



Small Production Wells for Small
Community Water Systems
Final Report
Drinking Water and Groundwater Bureau



RSA/Rule: RSA 485:8, RSA 485:48, Env-Dw 305

FINAL REPORT COVER PAGE

PROJECT NAME	
PROJECT TOWN	
PWS ID	

APPLICANT (Project/Water System Owner)

Name	
Mailing Address	
Daytime Phone Number	
Email Address	

WELL SITE OWNER (Property Owner)

Name	
Mailing Address	
Daytime Phone Number	
Email Address	

PROJECT CONTACT/REPORT PREPARER

Name	
Company Name	
Mailing Address	
Daytime Phone Number	
Email Address	

PUMPING TEST PERFORMER/CONTACT

Name	
Mailing Address	
Daytime Phone Number	
Email Address	

SUBMITTAL INFORMATION

1. Project Type:
 - a. ___ New well(s) for New System
 - b. ___ New well(s) for Existing System
 - c. ___ Replacement well(s) for Existing System
 - d. ___ Hydrofractured or Deepened well(s) for Existing System

2. Proposed source capacity volume in gallons per day: _____

DWGBinfo@des.nh.gov or phone (603) 271-2513
PO Box 95, Concord, NH 03302-0095

CERTIFICATION STATEMENT

By signing this final report, the signer certifies that the information contained in or otherwise submitted with this final report is true, complete and not misleading to the best of the signer’s knowledge and belief.

By signing this final report, the signer understands that submission of false, incomplete or misleading information is grounds for:

- Not approving the report;
- Revoking any approval that is granted based on the information;
- Suspending or revoking the professional license held by the signer if the department is the licensing authority or referring the matter to the appropriate licensing authority for potential action against the professional license held by the signer if other than the department; and
- If the signer is acting as or on behalf of a listed engineer as defined in Env-C 502.10, debaring the listed engineer from the roster.

By signing this final report, the signer understands that they are subject to the penalties specified in NH law, currently RSA 641:3, for making unsworn false statements.

By signing this final report, the signer and applicant agree to comply with all applicable rules and conditions of the approval, if one is issued.

SIGNATURES

APPLICANT: _____ **DATE:** _____

PRINTED NAME: _____

***FINAL REPORT PREPARER:** _____ **DATE:** _____

PRINTED NAME: _____

PROFESSIONAL LICENSE TYPE: _____

PROFESSIONAL LICENSE NUMBER: _____

**If the final report preparer is a NH-licensed Professional Engineer (P.E.) or Professional Geologist (P.G.), this cover page must bear the stamp or seal of the licensed professional.*

For additional information contact NHDES’ Community Well Siting program manager at (603) 271-8866.

FINAL REPORT FORM

PURPOSE: This form will provide the information required for a final report for a new small production well(s) under Env-Dw 305, *Small Production Wells for Small Community Water Systems*. Please be advised that this form is provided for the convenience of applicants, and you are not obligated to use it. If you prefer to produce an original report, remember to provide the form cover page and **all of the information** required under the rules. Helpful information and reminders are provided throughout this form and are printed in *italics*. This form, other related publications and contact information for NHDES' Community Well Siting program staff can be found on NHDES' website at http://des.nh.gov/organization/divisions/water/dwgb/dwspp/well_siting/index.htm.

Please note: if the Preliminary Report approval is greater than 4 years old, it has expired and a new Preliminary Report must be submitted.

INSTRUCTIONS:

- A. Reviewing the following materials will help you complete this form. You can obtain copies of the rules and guidance materials from NHDES' Public Information Center at (603) 271- 8876 or from the website listed above.
1. Preliminary Report for the project and all NHDES review and approval letters.
 2. Pumping test data and water quality analysis results.
 3. Well completion reports and any field logs of borehole geology for the site.
 4. NH Administrative Rule, Env-Dw 305, *Small Production Wells for Small Community Water Systems*.
 5. The well siting guide, *The Applicant's Toolkit for Siting New Small Community Wells in New Hampshire*.
 6. The pumping test guide, *A Field Guide for Pumping Test Operators*.
 7. NH Administrative Rule, Env-Dw 405, *Design Standards for Small Community PWS*.
 8. NH Administrative Rule, Env-Wq 2101, *Water Conservation* and the Water Conservation Plan Guidance Document. (Copies of these documents can be found on NHDES' website at http://des.nh.gov/organization/divisions/water/dwgb/water_conservation/index.htm)
- B. If the GIS map and inventory submitted with the Preliminary Report is more than 90 days old, email NHDES' Community Well Siting program to request a new GIS map and inventory of known and potential contamination sources and water users in the project area. The staff person will need coordinates or a location map of the site (USGS map or equivalent). When you receive the map and inventory, if any new active known contamination sources exist in the Wellhead Protection Area, review the applicable Hazardous Waste Division files to determine if the site poses a contamination risk to the proposed new well. Contact NHDES' Public Information and Permitting Unit at (603) 271-8876 to schedule a file review or submit a request online at <https://xml2.des.state.nh.us/FileReview/FileReview.aspx>. For further instructions on conducting a file review, refer to *The Applicant's Toolkit for Siting New Small Community Wells in New Hampshire*.
- C. NHDES reviews submissions in the order they are received. If the information submitted is incomplete, NHDES will respond in writing noting the missing or incorrect information.
- D. If you need to provide additional information, please include additional pages directly after the page containing the pertinent section.
- E. Before submitting, review the form to ensure all questions are answered and all attachments are included. When complete, submit the form in a portable document format (PDF) via email to NHDES' Community Well Siting program.

Section 1.0 GENERAL INFORMATION

1.1 Project Information

1.1a. Will the applicant (project or water system owner) retain ownership of the water system after approval for the new production well(s) is obtained?

YES___ NO___

If **YES**, go to **Section 1.2** below.

If **NO**, identify the future water system owner:

Name _____

Address _____

Company _____

Daytime Phone Number _____

1.1b. Describe when and how ownership will be transferred to this future owner.

1.2 Source Capacity Requirements

What is the total source capacity required for the system under Env-Dw 405 as established in the Preliminary Report?

_____ gallons/day (gpd)

1.3 Well Capacity

Did the pumping test demonstrate that withdrawals from all wells (new and existing) meet or exceed the source capacity requirements?

YES___ NO___

If **YES**, go to **Section 1.4** below.

If **NO**, explain how source capacity requirements will be met. (NHDES may require the system to develop more wells to meet source capacity, or may limit the number of service connections.)

1.4 As-Built Well Location & Description

(EPA requires NHDES to report the location of each well in reference to the pump station, either existing or proposed. Please provide a description in this format. For example, BRW 1 is 150 feet SW of the pumphouse.)

1.5 Site Sketch

Provide a sketch showing the as-built well location and Sanitary Protective Area and **everything** existing and proposed within 1,000 feet of the new well. Use a scale large enough to provide detail. If no surveyed site plan exists, an aerial photograph base map may be used as long as all features are clearly shown and labeled. *(This sketch may also be used to supply information for **Sections 2.2 and 3.4a** of this report. Include elevation contours, if available.)*

1.6 Water Conservation

Has a Water Conservation Plan (WCP) been approved, in accordance with Env-Wq 2101, *Water Conservation*?

YES ___ NO ___

Date of Approval: _____

(Please be advised that NHDES cannot issue final approval for the proposed new well until a WCP has been approved.)

Section 2.0 SANITARY PROTECTIVE AREA

2.1 Sanitary Protective Area (SPA) Radius

What is the radius of the SPA around each proposed new well? *(Complete Table 2-1 for each proposed new well. The size of the SPA depends on the proposed permitted production volume(s) [PPV] of the well(s). Match the proposed PPV for each well to the SPA radius in the table below. **If more than one well is within an SPA, then the SPA radius for each well will be based on the combined PPV for those wells. Please note, each well must have a separate SPA.** The SPA for each well is a circle, centered on the well, with an appropriately identified radius.)*

SANITARY PROTECTIVE AREA RADII

<u>Permitted Production Volume (gpd)</u>	<u>Radius (feet)</u>
less than 14,400	150
14,401 to 28,800	175
28,801 to 57,599	200

Table 2-1, SANITARY PROTECTIVE AREA RADII

Well Name/Number	Proposed Permitted Production Volume (gpd)	Radius (ft)

2.2 Site Sketch

Provide a site sketch of the SPA(s) showing the well location, the SPA for each well and property lines. (You may use the sketch provided in **Section 1.5.**)

2.3 Sanitary Protective Area Land Use Evaluation

Is all the land inside the SPA in a natural, undisturbed state and will it remain that way after build out of the project?

YES___ NO___

Provide a general description of the land inside the SPA. (For example: wooded, meadow, wetland, etc.)

If **NO**, was a waiver been obtained for all land uses not required for operation and maintenance of the well and water system?

YES___ NO___

If **NO**, complete Worksheet A to apply for a waiver. The well site cannot be approved unless a waiver is obtained for any non-water supply related activity.

2.4 Legal Control of Sanitary Protective Area

2.4a. Does the water system own all of the land in the SPA?

YES___ NO___

If **YES**, identify the recorded deed book and page number(s), county name and date(s) of record and provide tax maps.

Deed Book and Page Number _____

County _____ Date Recorded _____

If **NO**, how has the water system gained legal control of non-owned land in the SPA (for example: easement, joint use agreement, etc.)

*Attach a copy of the recorded document providing legal control of the SPA. (If the water system is still in the process of finalizing an agreement, **STOP!** Final well siting approval will not be granted until legal control of the SPA is obtained.)

2.4b. Will control of the water system be transferred at a later date to another entity such as a homeowner’s association, privately owned utility or public entity?
YES___ NO___

If **YES**, when will control of the water system be transferred and to whom? (Note that control of the well site and SPA must transfer with system ownership.)

When and Who? _____

Section 3.0 PUMPING TEST

3.1 Non-Standard Testing

Was a test other than the Standard Test as defined in Env-Dw 305 performed?
YES___ NO___

If **YES**, please describe the method used (attach more sheets as necessary).

3.2 Test Setup

3.2a.Who was the company responsible for installing the pump and discharge setup for the pumping test and/or reading and recording measurements during the test. *(List all responsible parties and describe the tasks they performed. Please note that if the pump was permanently installed, the company performing this task must have a New Hampshire pump installer license.)*

Company _____

License Number _____

3.2b. Was the pump that was used for the pumping test intended to be the permanent pump?
YES___ NO___

3.3 Operation of Wells

(If this is a new water system, go to Section 3.3b.)

3.3a. Existing Well(s)

3.3a.1 How were the system's existing wells operated during the test? *(Complete Table 3-1.)*

Table 3-1, OPERATION OF EXISTING WELLS

Well Name/Number	Pumping Rate (gpm)	Operation Schedule <i>(Constant Rate, As Needed, or Off)</i>

3.3a.2 If existing wells were pumped at a constant rate, how were pumping rates measured and maintained? *(Complete Table 3-2 for each well.)*

Table 3-2, PUMPING RATE MEASUREMENTS (Existing Wells)

Well Name/Number	Equipment	Method	Schedule <i>(Frequency of Measurement)</i>	Range of Pumping Rates <i>(after first hour)</i>

3.3b. Proposed New Well(s)

How were the proposed new well(s) operated during the pumping test? Describe how a constant pumping rate was maintained and managed to offset hydraulic head changes (i.e., drawdown). *(Complete Table 3-3.) (Documentation of totalizer meter readings must be provided to demonstrate that pumping rates did not vary more than +/- 5% after the first 24 hours of pumping. Include all recorded totalizer readings in the pumping test log.)*

Table 3-3, OPERATION OF PROPOSED NEW WELLS

Well Name/Number	Pumping Rate (gpm)	Constant Rate Maintenance

3.4 Discharge Location

3.4a. Describe the discharge locations used during the pumping test in Table 3-4 below. *(Show these locations on the site sketch provided in Section 1.5.)*

TABLE 3-4, DISCHARGE LOCATIONS

Well Name/Number	Discharge Location	Distance from Well (ft)

3.4b. Was there any ponding of water at the discharge point or anywhere along the discharge line(s)? YES___ NO___

If **YES**, describe the location, depth and area of ponding. How close was this ponding to the pumping well(s)? Did the ponded water reach any natural outfall? What type of soil is in the ponded area?

3.5 Water Level Measurements

How were water levels measured in each well during the pumping test? *(Complete Table 3-5 for each well.)*

Table 3-5, WATER LEVEL MEASUREMENTS (Existing & Proposed New Wells)

Well Name/Number	Equipment

3.6 Pumping Test Results

3.6a. Complete Tables 3-6, 3-7, and 3-8 for each well and attach a copy of the **original** pumping test log (including recovery) in table format (example depicted in Worksheet B). Include all of the data collected during the pumping test including measurement times, water level measurements, water meter readings and pumping rate measurements, weather observations. For each well, include a semi-log plot of drawdown vs. elapsed time in minutes depicting the theoretical 180-day projected drawdown. *(If a continuous read datalogger was used, **DO NOT** submit the entire printout. Present the pertinent data in a chart noting measurements in increments no greater than every 5 minutes during the first hour, no less than every 15 minutes during the second hour and once an hour thereafter.)*

Table 3-6, PUMPING TEST SUMMARY

Well Name/ Number	Start Date/Time	End Date/Time	Pumping Duration (hrs)	Pumping Rate (gpm)	Static Water Level (ft)	Pumping Water Level (at end of test) (ft)

Table 3-7, WATER LEVEL DRAWDOWN SUMMARY

Well Name/ Number	Total Available Drawdown (ft)*	Total Observed Drawdown (ft)	Was stabilization* reached? Y/N	Total Observed Drawdown ÷ Pumping Rate (ft/gpm)	180-day Projected Drawdown (ft)

**Available drawdown means the distance between the static water level in the well casing and the uppermost productive water bearing zone, the pump intake, or the top of the well screen, whichever distance is the shortest.*

**Stabilization means that the average change in water level in the pumping well is 0.5 feet or less over a period of at least 12 hours.*

Table 3-8, WATER LEVEL RECOVERY SUMMARY

Well Name/ Number	Duration of Recovery Monitoring (hrs)	Recovered Water Level (ft)	% Recovery

3.6b. Extent of Drawdown

Did drawdown at the end of the pumping period exceed 35 ft/gpm in the proposed new well(s)?
YES ___ NO ___

3.6c. Projected Drawdown

Does drawdown projected out to 180-days exceed 90% of available drawdown in the proposed new well(s)?
YES ___ NO ___

3.6d. Extent of Recovery

Did the water level in the well recover to within 2 feet of the static water level or to a minimum of 90% of the total observed drawdown within a duration of time less than or equal to the pumping duration?
YES ___ NO ___

3.6e. Effects from/on the Proposed New Well(s)

Which of the following effects from/on the proposed new well(s) were assessed and how? (*Attach water level data from private/public wells or surface water resources monitored during the pumping test; or analysis results from water quality samples collected during the pumping test from other wells.*)

- Fluctuations of water levels in wells within 1,000 feet of the proposed new well(s).
- Fluctuations in water levels in nearby surface waters or wetlands.
- Groundwater contamination.
- Saltwater intrusion.

Summary of assessment:

Section 4.0 WELL CONSTRUCTION

4.1 Well Completion Report

Attach a copy of the well completion report(s) filed with the NH Water Well Board by the NH-licensed water well contractor who constructed the well(s).

4.2 Well Casing & Pump Information *(Complete Table 4-1 for each well.)*

Table 4-1, WELL CONSTRUCTION AND PUMP INFORMATION

Well Name/Number	Well Depth (ft)	Casing Length & Diameter (ft/in)	Pump Depth (ft)

Section 5.0 WATER QUALITY SAMPLING

5.1 Analyses and Laboratory

What laboratory analyzed the samples and for which parameters? *(Complete Table 5-1 for each laboratory. The laboratory must have current accreditation in New Hampshire for performing the analyses using methods approved for the analysis of drinking water.)*

Table 5-1, LABORATORY INFORMATION

Well Name/Number	Laboratory/NH Certification Number	Date/Time Sample was Collected	Analysis This Lab Performed

5.2 Results

(Attach copies of all laboratory results.)

Did any parameters exceed primary or secondary drinking water standards?

YES ___ NO ___

If **YES**, list the parameter(s) and level(s) detected:

Was a sample for Microscopic Particulate Analysis (MPA) collected?

YES ___ NO ___

If **YES**, attach a copy of the field screening data and laboratory results.

Section 6.0 WELLHEAD PROTECTION

6.1 Refinement of the Wellhead Protection Area (WHPA) for Bedrock Wells

(Refer to Env-Dw 305.11 and 305.21 and the guide, The Applicant’s Toolkit, for a discussion of refinement methods and documentation requirements. Please note: overburden wells require an analytical delineation method based on information collected during the pumping test. Contact NHDES Community Well Siting program staff for guidance, if needed. Bedrock wells use a fixed-radius circle centered on the well.)

Did you use the default WHPA radii?

YES ___ NO ___

If **YES**, identify the radius of each WHPA in Table 6-1 and attach a map of the refined WHPA for each well. *(Note, the WHPA can be shown on the GIS map.)*

If **NO**, provide **all** of the following information:

6.1a. Map showing the WHPA.

6.1b. Description and justification for analytical groundwater delineation method.

6.1c. Description of additional data collection activities including any performed as part of the pumping test program.

6.1d. Description and justification of how the data was analyzed and reported.

WELLHEAD PROTECTION AREA RADII

<u>Permitted Production Volume (gpd)</u>	<u>Radius (feet)</u>
Zero to 7,200	1,300
7,201 to 14,400	1,500
14,401 to 28,800	2,050
28,801 to 43,200	2,850
43,201 to 57,599	3,600

Table 6-1, WELLHEAD PROTECTION AREAS

Well Name/Number	Proposed Permitted Production Volume (gpd)	WHPA Radius (ft)

6.2 GIS Map & Inventory

If the GIS Map and Inventory submitted in the Preliminary Report is more than 90 days old, obtain a current version from NHDES and conduct a windshield survey.

6.2a. Who performed the windshield survey? When?

Name: _____ Date: _____

Phone: _____

6.2b. Are there any new known contamination sources within the WHPA that were not known at the time of Preliminary Report submittal?

YES ___ NO ___

6.2b.1 Have NHDES files for new known contamination sources been reviewed?

YES ___ NO ___

If **NO**, see the Applicant's Toolkit for guidance on conducting a file review. Do not complete any more of this form until you have completed any necessary file review.

If **YES**, attach the pertinent file review information.

File Review completed by

Date completed _____

6.2b.2 Based on the file review findings, is there a new known contamination site that might affect the quality of water derived from the proposed new well(s)?

YES ___ NO ___

6.3 Wellhead Protection Program (WHPP)

A WHPP is mandatory and includes updating the contamination source inventory every 3 years and sending groundwater protection educational materials to all owners of property. These materials should be submitted on the water system's letterhead. *(See the Applicant's Toolkit for examples of the educational materials. The first round of educational mailings is due within three (3) months of new system startup, within 3 months of well approval for existing systems or at the next regular waiver renewal if the system is already in the waiver program. Educational mailings must include Best Management Practices Rules [Env-Wq 401] for all potential contamination sources [PCS].)*

Who will be responsible for distributing these materials?

Name _____ Affiliation _____

Mailing Address _____

Daytime Phone Number _____ Email Address _____

- Provide a copy of the Wellhead Protection Program cover letters on water system letterhead and all educational materials in two separate packets, PCS and non-PCS.

Section 7.0 VULNERABILITY ASSESSMENT

If necessary, attach a vulnerability assessment of potential impacts to the proposed new well(s) from natural hazards per Env-Dw 305.28(j).

Section 8.0 APPROVAL TO CONNECT THE WELL

(Please note that approval to connect the well must be obtained under Env-Dw 405, Design Standards for Small Community PWS. Please contact DWGB Small Systems Engineering staff at (603) 271-2953 for further information.)

Who will be submitting distribution and connection design plans to DWGB small systems engineering?

Name _____

Company _____

Anticipated Date of Submittal: _____

Before submitting, thoroughly check this form to ensure that all questions are answered, all information is provided and all necessary attachments are included.

As a reminder, have you included the following?

1. As-built site sketch.
2. Copy of recorded easement or other legally binding document.
3. Pumping test log(s) including measurement times, pumping rates, water levels, recovery data, weather, semi-log plot(s) of time vs drawdown with the projected 180-day drawdown estimate and well completion reports.
4. Site sketch of the discharge location.
5. Laboratory results including MPA, if performed.
6. Refined Wellhead Protection Area map.
7. All maps, data and analysis required for an alternative WHPA delineation method, if one was used.
8. An updated GIS Map and Inventory and file review worksheet, if applicable.
9. Copy of educational materials on water system letterhead for the Wellhead Protection Program.
10. Any other pertinent materials.

WORKSHEET A: WAIVER APPLICATION

Project Name _____ Project Town _____

Date _____

Which section of the **rule** are you requesting be waived? Env-Dw 305. _____

Explain what, specifically, needs to be waived. Provide diagrams where helpful.

Describe what hardship would be caused if the rule were adhered to.

Explain the alternative solution in detail. Provide diagrams where helpful.

Explain how the alternative is consistent with the intent of the rules.

Explain how the alternative would adequately protect human health and the environment.

WORKSHEET C: RESULTS OF WINDSHIELD SURVEY

Project Name _____ Project Town _____

Date _____

Table 1. Potential Contamination Sources (PCS) Identified

Business Name or Resident	Land Use	Address	Location Marked on Map?

Note: Make copies of this page if you identify additional sites.

Table 2. Activities on the NHDES GIS Inventory that are no longer PCSs

Business Name or Resident	Address	Old PCS Activity (from GIS Inventory)	New Non-PCS Activity (from windshield survey)

Table 3. Contact with Local Officials and Property Owners

(May not be necessary if water supplier has long-term knowledge of local land uses and can provide appropriate information.)

Examples of Local Officials You Could Contact	Person Contacted & Date of Contact	Incident or Land Use Identified*	Address	Location Marked on Map?
Health Officer				
Fire Department				
Zoning Enforcement				
Town Clerk				
Tax Assessor				
Building Owner				

*Add sheets if needed to describe Incident or Land Use