and the confirmation analysis (when applicable) shall also be submitted.

4. Metals Requirements

A. Analytical Results Summary--An analytical results form shall be submitted for each sample. Each form shall contain the following information: sample identification number (laboratory and/or field ID), sample matrix, date sample received, date sample analyzed, sample moisture content, dilution factor (if any), list of target analytes and detected analyte concentrations and method detection limits.

B. Blank Results Summary--A blank results form shall be submitted for all instrument calibration blanks and reagent blanks associated with all field and QC samples. Each form shall contain the following information: list of all target analytes, matrix of the reagent blank, concentration units of the reagent blank, reported concentration of all target analytes found in all calibration and reagent blanks and method detection limits.

C. Calibration Summary--A calibration summary shall be submitted for all initial calibration standards and check standards associated with field samples, blanks and QC samples. Each form shall contain the following information: list of all target analytes, the true concentration for the initial calibration standards, the reported (or found) concentrations for the initial calibration standards and check standards, the percent recovery for each initial calibration standard and check standard and the percent recovery QC limits for each target analyte. In addition, this form shall also list the method detection limit and instrument detection limit for each target analyte.

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D. ICP Interference Check Sample Results Summary--If metals analysis is being conducted by ICP methodology, results of the interference check samples analysis shall be reported. The following information shall be reported: list of all target analytes in the interference check sample, the true concentration of analytes in the interference check sample, the reported concentrations of analytes found in the interference check sample for both the initial and final check samples analyses, the percent recovery of the target analytes found in the initial and final check samples analyses and the QC control limits for percent recovery values.

E. Spike Sample Results Summary--A summary of the spike sample analysis shall be submitted. The following information shall be reported: ID number of the sample chosen for spiking, sample matrix, the concentration of each spiked target analyte, the results of the unspiked sample analysis, the results of the spiked sample analysis, the percent recovery for each spiked analyte and the QC limit for percent recovery for each spiked analyte.

F. Duplicate Sample Results Summary--A summary of the duplicate sample analysis shall be submitted. The following information shall be reported: ID number of the original sample and the duplicate samples, sample matrix, results of the original sample analysis, results of the duplicate sample analysis, the relative percent difference of each target analyte for the original duplicate sample analyses and the QC limit for relative percent difference for each target analyte.

G. Laboratory Control Sample Results Summary--When specified by the analytical method, the results of the laboratory control (quality control) sample shall be submitted. The following information shall be reported: control sample matrix, list of all target analytes, the true concentration for each analyte in the control sample, the reported concentration for each target analyte in the control sample, the percent recovery for each target analyte and the QC limit for percent recovery for each target analyte.

H. Serial Dilution Summary--If required by the analytical method, a summary of the serial dilution results shall be submitted. The following information shall be reported: ID number of the original sample and the serial dilution samples, sample matrix, results of the original sample analysis, results of the serial dilution sample analysis, the percent difference of each target analyte compared to the original analytes' results and the QC limit for percent difference for each target analyte.

5. General Chemistry Requirements

A. Analytical Results Summary--An analytical results form shall be submitted for each sample. Each form shall contain the following information: sample identification number (laboratory and/or field ID), sample matrix, date sample received, date sample analyzed, sample moisture content, dilution factor (if any), list of target analytes and detected analyte concentrations and method detection limits.

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B. Blank Results Summary--A blank results form shall be submitted for all method blank samples associated with all field and QC samples. Each form shall contain the following information: list of all target analytes, matrix of the method blank, concentration units of the method blank, reported concentration of all target analytes found in all method blanks.

C. Spike Sample Results Summary--A summary of the spike sample analysis shall be submitted. The following information shall be reported: ID number of the sample chosen for spiking, sample matrix, the concentration of each spiked target analyte, the results of the unspiked sample analysis, the results of the spiked sample analysis, the percent recovery for each spiked analyte and the QC limit for percent recovery for each spiked analyte.

D. Duplicate Sample Results Summary--A summary of the duplicate sample analysis shall be submitted. The following information shall be reported: ID number of the original sample and the duplicate samples, sample matrix, results of the original sample analysis, results of the duplicate sample analysis, the relative percent difference of each target analyte for the original duplicate sample analyses and the QC limit for relative percent difference for each target analyte.

6. Petroleum Hydrocarbon Requirements

A. Analytical Results Summary--An analytical results form shall be submitted for each sample. Each form shall contain the information contained in Section 2A above. In addition, the identification of the GC instrument employed and the volume of extract injected shall be included.

B. Method Blank Summary--An analytical results form shall be submitted for all method blanks as well as a listing of all field and QC samples associated with each method blank. Each form shall contain the information in Section 6A above.

C. Standards Summary--A summary form containing GC standards information for all associated samples shall be submitted for all analyses. This summary shall contain the following information: instrument ID number, GC column used, date and time of standard(s) analysis, volume injected, listing of all associated field, QC and method blank samples, identity of each analyte in the hydrocarbon standard and/or the identity of petroleum product standard(s), retention times of each analyte in the hydrocarbon standard (when applicable), retention times of the surrogates and internal standard (when applicable), retention times of pristane and phytane (when applicable), retention time windows for each surrogate (when applicable), response factors/relative response factors used for quantitative determinations, response factors/relative response factors of surrogates, and percent relative standard deviations/percent differences of the surrogates.

D. Surrogate Compound Recovery Results Summary--If required by the analytical method, a summary form shall be submitted which contains the following information for all field samples, method blanks, and QC samples: sample identification number, sample

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matrix, surrogate compound names, concentration of surrogate compounds used, surrogate compound recoveries and QC limits for each surrogate compound.

E. Matrix Spike Results Summary--If required by the analytical method, a summary form shall be submitted which contains the following information: ID number of the sample chosen for spiking, sample matrix, the concentration of each spiked analyte/petroleum product, the results of the unspiked sample analysis, the results of the spiked sample analysis, the percent recovery for each spiked analyte/petroleum product and the QC limit for percent recovery for each spiked analyte/petroleum product.

F. Quality Control Check Standard--If required by the analytical method, a summary form shall be submitted which contains the following information: ID number of the sample, concentration of each spiked analyte/petroleum product, the results of the spiked sample analysis, the percent recovery for each spiked analyte/petroleum product, and the QC limit for percent recovery for each spiked analyte/petroleum product.

G. Duplicate Sample Results Summary--A summary of the duplicate sample results shall be submitted which contains the following: ID numbers of the original sample and the duplicate sample, sample matrix, results of the original sample analysis, results of the duplicate sample analysis, the relative percent difference calculated from the original and duplicate sample results and the QC limit for the relative percent difference (when applicable).

H. Quantitation Reports--Instrument quantitation reports shall be submitted for all field samples, QC samples, method blanks and standards.

I. Chromatograms--Chromatograms for all field samples, QC samples, method blanks and standards shall be submitted. All surrogate, internal standard (when applicable), pristane and phytane peaks on the chromatogram shall be identified along with the retention time for each peak.

¹ A negative proof is a mass spectrum offered as evidence to support an analyst's decision to negate the presence of a contaminant which has been qualitatively identified and reported by the instrument's data system.

² Method blanks for nonaqueous samples shall consist of performing the entire analytical procedure without any actual sample being present. The appropriate amount of sodium sulfate as specified in the current Statements of Work for Organics would be substituted as the "sample" for the semivolatile and pesticide/arochlor fractions.

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APPENDIX B - (RESERVED)

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APPENDIX C - Mann-Whitney U-Test*

The random variable to be analyzed shall be the concentrations of the individual contaminants of concern in each individual monitoring well. The statistic to be evaluated is the Mann-Whitney "U". The test shall be a Mann-Whitney U-test with the size of the test equal to 0.1. The hypotheses (H) to be tested are:

$$H_0: \hat{\theta}_1 \leq \hat{\theta}_2 \text{ (null hypothesis)}$$

$$H_1: \hat{\theta}_1 > \hat{\theta}_2 \text{ (alternate hypothesis)}$$

where $\hat{\theta}_2$ represents the stochastic size of the population of each individual contaminant during the most recent 12 month period of sampling and $\hat{\theta}_1$ represents the stochastic size of the population of each individual contaminant during the previous 12 month period. The test is applied to each contaminant in each individual monitoring well. In other words, if benzene and trichloroethene are the contaminants of concern, and there are four monitoring wells involved in the sampling program, then a total of eight Mann-Whitney tests are to be performed (benzene in each of the four monitoring wells and trichloroethene in each of the four monitoring wells).

The U statistic shall be evaluated as follows:

1. The test is applied to eight consecutive quarters of analytical data for each individual contaminant in each individual monitoring well.
2. For each quarter of data, annotate the concentration of the specific contaminant in the specific monitoring well with either a "b" for the most recent four quarters or an "a" for the four quarters from the previous 12 month period.
3. Vertically arrange the eight contaminant concentrations, with notations, in order of increasing value: the lowest value on the top, and the greatest value on the bottom.
4. For each individual "a" concentration, count the number of "b" concentrations that occur below that "a" concentration in the column.
5. Add the four values (zero or some positive number) obtained for Step 4 to calculate the "U" value.
6. All values of non-detectable (ND) or values detected below the limits of quantitation are to be ranked as "zero." It is required that appropriate detection levels/quantitation limits be achieved.
7. If two or more concentrations are identical, then two vertical columns are necessary. In the first column, rank tying "b" concentrations first, and in the second column rank tying "a" concentrations first. Calculate an interim "U" for each column ("Ua" and "Ub"). The average of these interim values is the actual "U". This is shown in Example 2, below.

The hypotheses shall be tested as follows:

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1. If "U" is three or less, the null hypothesis is rejected, and it is concluded, with at least 90 percent confidence, that the concentration for the individual contaminant has decreased with time at the specific monitoring well.

2. If "U" is greater than three, the null hypothesis is accepted, and it cannot be concluded, with 90 percent or greater confidence, that the concentration for the individual contaminant has decreased with time at the specific monitoring well.

* Adapted from Mann, H. B. and Whitney, D.R., 1947, On a test of whether one of two random variables is stochastically larger than the other., Ann. Math. Statist., 18, pp. 52-54.

EXAMPLE 1: All data points are numerically unique

1. Individual Contaminant: TCE
Individual Monitoring Well: MW-1

2. Monitoring quarters:

	$\hat{\theta}_1$ [Year 1]					$\hat{\theta}_2$ [Year 2]			
Sampling Round:	1	2	3	4		5	6	7	8
Sampling Result:	506a	1021a	612a	265a		543b	261b	77b	379b
(ppb)									
(concentration)									

3. 77b
261b
265a
379b
506a
543b
612a
1021a

4. 265a=2, 506a=1, 612a=0, 1021a=0

5. 2+1+0+0=3, U=3

Conclusion: "U" is three, therefore the null hypothesis is rejected, and it is concluded, with 90 percent or greater confidence, that the first sampling set ($\hat{\theta}_1$) is greater than the second sampling set ($\hat{\theta}_2$), and therefore that the concentration for the specific contaminant in the specific monitoring well has decreased over the period of the ground water monitoring program.

EXAMPLE 2: two or more numerically identical data points

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1. Individual Contaminant: TCE
Individual Monitoring Well: MW-1

2. Monitoring quarters:

	$\hat{\theta}_1$ [Year 1]					$\hat{\theta}_2$ [Year 2]			
Sampling Round:	1	2	3	4		5	6	7	8
Sampling Result:	28a	NDa	61a	NDa		63b	NDb	77b	79b
(ppb)									
(concentration)									

3. a] NDb
NDa
NDa
28a
61a
63b
77b
79b
- b] NDa
NDa
NDb
28a
61a
63b
77b
79b

4. a] NDa=3, NDa=3, 28a=3, 61a=3
b] NDa=4, NDa=4, 28a=3, 61a=3

5. a] 3+3+3+3=12 Ua=12 ==> U=13.0
b] 4+4+3+3=14 Ub=14

Conclusion: "U" is thirteen, therefore we accept the null hypothesis, and we cannot conclude, with 90 percent or greater confidence, that the first sampling set ($\hat{\theta}_1$) is greater than the second sampling set ($\hat{\theta}_2$), and we cannot conclude that the concentration for that specific contaminant has decreased with time.

APPENDIX D - HISTORIC FILL DATABASE

APPENDIX D Historic Fill Database Summary Table

	Minimum (ppm) ¹	Maximum (ppm) ¹	Avg (ppm) ¹	Number of Samples	Number > URU CDCSCC ²	% > URU CDCSCC ²	Number > RU CDCSCC ²	% > RU CDCSCC ²
B(a)A ³	0.03	160.0	1.37	441	126	29	33	7
B(a)P ³	0.02	120.0	1.89	431	146	34	146	34
B(b)F ³	0.02	110.0	1.91	426	118	28	39	9
B(k)F ³	0.02	93.0	1.79	412	101	25	26	6
I(1)P ³	0.02	67.0	1.41	397	70	18	18	5
D(a)A ³	0.01	25.0	1.24	286	78	27	78	27
Arsenic	0.05	1098	13.2	369	35	9	35	9
Be ³	0.01	79.7	1.23	213	21	10	21	10
Cadmium	0.02	510	11.1	236	147	62	5	2
Lead	0.28	10700	574	538	259	48	119	22
Zinc	2.45	10900	575	197	80	4	8	4

¹ ppm = parts per million

² URU = Unrestricted Use, RU = Restricted Use, CDCSCC = Current Direct Contact Soil Cleanup Criteria

³ B(a)A = Benzo(a)anthracene, B(a)P = Benzo(a)pyrene, B(b)F = Benzo(b)fluorene, B(k)F = benzo(k)fluoranthene, I(1)P = Indeno(1,2,3-cd)pyrene, D(a)A = Dibenzo(a,h)anthracene, Be = Beryllium

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APPENDIX E - MODEL DEED NOTICE

The model document in this appendix contains blanks and matter in brackets []. These blanks shall be replaced with the appropriate information prior to submission to the Department for approval. The model document in this appendix is not subject to the variance provisions of N.J.A.C. 7:26E-1.7.

Matter bracketed [] is not intended for deletion, but rather is intended to be descriptive of the variable information that may be contained in the final document.

IN ACCORDANCE WITH N.J.S.A. 58:10B-13, THIS DOCUMENT IS TO BE RECORDED IN THE SAME MANNER AS ARE DEEDS AND OTHER INTERESTS IN REAL PROPERTY.

Prepared by: _____
[Signature]

[Print name below signature]

Recorded by:

[Signature, Officer of County Recording Office]

[Print name below signature]

DEED NOTICE

This Deed Notice is made as of the _____ day of _____, _____, by *[Insert the full legal name and address of each current property owner]* (together with his/her/its/their successors and assigns, collectively "Owner").

1. THE PROPERTY. *[Insert the full legal name and address of each current property owner]* *[Insert as appropriate: "is", or "are"]* the owner in fee simple of certain real property designated as Block(s) _____ Lot(s) _____, on the tax map of the *[Insert, as appropriate: City/Borough/Township/Town]* of *[Insert the name of municipality]*, *[Insert the name of county]* County; the New Jersey Department of Environmental Protection Program Interest Number (Preferred ID) for the contaminated site which includes this property is *[Insert the Program Interest Number (Preferred ID)]*; and the property is more particularly described in Exhibit A, which is attached hereto and made a part hereof (the "Property").

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2. DEPARTMENT'S ASSIGNED BUREAU. The *[insert name of Bureau]* was the New Jersey Department of Environmental Protection program that was responsible for the oversight of the remediation of the Property. The matter was Case No. *[insert Program Interest Number (Preferred ID)]*.

3. SOIL CONTAMINATION. *[Insert the full legal name of the person that was responsible for conducting the remediation]* has remediated contaminated soil at the Property, and the New Jersey Department of Environmental Protection approved a remedial action on *[Insert date of Department's approval]*, such that soil contamination remains in certain areas of the Property which contains contaminants in concentrations that do not allow for the unrestricted use of the Property; this soil contamination is described, including the type, concentration and specific location of such contaminants, in Exhibit B, which is attached hereto and made a part hereof. As a result, there is a statutory requirement for this Deed Notice *[include if appropriate: and engineering controls]* in accordance with N.J.S.A. 58:10B-13.

4. CONSIDERATION. In accordance with the New Jersey Department of Environmental Protection's approval of the remedial action work plan for the remediation of the site which included the Property, and in consideration of the terms and conditions of that approval, and other good and valuable consideration, Owner has agreed to subject the Property to certain statutory and regulatory requirements which impose restrictions upon the use of the Property, to restrict certain uses of the Property, and to provide notice to subsequent owners, lessees and operators of the restrictions and the monitoring, maintenance, and biennial certification requirements outlined in this Deed Notice and required by law, as set forth herein.

5A. RESTRICTED AREAS. Due to the presence of these contaminants, the Owner has agreed, as part of the remedial action for the Property, to restrict the use of certain parts of the Property (the "Restricted Areas"); a narrative description of these restrictions, along with the associated monitoring and maintenance activities and the biennial certification requirements are provided in Exhibit C, which is attached hereto and made a part hereof. The Owner has also agreed to maintain a list of these restrictions on site for inspection by governmental enforcement officials.

[Insert the following paragraph when engineering controls are also implemented at the site:

5B. ENGINEERING CONTROLS. Due to the presence and concentration of these contaminants, the Owner has also agreed, as part of the remedial action for the Property, to the placement of certain engineering controls on the Property; a narrative description of these engineering controls, along with the associated monitoring and maintenance activities and the biennial certification requirements are provided in Exhibit C.]

6A. ALTERATIONS, IMPROVEMENTS, AND DISTURBANCES.

i. Except as provided in Paragraph 6B, below, no person shall make, or allow to be made, any alteration, improvement, or disturbance in, to, or about the Property which disturbs any engineering control at the Property without first obtaining the express written consent of the Department of Environmental Protection. Nothing herein shall constitute a

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waiver of the obligation of any person to comply with all applicable laws and regulations including, without limitation, the applicable rules of the Occupational Safety and Health Administration. To request the consent of the Department of Environmental Protection, contact:

Department of Environmental Protection
Division of Remediation Management and Response
Bureau of Operation, Maintenance, and Monitoring
Deed Notice Inspection Program
P.O. Box 413
401 E. State Street
Trenton, NJ 08625-0413

ii. Notwithstanding subparagraph 6A.i., above, the Department of Environmental Protection's express written consent is not required for any alteration, improvement, or disturbance provided that the owner, lessee or operator:

(A) Notifies the Department of Environmental Protection of the activity by calling the DEP Hotline, at 1-877-WARN-DEP or 1-877-927-6337, within twenty-four (24) hours after the beginning of each alteration, improvement, or disturbance;

(B) Restores any disturbance of an engineering control to pre-disturbance conditions within sixty (60) calendar days after the initiation of the alteration, improvement or disturbance;

(C) Ensures that all applicable worker health and safety laws and regulations are followed during the alteration, improvement, or disturbance, and during the restoration;

(D) Ensures that exposure to contamination in excess of the applicable remediation standards does not occur;

(E) Submits a written report, describing the alteration, improvement, or disturbance, to the Department of Environmental Protection within sixty (60) calendar days after the end of each alteration, improvement, or disturbance. The owner, lessee or operator shall include in the report the nature of the alteration, improvement, or disturbance, the dates and duration of the alteration, improvement, or disturbance, the name of key individuals and their affiliations conducting the alteration, improvement, or disturbance, a description of the notice the Owner gave to those persons prior to the disturbance, the amounts of soil generated for disposal, if any, the final disposition and any precautions taken to prevent exposure. The owner, lessee, or operator shall submit the report to:

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Department of Environmental Protection
Division of Remediation Management and Response
Bureau of Operation, Maintenance, and Monitoring
Deed Notice Inspection Program
P.O. Box 413
401 E. State Street
Trenton, NJ 08625-0413

[Insert the following paragraph when engineering controls are also implemented at the site:

6B. EMERGENCIES. In the event of an emergency which presents, or may present, an unacceptable risk to the public health and safety, or to the environment, any person may temporarily breach any engineering control provided that that person complies with each of the following:

i. Immediately notifies the Department of Environmental Protection of the emergency, by calling the DEP Hotline at 1-877-WARNDEP or 1-877-927-6337;

ii. Limits both the actual disturbance and the time needed for the disturbance to the minimum reasonably necessary to adequately respond to the emergency;

iii. Implements all measures necessary to limit actual or potential, present or future risk of exposure to humans or the environment to the contamination;

iv. Notifies the Department of Environmental Protection when the emergency has ended by calling the DEP Hotline at 1-877-WARNDEP or 1-877-927-6337;

v. Restores the engineering control to the pre-emergency conditions as soon as possible, and provides a written report to the Department of Environmental Protection of such emergency and restoration efforts within sixty (60) calendar days after completion of the restoration of the engineering control. The report must include all information pertinent to the emergency, potential discharges of contaminants, and restoration measures that were implemented, which, at a minimum, should specify: (a) the nature and likely cause of the emergency, (b) the potential discharges of or exposures to contaminants, if any, that may have occurred, (c) the measures that have been taken to mitigate the effects of the emergency on human health and the environment, (d) the measures completed or implemented to restore the engineering control, and (e) the changes to the engineering control or site operation and maintenance plan to prevent reoccurrence of such conditions in the future. The owner, lessee, or operator shall submit the report to:

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Department of Environmental Protection
Division of Remediation Management and Response
Bureau of Operation, Maintenance, and Monitoring
Deed Notice Inspection Program
P.O. Box 413
401 E. State Street
Trenton, NJ 08625-0413]

7A. MONITORING AND MAINTENANCE OF DEED NOTICE, AND PROTECTIVENESS CERTIFICATION. The persons in any way responsible, pursuant to the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11a et seq., for the hazardous substances that remain at the Property, the persons responsible for conducting the remediation, the Owner, and the subsequent owners, lessees, and operators, shall monitor and maintain this Deed Notice, and certify to the Department on a biennial basis that the remedial action that includes this Deed Notice remains protective of the public health and safety and of the environment. The subsequent owners, lessees and operators have this obligation only during their ownership, tenancy, or operation. The specific obligations to monitor and maintain the deed notice shall include all of the following:

i. Monitoring and maintaining this Deed Notice according to the requirements in Exhibit C, to ensure that the remedial action that includes the Deed Notice continues to be protective of the public health and safety and of the environment;

ii. Conducting any additional remedial investigations and implement any additional remedial actions, that are necessary to correct, mitigate, or abate each problem related to the protectiveness of the remedial action for the site prior to the date that the certification is due to the Department pursuant to iii, below, in order to ensure that the remedial action that includes this Deed Notice remains protective of the public health and safety and of the environment.

iii. Certify to the Department of Environmental Protection as to the continued protectiveness of the remedial action that includes this Deed Notice, on a form provided by the Department and consistent with N.J.A.C. 7:26C-1.2 (a)1, every two years on the anniversary of the date stamped on the deed notice that indicates when the deed notice was recorded;

[Insert the following paragraph if the soil remedial action included any engineering controls at the site:

7B. MONITORING AND MAINTENANCE OF ENGINEERING CONTROLS, AND PROTECTIVENESS CERTIFICATION. The persons in any way responsible, pursuant to the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11a et seq., for the hazardous substances that remain at the Property, the person responsible for conducting the remediation, and, the Owner, and the subsequent owners, lessees, and operators, shall maintain all engineering controls at the Property and certify to the Department on a biennial basis that the remedial action of which each engineering control is a part remains protective of the public health and safety and

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of the environment. The subsequent owners, lessees and operators have this obligation only during their ownership, tenancy, or operation. The specific obligations to monitor and maintain the engineering controls shall include the following:

i. Monitoring and maintaining each engineering control according to the requirements in Exhibit C, to ensure that the remedial action that includes the engineering control continues to be protective of the public health and safety and of the environment;

ii. Conducting any additional remedial investigations and implement any additional remedial actions, that are necessary to correct, mitigate, or abate each problem related to the protectiveness of the remedial action for the Property prior to the date that the certification is due to the Department pursuant to iii, below, in order to ensure that the remedial action that includes the engineering control remains protective of the public health and safety and of the environment.

iii. Certify to the Department of Environmental Protection as to the continued protectiveness of the remedial action that includes the engineering control, on a form provided by the Department and consistent with N.J.A.C. 7:26C-1.2 (a)1, every two years on the anniversary of the date stamped on the deed notice that indicates when the deed notice was recorded.

8. ACCESS. The Owner and the subsequent owners, lessees and operators agree to allow the Department, its agents and representatives access to the Property to inspect and evaluate the continued protectiveness of the remedial action that includes this Deed Notice and to conduct additional remediation to ensure the protection of the public health and safety and of the environment if persons responsible for monitoring the protectiveness of the remedial action, as described in Paragraph 7, above, fail to conduct such remediation pursuant to this Deed Notice as required by law. The Owner, and the subsequent owners and lessees, shall also cause all leases, subleases, grants, and other written transfers of an interest in the Restricted Areas to contain a provision expressly requiring that all holders thereof provide such access to the Department.

9. NOTICES.

i. The Owner and the subsequent owners and lessees, shall cause all leases, grants, and other written transfers of an interest in the Restricted Areas to contain a provision expressly requiring all holders thereof to take the Property subject to the restrictions contained herein and to comply with all, and not to violate any of the conditions of this Deed Notice. Nothing contained in this Paragraph shall be construed as limiting any obligation of any person to provide any notice required by any law, regulation, or order of any governmental authority.

ii. Owner and all subsequent owners and lessees shall notify any person intending to conduct invasive work or excavate within the Restricted Areas at the Property, including, without limitation, tenants, employees of tenants, and contractors of the nature and location of contamination in the Restricted Areas, and, of the precautions necessary to minimize potential human exposure to contaminants.

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iii. The Owner and the subsequent owners shall provide written notice to the Department of Environmental Protection at least thirty (30) calendar days before the effective date of any conveyance, grant, gift, or other transfer, in whole or in part, of the owner's interest in the Restricted Area.

iv. The Owner and the subsequent owners shall provide written notice to the Department within thirty (30) calendar days following the owner's petition for or filing of any document initiating a rezoning of the Property. The Owner and the subsequent owners shall submit the written notice to:

Department of Environmental Protection
Division of Remediation Management and Response
Bureau of Operation, Maintenance, and Monitoring
Deed Notice Inspection Program
P.O. Box 413
401 E. State Street
Trenton, NJ 08625-0413.

10. ENFORCEMENT OF VIOLATIONS.

i. This Deed Notice itself is not intended to create any interest in real estate in favor of the Department of Environmental Protection, nor to create a lien against the Property, but merely is intended to provide notice of certain conditions and restrictions on the Property and to reflect the regulatory and statutory obligations imposed as a conditional remedial action for this site.

ii. The restrictions provided herein may be enforceable solely by the Department against any person who violates this Deed Notice. To enforce violations of this Deed Notice, the Department may initiate one or more enforcement actions pursuant to N.J.S.A. 58:10-23.11u and require additional remediation and assess damages pursuant to N.J.S.A. 58:10-23.11g.

11. SEVERABILITY. If any court of competent jurisdiction determines that any provision of this Deed Notice requires modification, such provision shall be deemed to have been modified automatically to conform to such requirements. If a court of competent jurisdiction determines that any provision of this Deed Notice is invalid or unenforceable and the provision is of such a nature that it cannot be modified, the provision shall be deemed deleted from this instrument as though the provision had never been included herein. In either case, the remaining provisions of this Deed Notice shall remain in full force and effect.

12. SUCCESSORS AND ASSIGNS. This Deed Notice shall be binding upon Owner and upon Owner's successors and assigns, and subsequent owners, lessees and operators while each is an owner, lessee, or operator of the Property.

13. MODIFICATION AND TERMINATION.

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i. Any person may request in writing, at any time, that the Department modify this Deed Notice where performance of subsequent remedial actions, a change of conditions at the Property, or the adoption of revised remediation standards suggest that modification of the Deed Notice would be appropriate.

ii. Any person may request in writing, at any time, that the Department terminate this Deed Notice because the conditions which triggered the need for this Deed Notice are no longer applicable.

iii. This Deed Notice may be revised or terminated only upon filing of an instrument, executed by the Department, in the office of the [*Insert as appropriate the County Clerk/Register of Deeds and Mortgages*] of [*Insert the name of the County*] County, New Jersey, expressly modifying or terminating this Deed Notice.

14A. EXHIBIT A. Exhibit A includes the following maps of the Property and the vicinity:

i. Exhibit A-1: Vicinity Map - A map that identifies by name the roads, and other important geographical features in the vicinity of the Property (for example, Hagstrom County Maps);

ii. Exhibit A-2: Metes and Bounds Description - A metes and bounds description of the Property, including reference to tax lot and block numbers for the Property;

iii. Exhibit A-3: Property Map - A scaled map of the Property, scaled at one inch to 200 feet or less, and if more than one map is submitted, the maps shall be presented as overlays, keyed to a base map; and the Property Map shall include diagrams of major surface topographical features such as buildings, roads, and parking lots.

14B. EXHIBIT B. Exhibit B includes the following descriptions of the Restricted Areas:

i. Exhibit B-1: Restricted Area Map - A separate map for each restricted area that includes:

(A) As-built diagrams of each engineering control, including caps, fences, slurry walls, ground water monitoring wells, and ground water pumping system;

(B) As-built diagrams of any buildings, roads, parking lots and other structures that function as engineering controls; and

(C) Designation of all soil and sediment sample locations within the restricted areas that exceed any soil or sediment standard that are keyed into one of the tables described in the following paragraph.

ii. Exhibit B-2: Restricted Area Data Table - A separate table for each restricted area that includes:

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(A) Sample location designation from Restricted Area map (Exhibit B-1);

(B) Sample elevation based upon mean sea level;

(C) Name and chemical abstract service registry number of each contaminant with a concentration that exceeds the unrestricted use standard;

(D) The restricted and unrestricted use standards for each contaminant in the table; and

(E) The remaining concentration of each contaminant at each sample location at each elevation (or if historic fill, include data from the Department's default concentrations at N.J.A.C. 7:26E-4.6, Table 4-2).

14C. EXHIBIT C. Exhibit C includes narrative descriptions of the institutional controls [*Insert as appropriate:* and engineering controls] as follows:

i. Exhibit C-1: Deed Notice as Institutional Control: Exhibit C-1 includes a narrative description of the restriction and obligations of this Deed Notice that are in addition to those describe above, as follows:

(A) General Description of this Deed Notice:

(1) Description and estimated size of the Restricted Areas as described above;

(2) Description of the restrictions on the Property by operation of this Deed Notice; and

(3) The objective of the restrictions.

(B) Description of the monitoring necessary to determine whether:

(1) Any disturbances of the soil in the Restricted Areas did not result in the unacceptable exposure to the soil contamination;

(2) There have been any land use changes subsequent to the filing of this Deed Notice or the most recent biennial certification, whichever is more recent;

(3) The current land use on the Property is consistent with the restrictions in this Deed Notice;

(4) Any newly promulgated or modified requirements of applicable regulations or laws apply to the site; and

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(5) Any new standards, regulations, or laws apply to the site that might necessitate additional sampling in order to evaluate the protectiveness of the remedial action which includes this Deed Notice, and conduct the necessary sampling.

(C) Description of the following items that will be included in the biennial certification:

(1) A monitoring report that describes the specific activities, pursuant to (A) and (B), above, conducted in support of the biennial certification of the protectiveness of the remedial action that includes this Deed Notice;

(2) Land use at the Property is consistent with the restrictions in this Deed Notice; and

(3) The remedial action that includes this Deed Notice continues to be protective of the public health and safety and of the environment.

[Insert the following if engineering controls are part of the remedial action for the site:

ii. Exhibit C-2: *[Insert the name of the first engineering control]*: Exhibit C-2 includes a narrative description of *[Insert the name of the first engineering control]* as follows:

(A) General Description of the engineering control:

(1) Description of the engineering control;

(2) The objective of the engineering control; and

(3) How the engineering control is intended to function.

(B) Description of the operation and maintenance necessary to ensure that:

(1) Periodic inspections of each engineering control are performed in order to determine its integrity, operability, and effectiveness;

(2) Each engineering control continues as designed and intended to protect the public health and safety and the environment;

(3) Each alteration, excavation or disturbance of any engineering control is timely and appropriately addressed to maintain the integrity of the engineering control;

(4) This engineering control is being inspected and maintained and its integrity remains so that the remedial action continues to be protective of the public health and safety and of the environment;

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(5) A record of the self-inspection dates, name of the inspector, results of the inspection and condition(s) of this engineering control. Sampling, for example, may be necessary if it is not possible to visually evaluate the integrity/ performance of this engineering control; and

(6) Any new standards, regulations, or laws apply to the site that might necessitate additional sampling in order to evaluate the protectiveness of the remedial action which includes this Deed Notice, and conduct the necessary sampling.

(C) Description of the following items that will be included in the biennial certification:

(1) A monitoring report that describes the specific activities, pursuant to (A) and (B), above, conducted in support of the biennial certification of the protectiveness of the remedial action that includes this Deed Notice;

(2) The engineering controls continue to operate as designed; and

(3) The remedial action that includes the engineering control continues to be protective of the public health and safety and of the environment.

Repeat the contents of Exhibit C-2, renumbering accordingly, for each separate engineering control that is part of the remedial action for the site.]

15. SIGNATURES. IN WITNESS WHEREOF, Owner has executed this Deed Notice as of the date first written above.

[If Owner is an individual]

WITNESS:

[Signature]

[Print name below signature]

[If Owner is a corporation]

ATTEST:

[Name of corporation]

By _____

[Print name and title]

[Signature]

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[If Owner is a general or limited partnership]

WITNESS: [Name of partnership]

[Signature]

By _____, General
[Print name] Partner

[If Owner is an individual]

STATE OF [State where document is executed] SS.:
COUNTY OF [County where document is executed]

I certify that on _____, 20__, [Name of Owner] personally came before me, and this person acknowledged under oath, to my satisfaction, that this person [or if more than one person, each person]

(a) is named in and personally signed this document; and

(b) signed, sealed and delivered this document as his or her act and deed.

_____, Notary Public
[Print Name and Title]

[If Owner is a corporation]

STATE OF [State where document is executed] SS.:
COUNTY OF [County where document is executed]

I certify that on _____, 20__, [Name of person executing document on behalf of Owner] personally came before me, and this person acknowledged under oath, to my satisfaction, that:

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(a) this person is the [secretary/assistant secretary] of [Owner], the corporation named in this document;

(b) this person is the attesting witness to the signing of this document by the proper corporate officer who is the [president/vice president] of the corporation;

(c) this document was signed and delivered by the corporation as its voluntary act and was duly authorized;

(d) this person knows the proper seal of the corporation which was affixed to this document; and

(e) this person signed this proof to attest to the truth of these facts.

[Signature]

[Print name and title of attesting witness]

Signed and sworn before me on _____, 20__

_____, Notary Public

[Print name and title]

[If Owner is a partnership]

STATE OF [State where document is executed] SS.:
COUNTY OF [County where document is executed]

I certify that on _____, 20__, [Name of person executing document on behalf of Owner] personally came before me, and this person acknowledged under oath, to my satisfaction, that this person:

(a) is a general partner of [Owner], the partnership named in this document;

(b) signed, sealed and delivered this document as his or her act and deed in his capacity as a general partner of [owner]; and

(c) this document was signed and delivered by such partnership as its voluntary act, duly authorized.

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[Signature]

_____, General Partner
[Print Name]

_____, Notary Public

[Print name and title]

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APPENDIX F - (RESERVED)

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APPENDIX G - CONTOUR MAP REPORTING FORM

This reporting form shall accompany each groundwater contour map submittal. Use additional sheets as necessary.

1. Did any surveyed well casing elevations change from the previous sampling event? Yes... No... If yes, attach new "Well Certification--Form B--Location Certification" as found in the "Guide for the Submission of Remedial Action Workplans" (NJDEP, March 1995) and identify the reason for the elevation change (damage to casing, installation of recovery system in monitoring well, etc.).

2. Are there any monitor wells in unconfined aquifers in which the water table elevation is higher than the top of the well screen? Yes... No... If yes, identify these wells.

3. Are there any monitor wells present at the site but omitted from the contour map? Yes... No... Unless the omission of the well(s) has been previously approved by the Department, justify the omissions.

4. Are there any monitor wells containing separate phase product during this measuring event? Yes... No... Were any of the monitor wells with separate phase product included in the groundwater contour map? Yes... No... If yes, show the formula used to correct the water table elevation.

5. Has the groundwater flow direction changed more than 45 degrees from the previous groundwater contour map? Yes... No... If yes, discuss the reasons for the change.

6. Has groundwater mounding and/or depressions been identified in the groundwater contour map? Yes... No... Unless the groundwater mounds and/or depressions are caused by the groundwater remediation system, discuss the reasons for this occurrence.

7. Are all the wells used in the contour map screened in the same water-bearing zone? Yes... No... If no, justify inclusion of those wells.

8. Were the groundwater contours computer generated..., computer aided..., or hand-drawn...? If computer aided or generated, identify the interpolation method(s) used.

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APPENDIX H - MODEL PUBLIC NOTICE FOR A DGW PROPOSAL

The model public notice in this appendix contains blanks and matter in brackets []. These blanks shall be replaced with the appropriate information prior to publication in appropriate local newspapers. As provided at N.J.A.C. 7:26E-7.2(c), the wording of this model public notice shall not be otherwise changed or modified.

Public Notice

This notice is being given to inform the public that as part of the remediation of [Site Name] at [street address], Block: _____ Lots: _____, in [Municipality], [_____] County, a proposal has been submitted to the New Jersey Department of Environmental Protection (Department) to discharge to ground water in accordance with a permit issued pursuant to the provisions of the New Jersey Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq., its implementing regulations the New Jersey Pollutant Discharge Elimination System, N.J.A.C. 7:14A; the Ground Water Quality Standards, N.J.A.C. 7:9C; and the Technical Requirements for Site Remediation, N.J.A.C. 7:26E. The Department's Site Remediation Program is reviewing the proposal to discharge to ground water for the purpose of remediating a contaminated site with the program interest # [_____].

Brief description of the proposed discharge: [Include a description of the site including the remedial action, type of discharge (e.g., treated ground water or in situ bioremediation), discharge unit (e.g., injection well, overland flow, lagoon, etc.) and treatment proposed and the name and description of the formation receiving the discharger]. A copy of this public notice has been sent to the Municipal Clerk and designated local health official for [Municipality, County or region].

A copy of the DGW proposal is available from the person responsible for conducting the remediation [include the name and address of the person conducting the remediation], or as part of the administrative record which is on file at the offices of the Department, Site Remediation Program, located at 401 East State Street, Trenton, Mercer County, New Jersey [or add alternate location]. The file may be reviewed under the New Jersey Open Public Records Act ("OPRA"), N.J.S.A. 47:1A-1 et seq. Information regarding the OPRA procedures is available at <http://www.state.nj.us/dep/opra/oprainfo.html>.

Interested persons may submit written comments regarding the DGW proposal to the Department at the address listed below and to the owner or operator of the facility at [name and address of person/contact submitting DGW proposal]. All comments shall be submitted within 30 calendar days of the date of this public notice. All persons who believe that the DGW proposal is inappropriate, must raise all reasonably ascertainable issues and submit in writing to the Department all reasonably available arguments and factual grounds supporting their position, including all supporting material, by the close of the public comment period. All comments submitted by interested persons that relate to the DGW proposal will be considered by the Department, provided that the Department receives the comments by the close of the public comment period. After the close of the public comment period, the Department will render a decision regarding the proposed discharge. The Department will respond to all significant and

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timely comments with its decision regarding the DGW proposal. Each person who has submitted written comments will receive notice of the Department's decision.

Any interested person may request in writing that the Department hold a non-adversarial public hearing on the DGW proposal. This request shall state the nature of the issues to be raised in the proposed hearing and shall be submitted within 30 calendar days of the date of this public notice to the address cited below. A public hearing will be conducted whenever the Department determines that there is a significant degree of public interest in the discharge to ground water decision. If a public hearing is held, the public comment period in this notice shall automatically be extended to the close of the public hearing.

Comments and written requests for a non-adversarial public hearing shall be sent to:

ATTN: DGW proposal
Site Remediation Program
NJ Department of Environmental Protection
[Name of Department contact]
[Address of Department contact]