Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Groundwater Discharge Permits

BRP WP 83 Hydrogeologic Evaluation Report
Instructions and Supporting Materials

Table of Contents

Introduction

MassDEP *Permit Applications*, as well as *Instructions & Support Materials*, are available for download from the MassDEP Web site at mass.gov/dep in two file formats: Microsoft Word™ and Adobe Acrobat PDF™. Either format allows documents to be printed.

Instructions & Support Materials files in Microsoft Word™ format contain a series of documents that provide guidance on how to prepare a permit application. Although we recommend that you print out the entire package, you may choose to print specific documents by selecting the appropriate page numbers for printing.

Permit Applications in Microsoft Word™ format must be downloaded separately. Users with Microsoft Word™ 97 or later may complete these forms electronically.

Permitting packages in Adobe Acrobat PDF™ format combine *Permit Applications* and *Instructions & Support Materials* in a single document. Adobe Acrobat PDF™ files may only be viewed and printed without alteration. *Permit Applications* in this format may not be completed electronically.

REQUIREMENTS TO OBTAIN A GROUNDWATER DISCHARGE PERMIT

The MassDEP Groundwater Discharge Permit Program regulates the location, construction, operation and monitoring of wastewater treatment plants designed for flows exceeding 10,000 gallons per day. New systems, unpermitted systems and some systems to be modified will undergo a review process that will assure compliance with 314 CMR 5.00 and will result in the issuance of a groundwater discharge permit. The hydrogeologic evaluation of the site is the first part of that process.*

Scope of Work:

Prior to the submission of the BRP WP 83 application form, the applicant will have a pre-scoping meeting with MassDEP. Following this meeting, the applicant will develop and submit to Mass DEP a scope of work for a hydrogeologic investigation in accordance with 314 CMR 5.09 that is specific to the proposed site, including consideration of downgradient receptors. Upon MassDEP approval of the scope of work, the applicant will then prepare a hydrogeologic evaluation report consistent with that scope.

Hydrogeologic Evaluation Report and BRP WP 83 application:

The completed hydrogeologic evaluation report will be submitted to the Mass DEP with the BRP WP 83 application form, the fee and other required materials. Once MassDEP has approved the report submitted with the BRP WP 83 application form, the applicant will then be able to apply for a groundwater discharge permit through the submittal of the appropriate groundwater discharge permit application. In accordance with 314 CMR 5.09A (4) & (5), the MassDEP may require the submission of plans and specifications with the permit application or anytime during the application's review.

**Please note: There may be instances where site constraints would require a discharge of less than 10,000 gallons per day of treated sanitary wastewater to obtain a groundwater discharge permit.*

BRP WP 83 Hydrogeologic Evaluation Report Guidance

To obtain a groundwater discharge permit, owners of new systems, unpermitted systems, and some systems to be modified must complete the following requirements:

1. Hydrogeologic Assessment
   Soils shall be described using the standard Title 5 soil evaluation techniques. Soil evaluations shall be performed by a Massachusetts Certified Soil Evaluator ("CSE"). Data from test pits to be considered in the hydrogeologic evaluation must be witnessed by a CSE. Site geology shall be determined by a variety of subsurface exploratory techniques that include the use of test pits, borings, peizometers, and observation wells. Hydrologic parameters may be estimated from an analysis of lithologic data, sieve analysis, in-situ permeability testing and pumping tests. This includes regional and historic information regarding the site. This will also include noting adjacent surface water feature and the potential interaction.

   Provide the following:

   a. Locus map and site plan at a suitable scale (such as 1"=40')
      i. Provide USGS maps available (topographic map, surficial geology map, hydrologic atlas)
      ii. Include well and surface water PWS protection areas (such as, but not limited to; Zone II's, IWPA's, Surface Water Protection Zones)
      iii. Include areas of sensitive habitats (such as, but not limited to ACEC's, vernal pools, mapped habitat areas)
   b. Previous subsurface work, such as, but not limited to;
      i. Soil and water quality
      ii. As built diagrams and logs
      iii. Water table fluctuation (high, low and adjusted seasonal high water using MassDEP approve method)
      iv. Tidal influences to water levels (if any)
   c. Determine the contributing watershed area
   d. Locate public and private wells within ½ mile of the site
      i. Indicate type of well (public/private, bedrock or sand/gravel and depth)
   e. Indicate areas of potential water supply development (such as, but not limited to mapped medium and high yield aquifers)
   f. Determine private wells within ½ mile radius of proposed discharge location and whether it is up, down or cross gradient under natural and discharge conditions
   g. Provide past use or nearby use which may have resulted in water quality or site specific conditions pertinent to development.
      i. This may include past or current waste site clean up activities.
      ii. Areas which may be subject to cleanup standards under MGL 21E
   h. Depth to bedrock
   i. If bedrock encountered during exploration, depth, fracture and joint pattern

2. Nutrient Analysis.
   a. If located within a MassDEP approved Zone II or an IWPA, determine the impact the discharge may have on the public supply well(s).
   b. If located adjacent surface water, assess potential impacts to that water with respect to nitrogen or phosphorus.

3. Soil Evaluation and Subsurface Testing
   a. Provide Certified Soil Evaluator logs and summaries for the site
      i. Perc tests and logs
      ii. Tests witnessed by MassDEP

b. Provide additional test data such as sieve tests, double ring or other approved tests.
c. Indicate on a site map the location of the tests
d. Soil boring data including split spoon and core logs (if applicable)
e. Well construction (per MassDEP Standards)
    i. As built diagrams
    ii. Water levels
    iii. Water quality (pH, Specific Conductance if available or required)
f. Any onsite monitoring such as VOC vapor analysis, specific conductance, pH of the water.

4. Groundwater Monitoring Program
    a. Indicate location and construction of monitoring wells
        i. Provide locations and elevations of wells and the corresponding measuring point elevation for ground water levels.
        ii. Wells to be constructed according to Standard Methods for Monitoring Wells (MassDEP BWSC publication)
        iii. Assess groundwater flow
            (1) Vertical gradient
            (2) Flow direction
            (3) Permeability of the soils and aquifer
            (4) Groundwater flow rate
            (5) Interaction of overburden/bedrock with respect to groundwater flow to determine infiltration and pumping effects.
            (6) Estimate seasonal high groundwater (using approved methods)
    b. indicate if the well is upgradient, cross gradient or downgradient of the discharge
    c. indicate the sampling frequency and list of analytes to be sampled

5. Time of Travel Calculation
    a. Applicable if within a public water supply protection area (including, but not limited to Zone II's, IWPA's and Surface Water Protection Areas)
        i. Assess potential input into surface water and if that surface water is intercepted by a PWS.
    b. Calculate the time of travel from the discharge to the public water supply
    c. Provide the calculations or model results indicating the methodology used

6. Final Site Report

    a. Show final grade and the relationship to seasonal high water and under loading conditions
    b. Mounding analysis and relationship to topography and final site grade.
    c. Provide cross sections (one parallel and one perpendicular to ground water flow direction, indicating system bottom, seasonal high water and projected mound).
    d. Well locations of all wells including those submitted under previous work, including as built diagrams and logs.
    e. Pre and Post loading ground water flow maps
    f. Show other important site modifications and structures, including but not limited to;
        i. Detention, retention ponds
        ii. Wells (Potable, irrigation, injection, Ground Source Heat Pump)
        iii. Buildings (note if the building have basements)
        iv. Roads and streets

7. Include section of summary, conclusions and recommendations
   a. Additional site characterization
   b. Site feasibility
   c. Potential impacts and mitigation (if any)
      i. To nearby property
      ii. To ground water or surface water supply
      iii. To nearby sensitive receptors (including, but not limited to; rare species habitats, and vernal pools)
      iv. Location of existing or proposed compliance monitoring wells.

The publication *Standard References for Monitoring Wells* is available at the State House Bookstore: http://www.sec.state.ma.us/spr/sprcat/agencies/310.htm.

Monitoring Well Proposals

The following is a list of information to be submitted to the MassDEP Regional Office location (Primary Permit Location) for Hydrogeologic Report applications with monitoring well proposals and with post-installation details. Monitoring wells are required in order to receive a groundwater discharge permit. See MassDEP publication *Standard References for Monitoring Well*s, Publication No. WSC-310-91, and 314 CMR 5.00.

Monitoring well proposals must include:

1. a locus map indicating the regional location of the sites. A USGS 1:25000 Scale 7 1/2 minute Topographic Series quadrangle sheet is most appropriate.

2. a site map to include:

    a) location of proposed and existing monitoring wells, borings, test pits, deep holes and subsurface work;
    b) cultural features (buildings, roads, leachfields, existing wells, subsurface utilities, etc.);
    c) assumed groundwater flow directions.

3. any written descriptions of subsurface conditions expected to be encountered, e.g. published surficial geologic, bedrock, or hydrogeologic atlases (USGS), existing drillers' or geologists' logs, test pit or deep hole test results with percolation rates.

4. a well construction detail describing **construction materials** and **installation technique** must be included. Construction details shall conform with the well construction guidelines concerning construction and screen placement. *(See attached diagram.)*

These materials must be submitted to and accepted by the MassDEP prior to the installation of the monitoring well(s). The MassDEP reserves the right to request additional information on a case-by-case basis if in its opinion the sensitivity of the potentially impacted area warrants additional investigation.

Following the acceptance of the monitoring well plan by the MassDEP regional office and the installation of the well(s), the following materials must be submitted:

1. A site plan including:

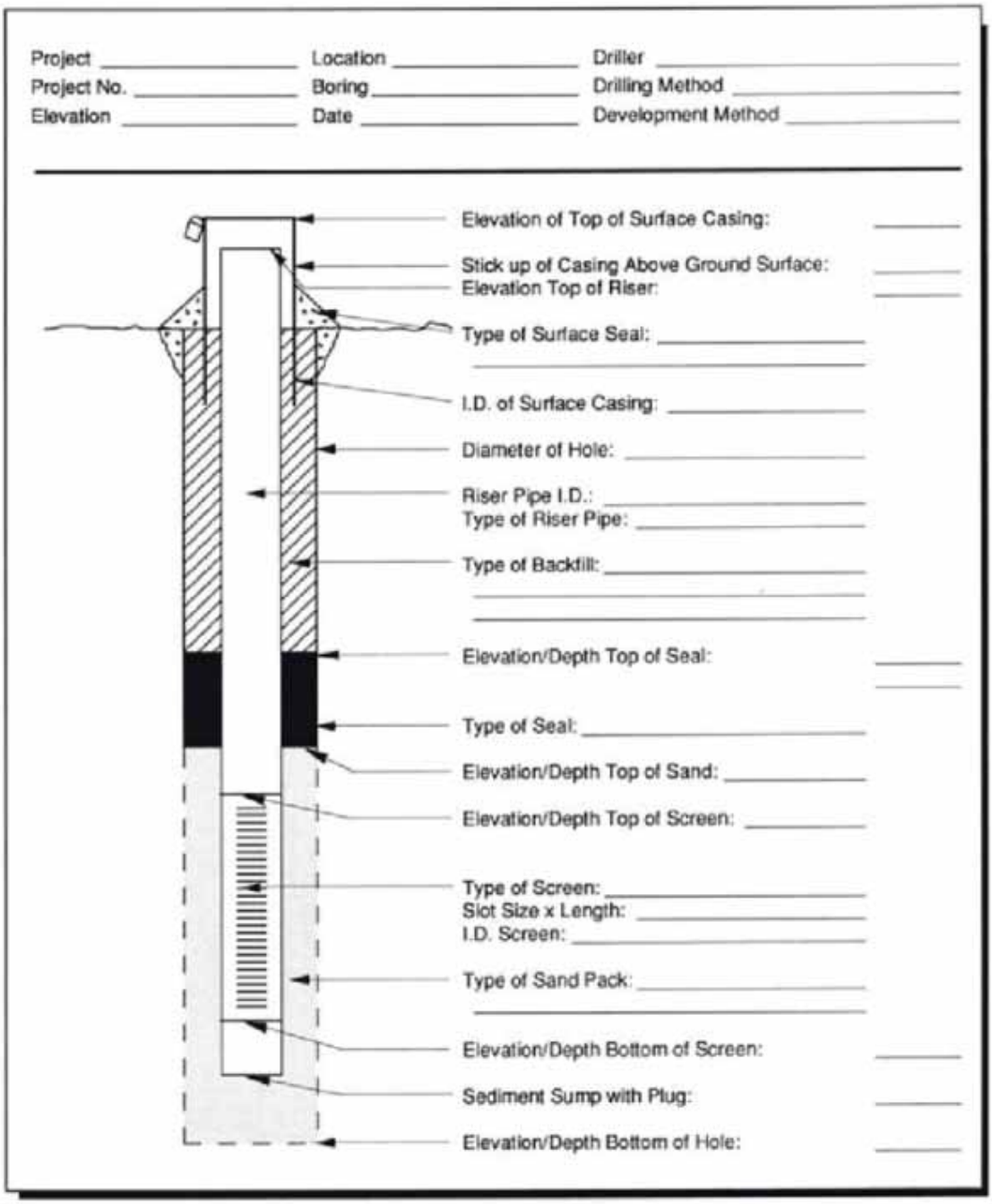
    a) all the features described in section 2a;
    b) the as-built well locations;
    c) groundwater contours and elevations based on monitoring well data.

2. Geologists' and drillers' logs for all monitoring wells.

3. Monitoring calculations describing potential mounding below the discharge.

4. A geologic cross-section utilizing three monitoring wells and including relevant features such as leaching fields, existing and proposed stormwater detention basins, subsurface utilities, streams, roadways,etc.

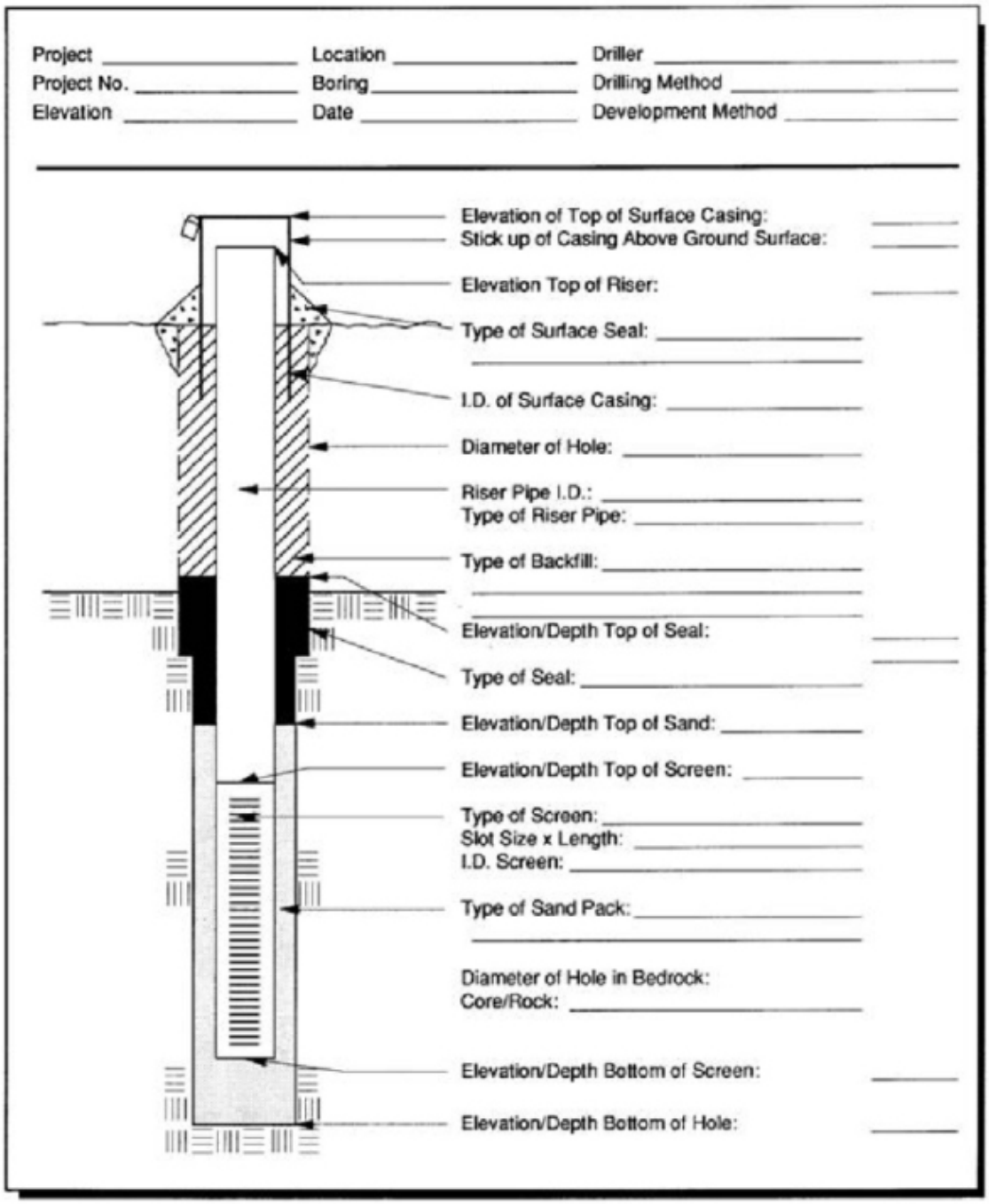
5. A background sampling of the monitoring wells for, at a minimum, the following parameters: water level, ph, specific conductance, alkalinity, nitrogen series, total phosphorus, orthophosphate, chloride and sodium.



Source: MADEP

Figure 4.4-2

Example of an As-built Overburden Monitoring Well Form
(From WSC #91-310: Standard References for Monitoring Wells)



Source: MADEP

Figure 4.4-3
Example of an As-built Bedrock Monitoring Well Form
(From WSC #91-310: Standard References for Monitoring Wells)

1. What is the purpose of this report approval?

This report approval is a prerequisite for the issuance of a permit to discharge treated sanitary wastewater in excess of 10,000 gallons per day (gpd) or to discharge treated wastewaters otherwise subject to a groundwater discharge permit. This report approval serves to protect the public health, welfare, and the environment through the control of these discharges onto or into the ground. If, following this report approval, the permittee intends to apply for either an Individual or General Groundwater Discharge Permit, the approved report will be a part of the permit application submittal.

Statutory authority for this permit is stated in MGL Chapter 21 Section 43. Regulatory authority for these permits is stated in 314 CMR 5.00.

2. Who must apply?

Any individual, business, or organization required to obtain a groundwater discharge permit is subject to the approval of a scope of work and hydrogeologic evaluation pursuant to MGL c. 21, s. 43 and 314 CMR 5.00 (unless exempted in 314 CMR 5.05).

3. What other requirements should be considered when applying for these report approvals?

The applicant must show evidence that a public notice has been placed in the Environmental Monitor stating that a scope of work has been prepared and has been submitted to MassDEP. Additionally, if the site is located within the Zone II or Interim Wellhead Protection Area (IWPA) of a ground water source of potable water for a public water system, the applicant must show evidence that the public water system has been notified in writing by certified mail when the scope of work and the Hydrogeologic Evaluation Report have been submitted to MassDEP.

4. Where should the application be sent?

The **application form with an original signature** in ink should be sent to the Wastewater Management Program at the appropriate MassDEP Regional Office (Primary Permit Location). Find your region at: http://www.mass.gov/eea/agencies/massdep/about/contacts/.

A **copy of the application** should be sent to the MassDEP Boston Office (Reserve Copy Location) at:

Department of Environmental Protection
Wastewater Management Program
1 Winter Street, Boston, MA 02108

A **copy of the MassDEP Transmittal Form and the Fee** for the application should be sent to:

Department of Environmental Protection
P.O. Box 4062
Boston, MA 02211

5. What is the application fee?

BRP WP 83 Preparation of a Hydrogeologic Evaluation.....$10,005

6. Where can I get a copy of the timelines?

The timelines are available on the MassDEP Website:
http://www.mass.gov/eea/agencies/massdep/service/approvals/timely-action-fees-and-payments.html

7. What is the annual compliance fee?

Current Annual Compliance Fees can be found at the MassDEP Website:
http://www.mass.gov/eea/agencies/massdep/service/approvals/timely-action-fees-and-payments.html

8. How long is this report approval in effect?

There is no fixed time limit when this approval would expire. However, at the time of submission of a groundwater permit application for an Individual Permit or a Notice of Intent for General Permit coverage, the permittee must certify whether the conditions upon which the approval was based have changed. If the answer is that conditions have changed, then an additional technical evaluation may be required to determine if the existing approval should remain in force or an amended approval is necessary.

9. How can I avoid the most common mistakes made in applying for this report approval?

a. Answer all questions on the application form and indicate "not applicable" (N/A) where appropriate. One copy of all application forms must have an original signature in ink.

b. Applications for BRP WP 83 must include:

1) Copy of the approved scope of work.

2) Copy of the public notice from the Environmental Monitor that the scope of work has been submitted.

3) If the proposed site is within a Zone II or Interim Wellhead Protection Area, a copy of the notice to the public water system notifying them that a scope of work and, when appropriate, that the Hydrogeologic Report has been submitted to the Department.

c. Submit fee and one copy of the MassDEP Transmittal Form to: Department of Environmental Protection, PO Box 4062, Boston, MA 02211.

10. What are the regulations that apply to these report approvals? Where can I get copies?

These regulations include, but are not limited to:

a. Groundwater Discharge Regulations, 314 CMR 5.00.
b. Timely Action and Fee Provisions, 310 CMR 4.00.
c. Administrative Penalty Regulations, 310 CMR 5.00.

These may be purchased at:

State House Bookstore
Room 116
Boston, MA 02133
617-727-2834

State House West Bookstore
436 Dwight Street
Springfield, MA 01103
413-784-1376

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Groundwater Discharge Permits
BRP WP 83 Hydrogeologic Evaluation Report

Application Completeness Check List

☐ The MassDEP Transmittal Form is completed. If the applicant is a municipality, "Fee Exempt" has been selected from among the Special Provisions under the Amount Due section of the Transmittal Form.

☐ The Hydrogeologic Evaluation Report Application Form is properly filled out by the applicant and the consultant engineer and signed in ink.

☐ A copy of the public notice from the Environmental Monitor that the scope of work has bee has been prepared and submitted to MassDEP in accordance with 314 CMR 5.09 .

☐ A copy of the Scope of Work and the MassDEP approval letter is included with the application.

☐ The Hydrogeologic Evaluation Report is included with the application.

☐ If the site is within the Zone II or Interim Wellhead Protection Area of a ground water source of potable water for a public water system, a notice has been sent to the public water system notifying them that a scope of work and, when appropriate, that the Hydrogeologic Evaluation Report has been submitted to MassDEP in accordance with 314 CMR 5.09.

To submit the application package:

☐ Checklist items have been completed.

☐ Send one copy of the application along with one copy from the MassDEP Transmittal form to:

Department of Environmental Protection
_____* Regional Office
Wastewater Management Program
*Find your region: www.mass.gov/dep/about/region/findyour.htm

☐ Send one copy of the application along with a photocopy of the MassDEP Transmittal page to:

Department of Environmental Protection
Wastewater Management Program
1 Winter Street, Boston, MA 02108

☐ Send fee of:

$10,005 for BRP WP 83;

in the form of a check or money order made payable to *Commonwealth of Massachusett*s, along with one copy from the MassDEP Transmittal Form to:

Department of Environmental Protection
P.O. Box 4062
Boston, MA 02211

Massachusetts Department of Environmental Protection
Bureau of Resource Protection–Groundwater Discharge Permit Program

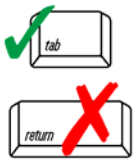
BRP WP 83 Application to Prepare a Hydrogeological Evaluation

Transmittal Number #

Facility ID/Permit # (if known)

A. General Information

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



1. Applicant Information:

Name | Company Name (If applicable)

Address

City/Town | State

Telephone | Zip Code

Email address

2. Applicant Contact Information (if different from above):

Contact Name | Company Name (If applicable)

Title

Address

City/Town | State

Telephone | Zip Code

email address

B. Project Information

1. Has a pre-scoping meeting been held with MassDEP personnel?

☐ Yes ☐ No If yes, date of pre-scoping meeting: _____

2. Has a public notice been placed in the Environmental Monitor that the scope of work has been prepared and will be submitted to MassDEP in accordance with 314 CMR 5.09(1)(b)?

☐ Yes ☐ No If yes, date of Environmental Monitor: _____

3. Is there a discharge presently located on the site?

☐ Yes ☐ No If yes, answer the following:

When did the discharge begin? Date of startup: _____

Description of discharge:

BRP WP 83 Application to Prepare a Hydrogeological Evaluation

Transmittal Number #

Facility ID/Permit # (if known)

B. Project Information (cont.)

4. Improvements - Are you required by any Federal, State or local authority to meet any implementation schedule for the construction, upgrading or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to; permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

   ☐ Yes ☐ No

   If yes, answer the following:

   Description of order or agreement (include enforcement document number, if applicable):

   Identification No. of Affected Treatment Facility

   Description of Project

   Final Compliance Date

C. Site Information

1. GPS Coordinates:

   a) Enter Latitude and Longitude to the nearest whole second for the proposed site.

      Latitude: Longitude:

   b) Provide a narrative description of the site and the feature to be permitted. As an example: "The site is on the west side of Main Street, the third building north of High Street. The disposal field lies 100 feet off the southwest corner of the building."

   c) Attach a site map based on the MassGIS Coordinate Information Tool that clearly indicates the site. The Coordinate Information Tool is available at http://maps.massgis.state.ma.us/images/dep/xyinfo/get_xy.html.

BRP WP 83 Application to Prepare a Hydrogeological Evaluation

Transmittal Number #

Facility ID/Permit # (if known)

C. Site Information (cont.)

2. Provide a topographic map or maps of the area extending at least to one mile beyond the property boundaries of the site which clearly show the following:

   1) The legal boundaries of the site;
   2) All hazardous waste management facilities;
   3) All springs and surface water bodies in the area, plus all drinking water wells within one mile of the facility which are identified in the public record or otherwise known to you.
   4) All Zone II's or IWPA's.

3. Please list any public or private drinking water supply wells within 2,500 feet of the proposed site:

Well Location	Type of Well (Public/Private)	Status (Active/Inactive)	Safe Yield

D. Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I will be responsible for publication of public notice of the applicable permit proceedings identified under 314 CMR 2.06(1)(a) through (d)."

Signature of Applicant

Printed Name of Applicant

Date Signed

Name of Preparer

Telephone

Title of Preparer

email