

Well Driller Certification Program

**Board of Health/MassDEP Training
2010**

By

Paul Blain

Senior Hydrogeologist

MassDEP – Bureau of Resource Protection

Well Driller Certification Program



- **Program Consists of :**
 - **Certification of Well Drillers/Registration of Drill Rigs**
 - **Updating of the Well Completion Report Database w/Data From Recently Drilled Wells**
 - **Respond to Requests for Well Completion Data**
 - **Processing of Backlogged Well Completion Reports**

Well Driller Certification Program



- Program was transferred from DCR to MassDEP
- Legislation in Governors SFY 2010 Budget
- Effective October 1, 2009

Well Driller Certification Program



- **MassDEP OGC – Amending Regulations**
 - **Public Hearings - Nov. 12, 2009**
 - **Promulgation Date – April 2010**
 - **Well Driller Certificates/Rig Permits issued by DCR for SFY 2010**

Well Driller Certification Program



Fee Schedule

Initial Well Driller Certification - \$200

Renewal of Certification - \$100/annually

Registration of Drill Rigs - \$25/annually

Initial Waiver Application - \$400

Effective Upon Promulgation of MassDEP Regulations

Well Driller Certification Program



Compliance and Enforcement

- **Under Existing Regulations**
(313 CMR 3.00)
 - **\$300/Violation**
- **Under MassDEP Regulations**
 - **Effective upon promulgation of 310 CMR 46.00**
 - **Subject to MassDEP C & E Schedule**

Well Driller Certification Program



Database Transition

Phase I - Certification of Well Drillers and Rig Permits

Phase II – Electronic Filing of Well Completion Reports

Phase III – SearchWell

Well Driller Certification Program



Phase I

- **Development of an internal applications to manage the certification of well drillers and registration of drilling rigs**
- **Completion Date - November 2009**



Home



Reports



Help

Search Certification Number:

Search

Create New Driller

DRILLER INFO

Certification Number: Driller Type: Certified Since: InActive Date: Status:

First Name: Middle I: Home Phone:

Last Name: Cell Phone:

Home Address 1: Email Id:

Home Address 2: Fax:

City: State: MASSACHUSETTS (MA) Web Address:

Zip Code: Tax ID:

Comments:

COMPANY INFO

Company: Company Phone:

Address 1: Cell Phone:

Address 2: Email Id:

City: State: MASSACHUSETTS (MA) Fax:

Zip Code:

Add Driller

RIG

ACTIVITY

Company:
Address 1:
Address 2:
City:
Zip Code:

State: MASSACHUSETTS (MA)

Company Phone:
Cell Phone:
Email Id:
Fax:

RIG

Decal Number:
License Number:
VIN:
Rig State:

Rig Type:
Effective Start Date:
Effective End Date:

Edit	Decal Number	License Number	VIN	Rig State	Rig Type	Start Date	End Date

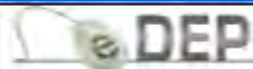
ACTIVITY

Well Driller Certification Program



Phase II

- **Develop a public facing application that will allow well drillers to submit Well Completion Reports electronically to MassDEP**
- **Completion date – April 2010**



WELL DRILLER - Transaction #152027

Error Check

Save

Print

Exit



Massachusetts Department of Environmental Protection
Bureau of Resource Protection

Please specify work performed:

Flow Test

Please specify well type:

Monitoring

Number Of Wells:

1

WELL LOCATION

In public right-of-way:

Yes (No)

Subdivision/Property/Description:

Property Owner:

TEST

Engineering Firm:

Address at well location:

Street Number:

120

Street Name:

MAIN ST

Building Lot#

Assessor's Map #:

Assessor's Lot#

City/Town:

MALDEN

GPS (GPS for the deepest well)

North:

42.11123

West:

72.33333

Mailing Address:

Use the address of the well location address

Street Number:

120

Street Name:

MAIN ST

City/Town:

MALDEN

State:

MASSACHUSETTS

Board of health permit obtained:

Yes (Not Required)

Permit Number:

152027

Date Issued:

10/15/2015



MassDEP's Online Filing System

WELL DRILLER - GENERAL WELL FORM - Transaction #152076

Error Check

Save

Print

Exit



Massachusetts Department of Environmental Protection
Bureau of Resource Protection

DRILLING METHOD

Overburden

Dug

Bedrock

Reverse Rotary

WELL LOG OVERBURDEN LITHOLOGY

From(ft)	To(ft)	Code	Color	Comment	Drop in drill stem	Extra fast or slow drill rate	Loss or addition of fluid
0	15	Coarse Sand	Dark Gray		<input type="checkbox"/> Yes	<input type="radio"/> Fast <input type="radio"/> Slow	<input type="radio"/> Loss <input type="radio"/> Addition
15	25	Fine Sand	Greenish Gray		<input type="checkbox"/> Yes	<input checked="" type="radio"/> Fast <input type="radio"/> Slow	<input type="radio"/> Loss <input type="radio"/> Addition

Add More

WELL LOG BEDROCK LITHOLOGY

WELL LOG BEDROCK LITHOLOGY

From(ft)	To(ft)	Code ▲	Comment	Drop in drill stem	Extra fast or slow drill rate	Loss or addition of fluid	Visible Rust Staining	Extra Large Chips	
<input type="text" value="60"/>	<input type="text" value="100"/>	Slate/Phyllite ▼	<input type="text"/>	<input type="checkbox"/> Yes	<input type="radio"/> Fast <input type="radio"/> Slow	<input type="radio"/> Loss <input type="radio"/> Addition	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	Delete
<input type="text" value="25"/>	<input type="text" value="60"/>	Schist ▼	<input type="text"/>	<input type="checkbox"/> Yes	<input type="radio"/> Fast <input type="radio"/> Slow	<input type="radio"/> Loss <input type="radio"/> Addition	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	Delete

Add More

ADDITIONAL WELL INFORMATION

Developed Yes No

Total Well Depth

Surface Seal Type ▼

Fracture Enhancement Yes No

Depth to Bedrock

CASING

From	To	Type	Thickness	Diameter	Driveshoe	
<input type="text" value="15"/>	<input type="text" value="20"/>	Steel ▼	17# ▼	<input type="text"/>	<input type="checkbox"/> Yes	Delete

Add More

SCREEN No Screen

From	To	Type	Slot Size	Diameter	
<input type="text"/>	<input type="text"/>	Carbon Steel ▼	<input type="text"/>	<input type="text"/>	Delete

Add More

WATER-BEARING ZONES DRY WELL

From	To	Yield (gpm)
<input type="text"/>	<input type="text"/>	<input type="text"/>

WATER-BEARING ZONES DRY WELL

From	To	Yield (gpm)	
<input type="text"/>	<input type="text"/>	<input type="text"/>	Delete

ANNULAR SEAL / FILTER PACK

From	To	Material 1	Weight	Material 2	Weight	Water (gal)	Batches	Method Of Placement	
<input type="text"/>	<input type="text"/>	<input type="text" value="Choose Material"/>	<input type="text"/>	<input type="text" value="Choose Material"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="- Choose One -"/>	Delete

14. WATER LEVEL

Date Measured	Static Depth BGS (ft)	Flowing Rate (gpm)
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15. COMMENTS

16. WELL DRILLERS STATEMENT
This well was drilled or altered under my direct supervision, according to the applicable rules and regulations, and this report is complete and accurate to the best of my knowledge.

Driller	<input type="text"/>	Supervising Driller	<input type="text"/>	Registration #	<input type="text"/>
Firm	<input type="text"/>	Date Job Complete	<input type="text"/>	Rig Permit #	<input type="text"/>

NOTE: Well Completion Reports must be filed by the registered well driller within 30 days of well completion.



WELL DRILLER - ADDENDUM FORM - Transaction #152027

Error Check

Save

Print

Exit



Massachusetts Department of Environmental Protection
Bureau of Resource Protection

WELL COMPLETION ADDENDUM FORM MONITORING WELLS

Corresponds with Well Completion Report #:

Well ID	Well Depth	Screen Interval FROM	Screen Interval TO	GPS Coordinates (WGS 1984) Degree Decimals	
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	North: <input type="text"/>	West: <input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	North: <input type="text"/>	West: <input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	North: <input type="text"/>	West: <input type="text"/>

NOTE: Well Completion Reports must be filed by the registered well driller within 30 days of well completion.

Well Driller Certification Program



Phase III

- .NET public facing application that will reside on the MassDEP Website that will allow the searching of the well information database
- Scheduled Release Date – April 2010
- Database Currently contains 80,000 wells
- 90,000 Well Completion Reports Backlogged
 - Going Back to 1970s
 - Poor Locational Information

Well Drilling

Well ID: Town: Drill registration Number:

Advanced Search

Date Range	Choose a Well Type	Other Search Options
Begin Date: <input type="text" value="Null"/>	<input type="checkbox"/> Cathodic Protection	<input type="radio"/> All
End Date: <input type="text" value="Null"/>	<input type="checkbox"/> Domestic	<input type="radio"/> Decommission
	<input type="checkbox"/> Geoconstruction	<input type="radio"/> Deepen
	<input type="checkbox"/> Geothermal Close Loop	<input type="radio"/> Hydrofracture
	<input type="checkbox"/> Geothermal Open Loop	<input type="radio"/> New Well
	<input type="checkbox"/> Industrial	<input type="radio"/> Repair
	<input type="checkbox"/> Injection	<input type="radio"/> Replacement
	<input type="checkbox"/> Irrigation	
	<input type="checkbox"/> Monitoring	
	<input type="checkbox"/> Public Water Supply	
	<input type="checkbox"/> Recovery	
	<input type="checkbox"/> Test Wells	

[Search](#) [Reset](#) [Gis](#) [Export To Excel](#)



Well Drilling

Well ID: Town: Drill registration Number:

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End Date: <input type="text" value="Null"/>	<input checked="" type="checkbox"/> Domestic	<input type="radio"/> Decommission
	<input type="checkbox"/> Injection	<input type="radio"/> Deepen
	<input type="checkbox"/> Irrigation	<input type="radio"/> Hydrofracture
	<input type="checkbox"/> Geoconstruction	<input type="radio"/> New Well
	<input type="checkbox"/> Monitoring	<input type="radio"/> Repair
	<input type="checkbox"/> Public Water Supply	<input type="radio"/> Replacement
	<input type="checkbox"/> Recovery	
	<input type="checkbox"/> Test Wells	
	<input type="checkbox"/> Geothermal Close Loop	
	<input type="checkbox"/> Geothermal Open Loop	
	<input type="checkbox"/> Industrial	

Results

	WELL ID	TOWN	STREET NUMBER	STREET NAME	LAT D	LAT M	LONG D	LONG M	DATE COMPLETE	WELL TYPE
<input type="checkbox"/>	817	Acton	108A	Newtown Road	42	29.6190	-71	26.9052	09/26/2000	Domestic
<input type="checkbox"/>	818	Acton	2	Simon Haggood L	42	29.5494	-71	23.7618	09/14/2000	Domestic
<input type="checkbox"/>	820	Acton	226	Newtown Road	42	30.0006	-71	27.7824	09/07/2000	Domestic
<input type="checkbox"/>	822	Acton	115	Quarry Road	42	31.5006	-71	25.0242	06/30/2000	Domestic
<input type="checkbox"/>	827	Acton	10	Breezy Point Roa	42	30.8178	-71	25.9248	05/08/2000	Domestic
<input type="checkbox"/>	828	Acton	106	Davis Road	42	29.8182	-71	24.5892	04/24/2000	Domestic
<input type="checkbox"/>	829	Acton	820	Main Street	42	30.8910	-71	24.4848	04/18/2000	Domestic

Well Drilling

Well ID: Town: Drill registration Number:

Advanced Search

[Search](#) [Reset](#) [Gis](#) [Export To Excel](#)

Results

	WELL ID	TOWN	STREET NUMBER	STREET NAME	LAT D	LAT M	LONG D	LONG M	DATE COMPLETE	WELL TYPE
<input type="checkbox"/>	817	Acton	108A	Newtown Road	42	29.6190	-71	26.9052	09/26/2000	Domestic
<input type="checkbox"/>	818	Acton	2	Simon Hapgood L	42	29.5494	-71	23.7618	09/14/2000	Domestic
<input type="checkbox"/>	820	Acton	226	Newtown Road	42	30.0006	-71	27.7824	09/07/2000	Domestic
<input type="checkbox"/>	822	Acton	115	Quarry Road	42	31.5006	-71	25.0242	06/30/2000	Domestic
<input type="checkbox"/>	827	Acton	10	Breezy Point Road	42	30.8178	-71	25.9248	05/08/2000	Domestic
<input type="checkbox"/>	828	Acton	106	Davis Road	42	29.8182	-71	24.5892	04/24/2000	Domestic
<input type="checkbox"/>	829	Acton	820	Main Street	42	30.8910	-71	24.4848	04/18/2000	Domestic
<input type="checkbox"/>	830	Acton	220	Newtown Road	42	30.0570	-71	27.8004	03/29/2000	Domestic
<input type="checkbox"/>	832	Acton	2	Spring Hill Road	42	29.9112	-71	23.4294	03/01/2000	Domestic
<input type="checkbox"/>	836	Acton	9	Triangle Farm Lane	42	30.2910	-71	23.2470	12/04/1999	Domestic
<input type="checkbox"/>	837	Acton	3	Eastern Road	42	31.1004	-71	24.3732	10/20/1999	Domestic
<input type="checkbox"/>	840	Acton	126	Strawberry Hill Road	42	29.5650	-71	23.9154	09/04/1999	Domestic
<input type="checkbox"/>	842	Acton	8	Settlement Way	42	29.9202	-71	24.5622	08/18/1999	Domestic
<input type="checkbox"/>	843	Acton	8	Longmeadow Way	42	29.7360	-71	24.6288	07/29/1999	Domestic
<input type="checkbox"/>	844	Acton	292	Nagog Hill Road	42	30.1680	-71	26.7642	07/27/1999	Domestic
<input type="checkbox"/>	24173	Acton	4	Duston Lane	42	29.7078	-71	23.7582	06/13/1997	Domestic
<input type="checkbox"/>	24174	Acton	17	Grasshopper Lane	42	29.0184	-71	25.4526	06/04/1997	Domestic

Well Drilling

Well ID: Town: Drill registration Number:

Advanced Search

Date Range	Choose a Well Type	Other Search Options																																																	
Begin Date: Null <input type="text"/>	<input type="checkbox"/> Cathodic Protection	<input type="radio"/> All																																																	
October 2009	<input type="checkbox"/> Injection	<input type="radio"/> Decommission																																																	
<table border="1"> <tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr> <tr><td>27</td><td>28</td><td>29</td><td>30</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td></tr> <tr><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td></tr> <tr><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr> </table>	S	M	T	W	T	F	S	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	<input type="checkbox"/> Domestic <input type="checkbox"/> Geoconstruction <input type="checkbox"/> Geothermal Close Loop <input type="checkbox"/> Geothermal Open Loop <input type="checkbox"/> Industrial	<input type="radio"/> Deepen <input type="radio"/> Hydrofracture <input type="radio"/> New Well <input type="radio"/> Repair <input type="radio"/> Replacement
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27	28	29	30	1	2	3																																													
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Well Drilling

Well ID: Town: Drill registration Number:

Advanced Search

Date Range	Choose a Well Type	Other Search Options
Begin Date: <input type="text" value="Null"/>	<input type="checkbox"/> Cathodic Protection	<input type="radio"/> All
End Date: <input type="text" value="Null"/>	<input checked="" type="checkbox"/> Domestic	<input type="radio"/> Decommission
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<input type="checkbox"/>	820	Acton	226	Newtown Road	42	30.0006	-71	27.7824	09/07/2000	Domestic
<input type="checkbox"/>	821	Acton	33	Prospect Street	42	27.9108	-71	27.4434	08/09/2000	Irrigation
<input type="checkbox"/>	822	Acton	115	Quarry Road	42	31.5006	-71	25.0242	06/30/2000	Domestic
<input type="checkbox"/>	823	Acton	526	Main Street	42	29.4516	-71	25.6524	06/29/2000	Irrigation

Zero Results, Please Change Search Parameters

Well Drilling

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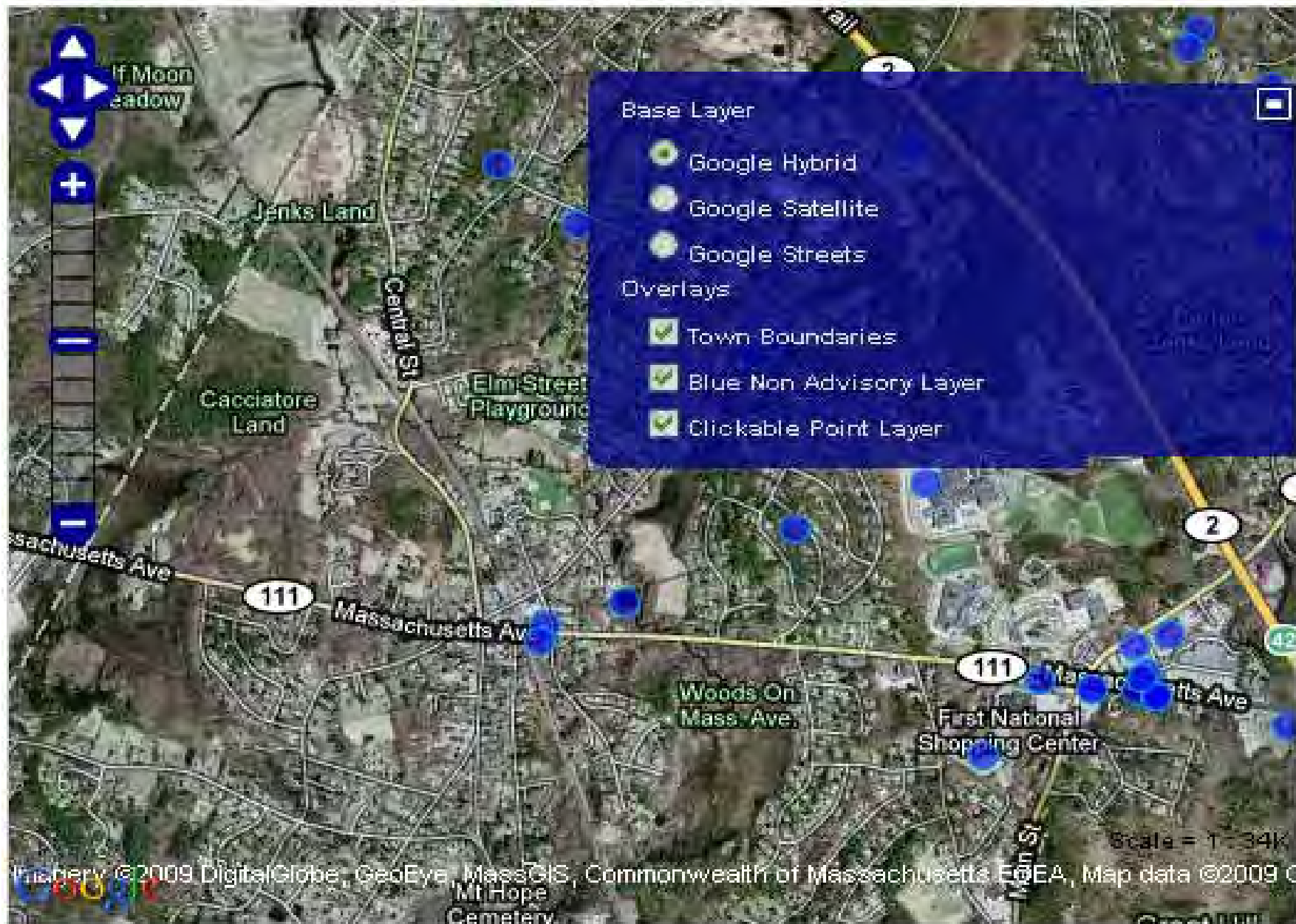
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History:





Base Layer

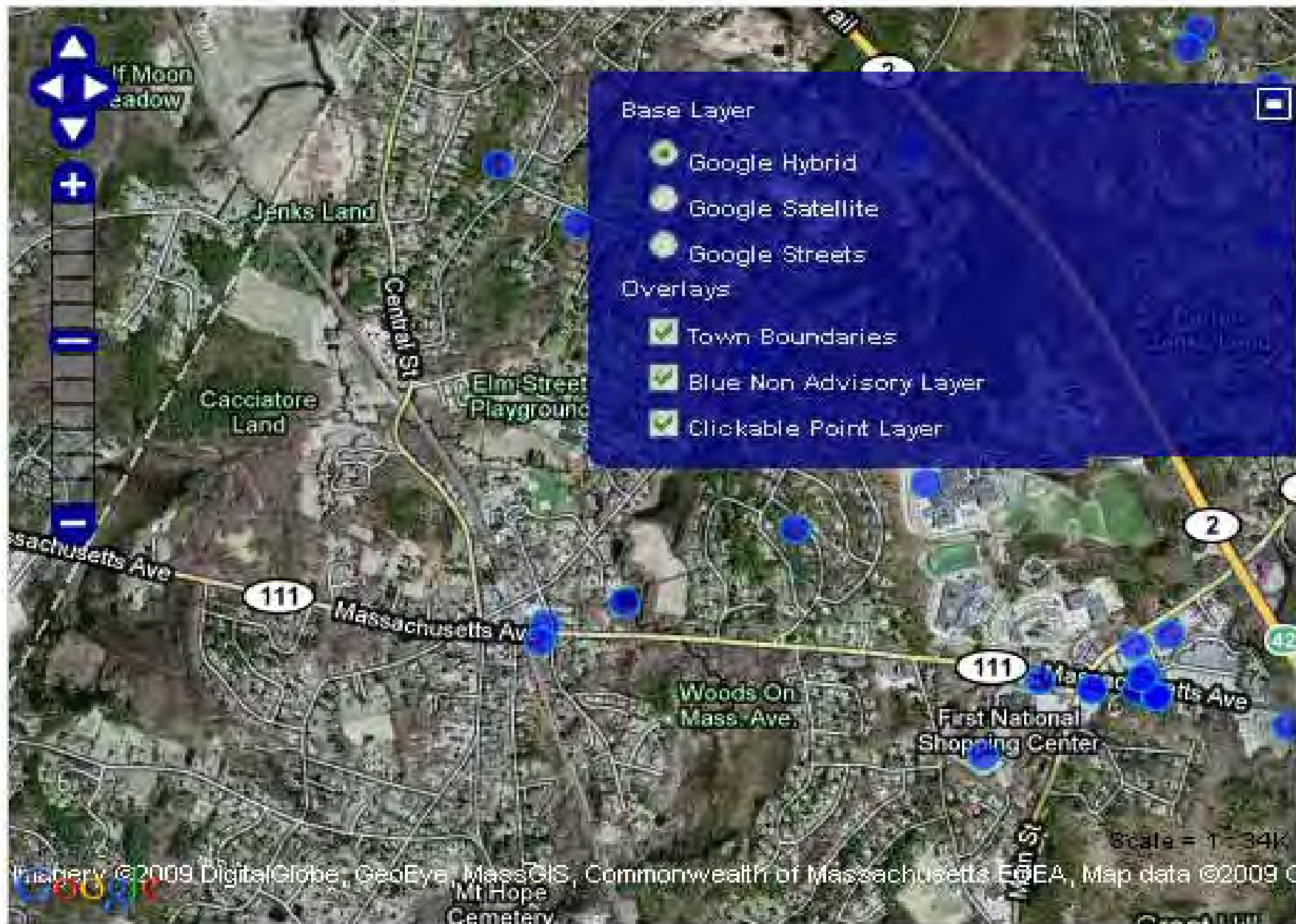
- Google Hybrid
- Google Satellite
- Google Streets

Overlays

- Town Boundaries
- Blue Non Advisory Layer
- Clickable Point Layer

History:





Base Layer

- Google Hybrid
- Google Satellite
- Google Streets

Overlays

- Town Boundaries
- Blue Non Advisory Layer
- Clickable Point Layer

History:



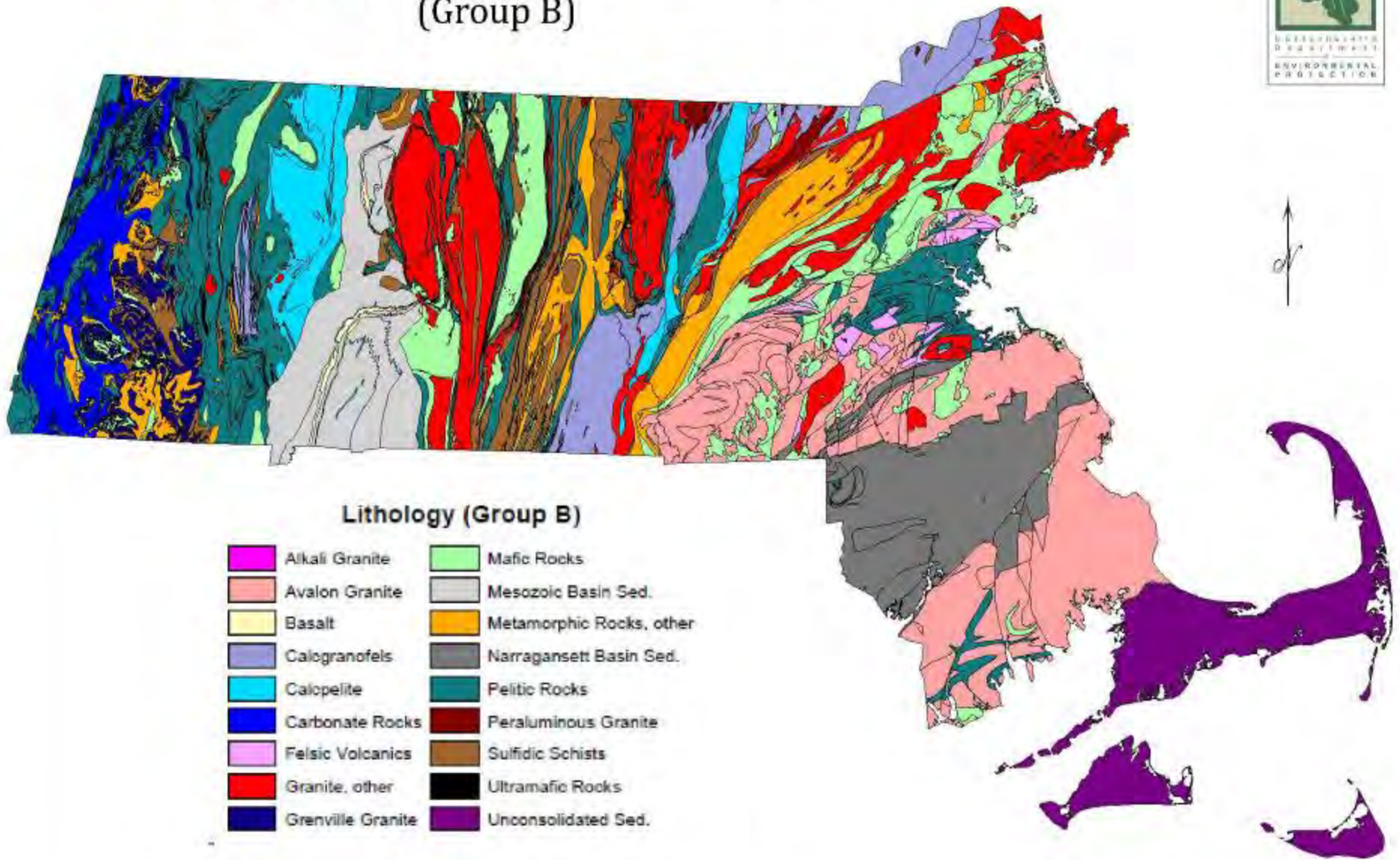
Well Driller Certification Program



Geologic Mapping Layers

- **Surficial Geology – in progress by USGS**
- **Bedrock Geology – Zen unless mapped by Office of State Geologist**

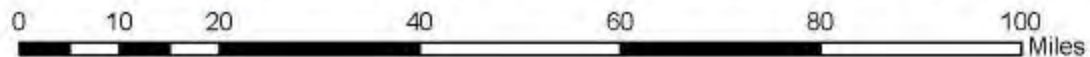
Lithology Distribution in Massachusetts (Group B)



Lithology (Group B)

 Alkali Granite	 Mafic Rocks
 Avalon Granite	 Mesozoic Basin Sed.
 Basalt	 Metamorphic Rocks, other
 Calogranofels	 Narragansett Basin Sed.
 Calcopelite	 Pelitic Rocks
 Carbonate Rocks	 Peraluminous Granite
 Felsic Volcanics	 Sulfidic Schists
 Granite, other	 Ultramafic Rocks
 Grenville Granite	 Unconsolidated Sed.

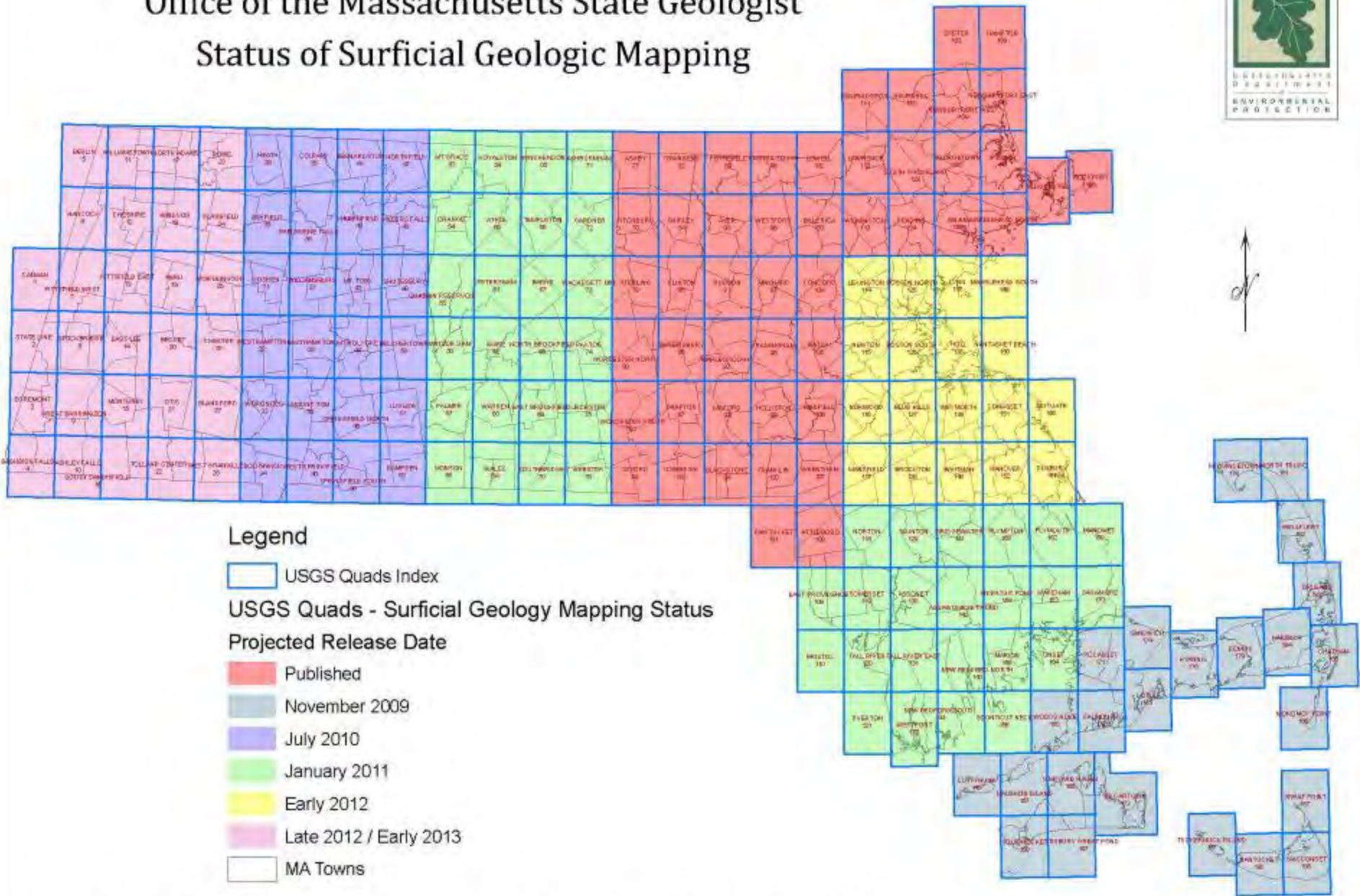
Data Source: U.S. Geological Survey, Eastern Minerals Resource Team, 2003.



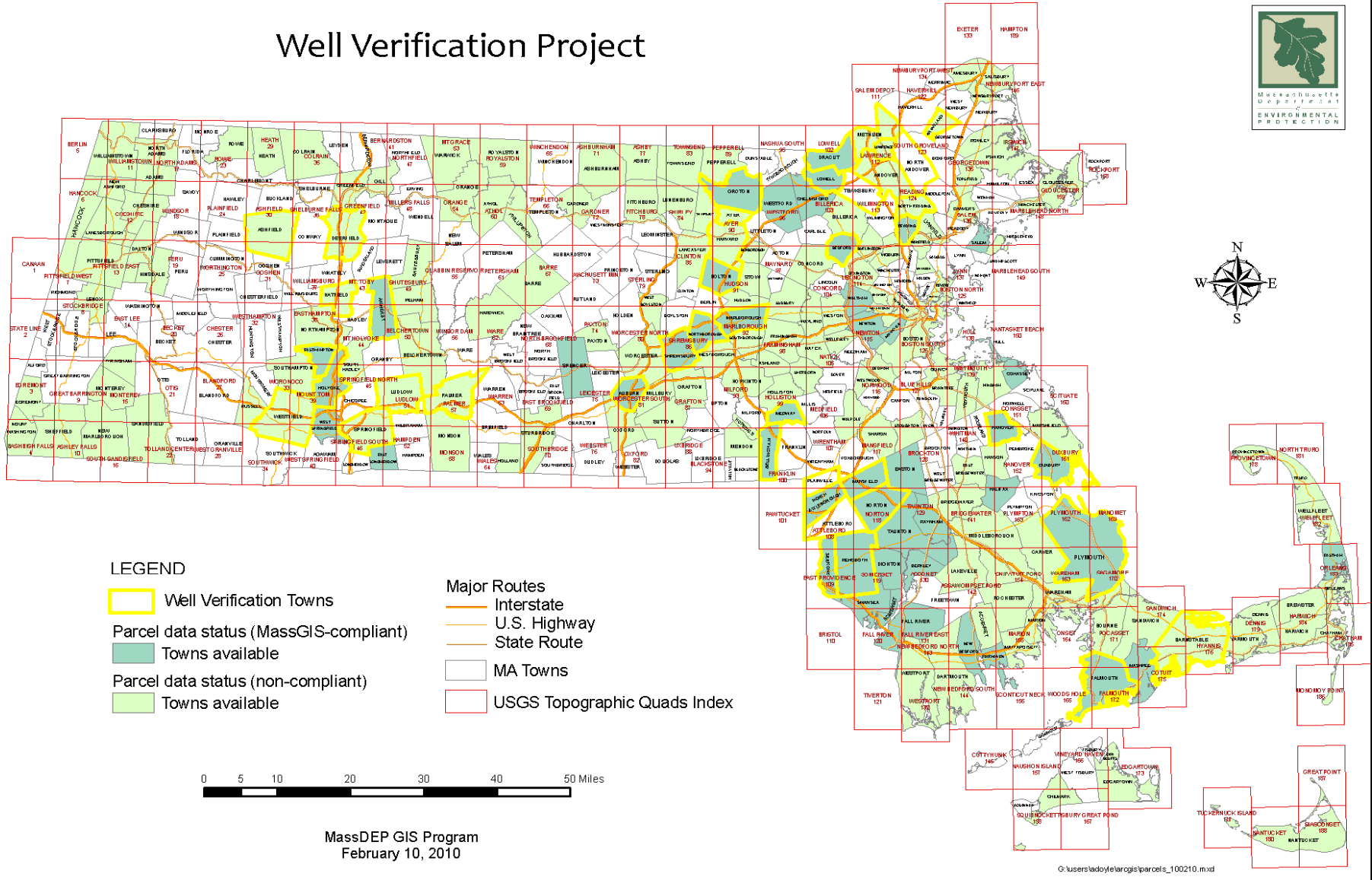
MassDEP GIS Program
10/28/09

Office of the Massachusetts State Geologist

Status of Surficial Geologic Mapping



Well Verification Project



LEGEND

- Well Verification Towns
- Parcel data status (MassGIS-compliant)
- Towns available
- Parcel data status (non-compliant)
- Towns available
- Major Routes
- Interstate
- U.S. Highway
- State Route
- MA Towns
- USGS Topographic Quads Index



MassDEP GIS Program
February 10, 2010

Well Driller Certification Program



- **Establish an Advisory Committee**
 - **MGWA – President**
 - **Drillers/Monitoring Well Drillers**
 - **DPH**
 - **MHOA**
 - **MWWA**
 - **Others**

Well Driller Certification Program



- **Advisory Committee Meets bimonthly**
- **Agendas and Meeting Minutes are posted on Well Driller Web Page**
- **<http://www.mass.gov/dep/public/wdacmtgs.htm>**

Well Driller Certification Program



Advisory Committee Issues

- Certification of Pump Installers
- Establishment of Two Tier Driller Certification System (apprentices/master drillers)
- Certification of Well Drilling Companies
- Develop Additional Well Driller Certification Categories
- Update Well Construction Standards

Well Driller Certification Program



Advisory Committee Issues (cont'd)

- Well Tagging
- Modify Well Driller Certification and Rig Permit Schedule
- Standardization of Well Yield Testing
- Modify Well Driller Exam to Include Practical Component
- Submittal of Water Quality Results to eDEP

Well Driller Certification Program



MassDEP

Contact information:

Steve Hallem – 617.292.5681

stephen.hallem@state.ma.us

Paul Blain – 617.292.5948

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Ground Source Heat Pump (GSHP) Wells Requiring MassDEP UIC Registration



- **Any well receiving return flow or system bleed from an open-loop system**
- **All closed-loop and Direct Exchange (DX) wells**

Note: All GSHP wells installed and operated in Massachusetts must conform to the MassDEP *Guidelines for Ground Source Heat Pump Wells (March 2009)*

Additional Well-Type Specific Requirements



- **Dual Use Open-loop (used for drinking water and heating/cooling):**
 - backpressure backflow prevention device prior to heat exchanger
 - BOH approval for private drinking water well
 - Requires local plumbing inspector approval – some towns don't allow this type of dual use
- **DX: cathodic protection (some exceptions)**

Setback Distances



If the open-loop well is also a private water supply well then all standard setback distances apply

All others:

- **25 feet from potential sources of contamination including but not limited to:**
 - septic tanks/fields
 - lagoons
 - livestock pens
 - oil or hazardous materials storage tanks
- **10 feet from property boundary (some towns require further setbacks from public road)**

Closed-loop and DX wells:

- **50 feet from private drinking water wells**

Proposed Guidelines Changes



All GSHP wells:

- 10-foot setback from water and sewer lines

Open-loop wells:

- 25-foot setback from other potable water supply wells
- Backflow prevention on system bleed line

Dual use (potable water supply and GSHP discharge) wells:

- Return flow discharge must be located above pump withdrawal depth

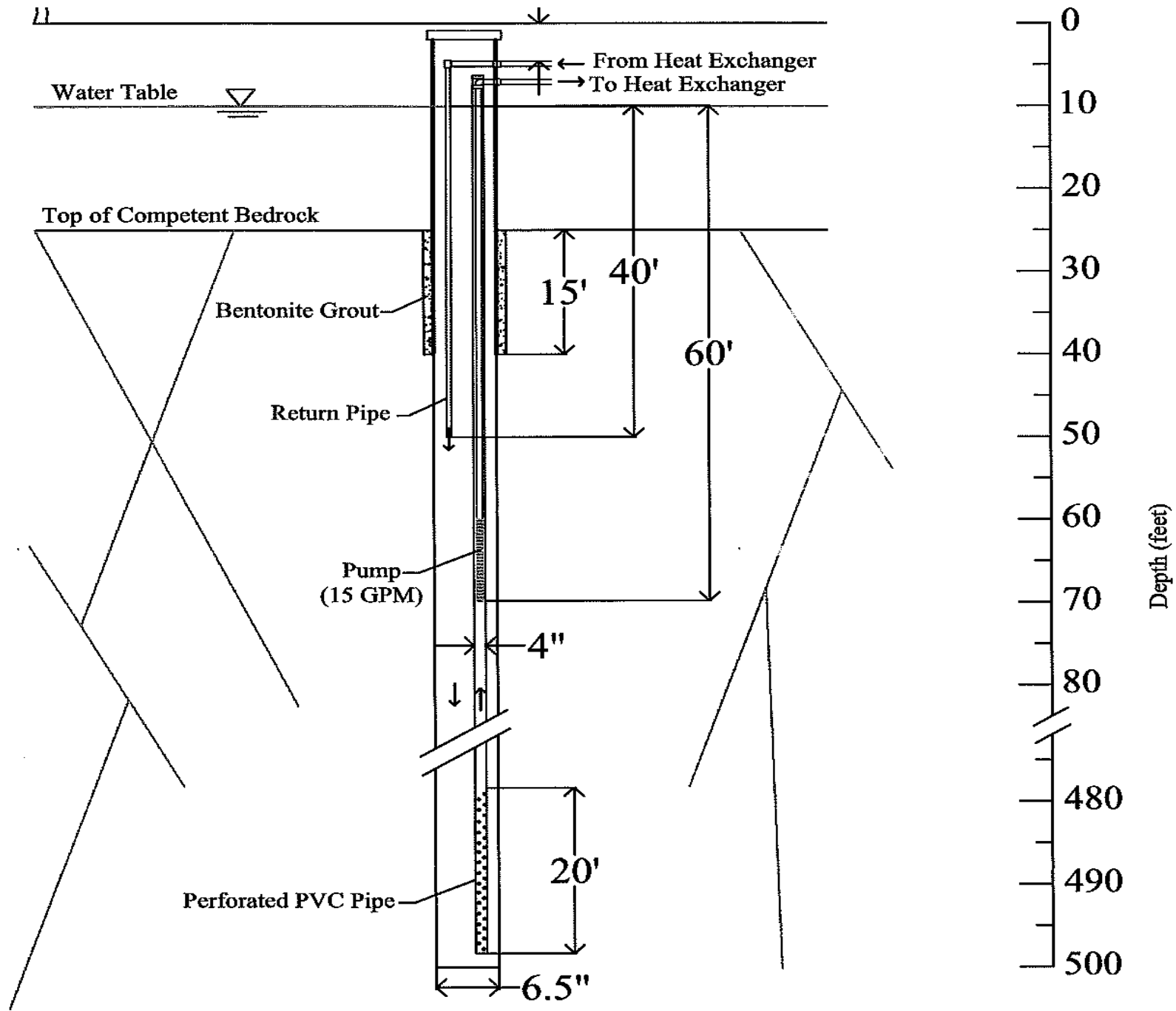


Figure copied from UIC submittal from GeoHydroCycle, Inc.

UIC Registration Application Process



Residential applications up to 4 units: BRP WS06e – fee exempt

All others: BRP WS06a,b,c – fee applies unless applicant is a municipal government and state entity doesn't pay if fee is \$100 or less

UIC Registration Application Submittal Requirements



- **Site Plan**
- **Cross Section of GSHP well and bleed well (if applicable)**
- **Open-Loop - Design rate of system and of bleed well and anticipated bleed volumes (daily maximum and total annual)**

Greatest MassDEP Concern for Open-Loop GSHP Wells



- **Coastal Environments – salt water intrusion and contamination of fresh water aquifers & corrosion concerns for plumbing and heat pump equipment**

UIC Registration Compliance Problems



- **A small percentage of GSHP wells are being registered with MassDEP UIC Program**
- **Direct Exchange (DX) wells are being installed by well drillers that are not certified by the MassDEP's Well Driller Certification Program (formerly part of DCR)**
 - **partially due to lack of registered drilling rigs suitable for installing DX wells**



UIC Registration Compliance Problems (continued)



What is a local benefit of a properly registered GSHP well?

- **A MassDEP hydrogeologist reviews the application providing at least one round of review from a groundwater expert**

UIC Registration Compliance Problems (continued)



What is a relatively painless way for the BOH to improve UIC registration compliance?

- **If you issue well construction permits for any or all of the GSHP well types, consider requiring proof of MassDEP UIC registration approval prior to issuing the BOH permit**
 - **If I have your email address you will be notified concurrently with the applicant**

BOH email addresses currently on-file with UIC Program



A – D

Acton
Amherst
Andover
Ashfield
Barnstable
Beverly
Boston
Boxford
Brewster
Burlington
Canton
Dracut

F – L

Fairhaven
Falmouth
Gloucester
Goshen
Grafton
Holden
Holliston
Hudson
Lunenburg

M – R

Manchester BTS
Medway
Middleborough
Montague
Needham
New Braintree
Newton
Norwell
Rehoboth
Rutland

S – W

Shrewsbury
South Hadley
Sterling
Sudbury
Topsfield
Wayland
West Newbury
Westford
Westwood
Whately
Williamsburg
Winchendon

MassDEP UIC Information & Contacts



Guidelines for Ground Source Heat Pump Wells & UIC forms and instructions available on MassDEP's UIC Web page:

<http://www.mass.gov/dep/water/drinking/uic.htm>

For GSHP UIC Registration:

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