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CHRISTOPHER D. CLEMENT, SR.  
COMMISSIONER

JEFF BRILLHART, P.E.  
ASSISTANT COMMISSIONER

Her Excellency, Governor Margaret Wood Hassan  
and the Honorable Council  
State House  
Concord, New Hampshire 03301

Bureau of Materials & Research  
August 27, 2014

REQUESTED ACTION

Sole Source

Authorize the Department of Transportation to amend a **sole source** Joint Funding Agreement with the U.S. Geological Survey (USGS) (Vendor 175772), Pembroke, NH. This amendment will allow USGS to increase their contribution by \$15,000 to a total of \$71,760. This is an internal accounting measure that allows the USGS to allocate additional resources to the project, and with the Department expending no additional funds. The amendment does not change the Department's contribution or extend the completion date of this project.

EXPLANATION

The USGS is uniquely qualified to conduct this study because of their comprehensive knowledge of groundwater transport characteristics, unique isotope testing capabilities and reputation for its unbiased, science-based approach to complex and sensitive issues.

The Governor and Executive Council (G&C) authorized the Department to enter into a **sole source** Joint Funding Agreement with the U.S. Geological Survey (USGS) on July 10, 2013, Item number 111 (attached). The agreement authorized the Department to expend \$70,000 to determine the source of nitrates in drinking water near blasting sites. G&C authorized an amendment to the agreement on April 23, 2014, Item number 95 (attached) that increased the Department's contribution by \$15,990 to a total fee of \$85,990. That amendment stated that USGS would provide matching funds of \$56,760.

This, the second amendment to the agreement, will address a request from USGS that enables them to allocate an additional \$15,000 to this project. No additional funding will be required of the Department.

This Amendment has been approved by the Attorney General as to form and execution. Copies of the fully executed Agreement are on file at the Secretary of State's Office and the Department of Administrative Services, and subsequent to Governor and Council approval will be on file at the Department of Transportation.

Your approval of this resolution is respectfully requested

Sincerely,

A handwritten signature in black ink that reads "C. D. Clement, Sr." in a cursive style.

Christopher D. Clement, Sr.  
Commissioner

Attachments



UNITED STATES DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY  
AMENDMENT OF JOINT FUNDING AGREEMENT  
FOR  
WATER RESOURCES INVESTIGATIONS  
Amendment No. 2

6000000093  
13ENNH000000025  
LH00FA7/LG40FE0  
TIN 02-6000618

This amendment is for the agreement dated July 10, 2013.

The parties hereto agree that subject to the availability of appropriations and in accordance with their respective authorities there shall be maintained in cooperation

Paragraphs 2a of the agreement is hereby   X   increased/      decreased by **\$15,000.00** to read as follows:

(a) **\$71,760.00** by the party of the first part during the period  
**July 10, 2013 to June 30, 2015**

Paragraphs 2b of the agreement is hereby   X   increased/      decreased by **\$0.00** to read as follows:

(b) **\$ \$85,990.00** by the party of the second part during the period  
**July 10, 2013 to June 30, 2015**

Billing for this agreement will be rendered **Quarterly**. Payments of bills are due within 60 days after billing date. If not paid by the due date, interest will be charged at the current Treasury rate for each 30-day period, or portion thereof, that the payment is delayed beyond the due date. (31 USC 3717; Comptroller General File B-212222, August 23, 1983. The USGS legal authority is 43 USC 36c; 43 USC 50; 43 USC 50b. USGS DUN's # 048601645

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

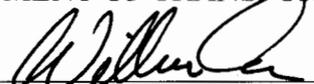
by   
(Signature)

Name: **Keith W. Robinson**

Title: **Director**

Date: 7/17/14

STATE OF NEW HAMPSHIRE  
DEPARTMENT OF TRANSPORTATION

by   
(Signature)

Name: **William J. Cass, P.E.**

Title: **Director of Project Development**

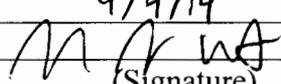
Date: 8/27/14

by \_\_\_\_\_  
(Signature)

Name: John J. Conforti

Title: **NH Office of the Attorney General**

Date: 9/4/14

By   
(Signature)

Name: \_\_\_\_\_

Title: **NH Governor & Executive Council**

Date: \_\_\_\_\_





## U.S. Geological Survey Manual

### 200.2 - Redelegations

12/06/10

#### OPR: Office of Administration and Enterprise Information

**Instructions:** This chapter is being revised to reflect a change in office chief, title, and office name.

**1. Purpose.** This chapter sets forth policy governing delegations of authority to carry out USGS activities.

#### **2. Definitions.**

A. *Authority* is the power vested in a person to approve or authorize an action. The exercise of an authority enacts a binding decision that commits the direct or indirect expenditure of funds or other resources.

B. *Delegating* is the official vesting of an authority, in whole or in part, by one person to another, in order to give legal effect or administrative approval to actions taken.

**3. Policy.** Authority in the USGS is to be delegated: (1) to the lowest level practicable, so that decisions can be made where the issues/problems exist; (2) so that it is not more restrictive than permitted by higher authority, unless there is good management reason for doing so; and (3) in a manner that strengthens the chain of command so that authority is commensurate with responsibility. An orderly system for approving, issuing, limiting, withdrawing, and keeping track of delegations of authority shall be in place at all levels of the Bureau.

**4. Guidelines.** In making decisions to delegate authority, the following guidelines are to be followed:

A. The delegation to a lower level would provide for greater efficiency.

B. Adequate guidance must exist for the proposed recipient(s) to carry out the authority. (**NOTE:** If not, guidance must be adopted prior to, or concurrent with, the delegation of authority.)

C. Proposed recipient(s) is/are trained and qualified to exercise the authority effectively.

D. The delegation of authority would not interfere with the operations and functions of other employees or with other programs and does not conflict with other delegations of authority that demand segregation of duties or the use of checks and balances.

E. The delegating official shall monitor the use of the authority, and retains accountability for the results. (NOTE: An official delegating authority does not relinquish the power to exercise that authority at any time and is not relieved of the responsibility for action taken by the person(s) to whom the authority has been delegated.) The official delegating the authority may, temporarily or permanently, withdraw or limit the delegation by issuing such a decision.

F. Delegations should be in writing, and leave no doubt as to the extent or limits of the authority delegated. In emergency situations or for temporary periods, authority may be delegated verbally.

G. A delegation of authority made to an individual is also made to that individual's supervisor(s), unless stated otherwise in the delegation of authority. Also, when designated as "Acting," an individual has the same authority as the person for whom he/she is acting, unless a further restriction is documented. (See SM 205.4 for procurement authority exception.)

H. Delegates must exercise redelegated authority in conformance with any requirements the delegator must observe.

I. Delegations should be issued to position titles rather than to named officials whenever possible. The delegating official must decide whether the authority being delegated is to a position or to an individual and so specify in the delegation of authority.

/s/ Karen D. Baker

December 6, 2010

Karen D. Baker

Associate Director for Administration and Enterprise Information

Date

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URL:<http://www.usgs.gov/usgs-manual/200/200-2.html>

Page Contact Information: [AEL, Office of Policy and Analysis](#)

Last modification: 19-Dec-2012@08:27



**U.S. Geological Survey Manual**

**205.13 – Delegations of Authority to Enter into Agreements and to Accept Contributions**

**Date:** 4/11/11

**OPR:** Office of Administration and Enterprise Information

**Instruction:** This chapter is being revised to reflect a change in the Office of Primary Responsibility--office chief, title, and office name. **Appendix A is being revised to: (1) remove the contents referencing "agreements to perform work for non-Federal organizations," and replacing it with delegations of authority to sign Intergovernmental Cooperation Act agreements; (2) add two new agreement categories--collaborative and Federal Energy Regulatory Commission agreements; and (3) revise positions/titles of individuals with delegated authority based on the Bureau's realignment.**

- 1. Purpose.** This chapter establishes delegations of authority necessary to approve agreements and accept contributions at the U.S. Geological Survey. Authority is delegated in Appendix A of this chapter.
- 2. Policy.** General provisions regarding policy and limitations on delegations are established in Survey Manual Chapter (SM) 200.1, Delegations; and general provisions regarding policy and guidelines on redelegations are established in SM 200.2, Redelegations. Managers and supervisors retain the power to exercise the authority that is being delegated to their subordinates. An official entering into an agreement is responsible for ensuring his or her statutory authority to enter into such an agreement.
- 3. Deferred Publication of Analyses and Interpretive Reports.** For reimbursable work, deferred publication of analyses and interpretive reports must be approved by the responsible Associate Director or Regional Executive.

Appendix A

/s/ Karen D. Baker April 11, 2011

Karen D. Baker \_\_\_\_\_  
Associate Director for Administration and Enterprise Information Date

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[U.S. Department of the Interior | U.S. Geological Survey](#)

URL: <http://www.usgs.gov/usgs-manual/200/205-13.html>

Page Contact Information: [AEI, Office of Policy and Analysis](#)

Last modification: 19-Dec-2012@09:16



**Appendix A  
Part 205, Chapter 13**

USGS DELEGATIONS OF AUTHORITY TO ENTER INTO AGREEMENTS AND TO ACCEPT CONTRIBUTIONS		
AUTHORITY	AUTHORITY DELEGATED TO <i>(THESE AUTHORITIES MAY NOT BE REDELEGATED UNLESS SPECIFIED IN THE DELEGATION):</i>	DOCUMENTATION REQUIRED/REMARKS
<p>A. Approve Agreements for work with States, Counties, Municipalities, and other Governmental Subdivisions; U.S. Territories; Native American Tribal Governments; DC Government [43 U.S.C.50]</p> <p>A-1. Approve Standard Joint Funding Agreement (JFA) using Form 9-1366 (without change)</p> <p>A-2. Approve Non-Standard JFA</p> <p>A-3. Approve the following Non-Standard JFA Exceptions:</p> <p>(a) Non-Standard JFA where the only change to the Form 9-1366 is a statement on maintaining a drug free workplace; on abiding by Federal non-discrimination laws; or that the USGS may not contract the work to another party without the prior consent of the cooperator in writing</p> <p>(b) Non-Standard JFA in following years with a cooperator if the initial JFA with that cooperator had been reviewed by the Office of Policy and Analysis. Changes to the scope of work, amount of money, and /or period of performance are authorized. Otherwise, the agreement with the cooperator should</p>	<p>Office Chiefs (see Note at bottom of page 11 for these positions) reporting to the Director/Deputy Director and Managers and Supervisors who report directly to a Senior Executive Service (SES) Manager</p> <p>Office Chiefs reporting to the Director/Deputy Director and Managers and Supervisors who report directly to a SES Manager</p> <p>Office Chiefs reporting to the Director/Deputy Director and Managers and Supervisors who report directly to a SES Manager</p>	<p>Use of the Form 9-1366 is encouraged.</p> <p>The USGS Checklist for Reimbursable Agreements must be completed and a copy must be maintained with the approved agreement.</p> <p>Review and approval by the Office of Policy and Analysis is required prior to signing the agreement.</p>



Appendix A  
Part 205, Chapter 13

USGS DELEGATIONS OF AUTHORITY TO ENTER INTO AGREEMENTS AND TO ACCEPT CONTRIBUTIONS		
AUTHORITY	AUTHORITY DELEGATED TO <u>(THESE AUTHORITIES MAY NOT BE REDELEGATED UNLESS SPECIFIED IN THE DELEGATION):</u>	DOCUMENTATION REQUIRED/REMARKS
<p>remain the same as that initially approved. The delegatee is responsible for ensuring that changes made are authorized.</p>		
<p><b>B. Intergovernmental Cooperation Act Agreements (not for use with U.S. Territories, Native American Tribal Governments) [31 U.S.C. § 6505]</b></p>		<p>See SM 500.27, Intergovernmental Cooperation Act Agreements with State and Local Units of Government and Figure 27-1, Intergovernmental Cooperation Act Agreement Template.</p>
<p><b>B-1. Approve Intergovernmental Cooperation Act Agreements using the USGS template (without change)</b></p>	<p>Office Chiefs reporting to the Director/Deputy Director and Managers and Supervisors who report directly to a SES Manager</p>	<p>The USGS Checklist for Reimbursable Agreements must be completed and a copy must be maintained with the approved agreement.</p>
<p><b>B-2. Approve Intergovernmental Cooperation Act Agreements using terms and conditions other than those provided in the USGS template</b></p>	<p>Office Chiefs reporting to the Director/Deputy Director and Managers and Supervisors who report directly to a SES Manager</p>	<p>Review and approval by the Office of Policy and Analysis is required prior to signing agreement.</p>
<p><b>B-3. Approve the following Intergovernmental Cooperation Act Agreement exceptions:</b></p> <p>(a) Where the only change is a statement on maintaining a drug-free workplace; on abiding by Federal non-discrimination laws; or that the USGS may not contract the work to another party without the prior consent of the cooperator in writing</p>	<p>Office Chiefs reporting to the Director/Deputy Director and Managers and Supervisors who report directly to a SES Manager</p>	



THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION



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CHRISTOPHER D. CLEMENT, SR.
COMMISSIONER

JEFF BRILLIART, P.E.
ASSISTANT COMMISSIONER

Bureau of Materials & Research
March 26, 2014

Her Excellency, Governor Margaret Wood Hassan
and the Honorable Council
State House
Concord, New Hampshire 03301

Sole Source

REQUESTED ACTION

- 1. Authorize the Department of Transportation to amend a sole source Joint Funding Agreement with the U.S. Geological Survey (Vendor 200815), Pembroke, NH, by increasing the agreement amount by \$15,990 from \$70,000 to \$85,990 to provide for a cooperative investigation to determine sources of nitrate in wells near blasting sites in New Hampshire, effective upon Governor and Council approval. 100% Federal Funds.
2. Further, authorize to amend the contract's completion date from September 30, 2014 to June 30, 2015, effective upon Governor and Council approval. The original agreement was approved by Governor and Council on July 10, 2013, Item #111.

Funding is available as follows:

Table with 3 columns: Description, FY 2014, FY 2015. Rows include 04-96-96-962015-3036 SPR Research Funds and 046-500464 General Consultants Non-Benefit.

EXPLANATION

The U.S. Geological Survey (USGS) is uniquely qualified to conduct this study because of their comprehensive knowledge of groundwater transport characteristics, unique isotope testing capabilities, and reputation for its unbiased, science-based approach to complex and sensitive issues.

The agreement has funded a joint effort between the Department and USGS to determine the source of nitrates in drinking water wells near blasting sites. Blasting operations for bedrock excavation on construction projects such as the I-93 widening are potential sources for nitrate contamination of drinking water wells. This ongoing investigation has detected temporal changes in water sampling results. Construction delays at the study site have lengthened the anticipated period of time during which blasting is occurring. Additional data is needed to fully characterize the dissipation of contaminants. This amendment will fund the additional sampling and analysis and extend the completion date as needed to bracket the full duration of blasting operations.

Common sources of contamination frequently exist in close proximity to affected wells. Differentiating between blasting-related causes and other potential sources such as septic systems, animal wastes, fertilizers, decomposing vegetation or landfill leachate would aid in determining, limiting, or managing the Department's liability in such matters. Standard water quality analyses designed to determine the safety of drinking water are not sufficient to identify the sources(s) of contamination. This investigation is using isotopes of nitrogen and oxygen in water sampled from private wells, monitoring wells, and surface water locations, along with conventional hydrologic and geologic data, to indicate the source of contaminants near I-93 blasting sites.

The Department's contribution of \$85,990.00 will leverage \$56,760.00 of USGS funds (USGS increase of \$14,760) through this amended Joint Funding Agreement.

This Amendment has been approved by the Attorney General as to form and execution. The Department was verified that the necessary funds are available. Copies of the fully-executed Agreement are on file at the Secretary of State's Office and the Department of Administrative Services, and subsequent to Governor and Council approval will be on file at the Department of Transportation.

Department project funding is 80% federal funds with 20% state match. Turnpike toll credit is being utilized for match requirements, effectively using 100% federal funds.

It is respectfully requested that authority be given to amend the sole-source Agreement for consulting services as outlined above.

Sincerely,

A handwritten signature in black ink, appearing to read "C.D. Clement, Sr.", with a stylized flourish at the end.

Christopher D. Clement, Sr.  
Commissioner

Attachments

UNITED STATES DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY  
AMENDMENT OF JOINT FUNDING AGREEMENT  
FOR  
WATER RESOURCES INVESTIGATIONS  
Amendment No. 1

6000000093  
13ENNH000000025  
LH00FA7/LG40FE0  
TIN 02-6000618

This amendment is for the agreement dated July 10, 2013.

The parties hereto agree that subject to the availability of appropriations and in accordance with their respective authorities there shall be maintained in cooperation

Paragraphs 2a of the agreement is hereby   X   increased/    decreased by \$14,760.00 to read as follows:

(a) \$56,760.00 by the party of the first part during the period  
July 10, 2013 to June 30, 2015

Paragraphs 2b of the agreement is hereby   X   increased/    decreased by \$15,990.00 to read as follows:

(b) \$ \$85,990.00 by the party of the second part during the period  
July 10, 2013 to June 30, 2015

Billing for this agreement will be rendered **Quarterly**. Payments of bills are due within 60 days after billing date. If not paid by the due date, interest will be charged at the current Treasury rate for each 30-day period, or portion thereof, that the payment is delayed beyond the due date. (31 USC 3717; Comptroller General File B-212222, August 23, 1983. The USGS legal authority is 43 USC 36c; 43 USC 50; 43 USC 50b. USGS DUN's # 048601645

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

by Keith Robinson  
(Signature)

Name: **Keith Robinson**

Title: **Director**

Date: 2/20/14

STATE OF NEW HAMPSHIRE  
DEPARTMENT OF TRANSPORTATION

by William J. Cass  
(Signature)

Name: **William J. Cass, P.E.**

Title: **Director of Project Development**

Date: 2/27/14  
by \_\_\_\_\_

(Signature)  
Name: John J. Corbett

Title: **NH Office of the Attorney General**

Date: 3/19/14

By John J. Corbett  
(Signature)

Name: \_\_\_\_\_

Title: **NH Governor & Executive Council**

Date: \_\_\_\_\_

## **Project extension to provide additional groundwater samples and analysis:**

*Determining sources of nitrate in drinking-water wells near blasting sites in Southern New Hampshire, April, 2013*

In Cooperation between the NH Department of Transportation and the US Geological Survey, NH-VT Office of the New England Water Science Center

### **Introduction**

This project extension would serve to provide additional samples for the project described in the proposal titled "Determining sources of nitrate in drinking-water wells near blasting sites in Southern New Hampshire, April 2013"

### **Objectives**

The main objective is to collect additional samples from wells near State Rt. 111 in Windham New Hampshire where blasting is currently underway and will continue through the spring of 2014. Five sampling rounds including five wells each will be added to the current project. Results of analysis of recently collected samples will determine which constituents will be targeted with sampling under the project extension.

### **Timeline and Costs**

Field work will be conducted in FY2014 and FY2015. The project timeline and the estimated costs of the study extension are shown in tables 1 and 2.

**Table 1. Proposed timeline for the study:**

<b>Work plan Element</b>	<b>FY14</b>			<b>FY15</b>		
	<b>Jan-Mar</b>	<b>Apr-June</b>	<b>July-Sept</b>	<b>Oct-Dec</b>	<b>Jan-Mar</b>	<b>Apr-June</b>
Data collection	x	x	x	x		
Report				x	x	x

**Table 2. Estimated summary of costs:**

<b>Element</b>	<b>Project Extension Cost</b>
Sample Collection (Direct)	\$10,000
Shipping and Lab Analysis (Direct)	\$5,070
Data handling, analysis, and reporting	\$4,350
Total Direct	\$19,420
Total Indirect Costs	\$11,330
Total Project	\$30,750
USGS share	\$14,760
NHDOT share	\$15,990



THE STATE OF NEW HAMPSHIRE  
DEPARTMENT OF TRANSPORTATION



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CHRISTOPHER D. CLEMENT, SR.  
COMMISSIONER

JEFF BRILLHART, P.E.  
ASSISTANT COMMISSIONER

Bureau of Materials & Research  
May 23, 2013

Her Excellency, Governor Margaret Wood Hassan  
and the Honorable Council  
State House  
Concord, New Hampshire 03301

Sole Source

**REQUESTED ACTION**

Authorize the Department of Transportation to enter into a **sole-source** Joint Funding Agreement with the U.S. Geological Survey (Vendor 200815), Pembroke, NH, for a total fee not to exceed \$70,000.00, for a cooperative investigation on determining sources of nitrate in wells near blasting sites in New Hampshire, effective upon Governor and Council approval, through September 30, 2014. 100% Federal Funds.

Funding is contingent upon the availability and continued appropriation of funds in FY 2014, as follows:

04-96-96-962015-3036	<u>FY 2014</u>
SPR Research Funds	
046-500464 General Consultants Non-Benefit	\$70,000.00

**EXPLANATION**

The Department is collaborating with USGS to conduct a cooperative research study to determine the source of nitrates in drinking wells near blasting sites. The U.S. Geological Survey (USGS) is uniquely qualified to conduct this study because of their comprehensive knowledge of groundwater transport characteristics, unique isotope testing capabilities, and reputation for its unbiased, science-based approach to complex and sensitive issues. In addition, the Department's contribution of \$70,000 will be matched with \$42,000 of USGS funds through the Joint Funding Agreement. Finally, the Pembroke office has successfully performed other studies for the Department in the past, including research related to bridge scour, investigations of flood magnitude and frequency, and development of the web-based New Hampshire StreamStats tool.

There have been recent issues with respect to blasting operations that represent a potential liability for the Department. Blasting operations for bedrock excavation on construction projects such as the I-93 widening are potential sources for nitrate contamination of drinking water wells. However, other common sources of contamination frequently exist in close proximity to affected wells. Differentiating between blasting-related causes and other potential sources such as septic systems, animal wastes,

fertilizers, decomposing vegetation or landfill leachate would aid in determining, limiting, or managing the Department's liability in such matters.

Standard water quality analyses designed to determine the safety of drinking water are not sufficient to identify the source(s) of contamination. This investigation will use isotopes of nitrogen and oxygen in water sampled from private wells, monitoring wells and surface water locations, along with conventional hydrologic and geologic data, to indicate the source of contaminants near I93 blasting sites.

This Agreement has been approved by the Attorney General as to form and execution. The Department will verify the necessary funds are available pending enactment of the Fiscal Year 2014 and 2015 budget. Copies of the fully-executed Agreement are on file at the Secretary of State's Office and the Department of Administrative Services, and subsequent to Governor and Council approval will be on file at the Department of Transportation.

It is respectfully requested that authority be given to enter into a sole-source Agreement for consulting services as outlined above.

Sincerely,

A handwritten signature in black ink, appearing to read "C. D. Clement, Sr.", written in a cursive style.

Christopher D. Clement, Sr.  
Commissioner

Attachments

Form 9-1366  
(Oct. 2005)

**U.S. Department of the Interior  
U.S. Geological Survey  
Joint Funding Agreement**

**Customer #:** 600000093  
**Agreement #:** 13ENNH000000025  
**Project #:** LH00FA7  
**TIN #:** 02-6000618  
**Fixed Cost Agreement**  Yes  No

Page 1 of 2

**FOR  
WATER RESOURCES INVESTIGATIONS**

THIS AGREEMENT is entered into as of the 10th day of July, 2013, by the U.S. GEOLOGICAL SURVEY, UNITED STATES DEPARTMENT OF THE INTERIOR, party of the first part, and the STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION, party of the second part.

1. The parties hereto agree that subject to availability of appropriations and in accordance with their respective authorities there shall be maintained in cooperation an investigation on determining sources of nitrates in wells near blasting sites in New Hampshire, herein called the program. The USGS legal authority is 43 USC 36C; 43 USC 50; and 43 USC 50b.
2. The following amounts shall be contributed to cover all of the cost of the necessary field and analytical work directly related to this program. 2(b) includes In-Kind Services in the amount of \$0.00.

(a) \$42,000.00 by the party of the first part during the period  
July 10, 2013 to September 30, 2014

(b) \$70,000.00 by the party of the second part during the period  
July 10, 2013 to September 30, 2014

- (c) Additional or reduced amounts by each party during the above period or succeeding periods as may be determined by mutual agreement and set forth in an exchange of letters between the parties.
  - (d) The performance period may be changed by mutual agreement and set forth in an exchange of letters between the parties.
3. The costs of this program may be paid by either party in conformity with the laws and regulations respectively governing each party.
  4. The field and analytical work pertaining to this program shall be under the direction of or subject to periodic review by an authorized representative of the party of the first part.
  5. The areas to be included in the program shall be determined by mutual agreement between the parties hereto or their authorized representatives. The methods employed in the field and office shall be those adopted by the party of the first part to insure the required standards of accuracy subject to modification by mutual agreement.
  6. During the course of this program, all field and analytical work of either party pertaining to this program shall be open to the inspection of the other party, and if the work is not being carried on in a mutually satisfactory manner, either party may terminate this agreement upon 60 days written notice to the other party.
  7. The original records resulting from this program will be deposited in the office of origin of those records. Upon request, copies of the original records will be provided to the office of the other party.

Form 9-1366  
continued

U.S. Department of the Interior  
U.S. Geological Survey  
Joint Funding Agreement

Customer #: 6000000093  
Agreement #: 13ENNH000000025  
Project #: LH00FA7  
TIN #: 02-6000618

- 8. The maps, records, or reports resulting from this program shall be made available to the public as promptly as possible. The maps, records, or reports normally will be published by the party of the first part. However, the party of the second part reserves the right to publish the results of this program and, if already published by the party of the first part shall, upon request, be furnished by the party of the first part, at costs, impressions suitable for purposes of reproduction similar to that for which the original copy was prepared. The maps, records, or reports published by either party shall contain a statement of the cooperative relations between the parties.
- 9. USGS will issue billings utilizing Department of the Interior Bill for Collection (form DI-1040). Billing documents are to be rendered quarterly. Payments of bills are due within 60 days after the billing date. If not paid by the due date, interest will be charged at the current Treasury rate for each 30 day period, or portion thereof, that the payment is delayed beyond the due date. (31 USC 3717; Comptroller General File B-212222, August 23, 1983).

U.S. Geological Survey  
United States  
Department of the Interior

State of New Hampshire  
Department of Transportation

USGS Point of Contact

Customer Point of Contact

Name: James R. Degnan  
Address: New England Water Science  
Center/NH-VT Office  
331 Commerce Way, Suite 2  
Pembroke, NH 03275  
Telephone: (603) 226-7826  
Email: jrdegnan@usgs.gov

Name: Krystle Pelham  
Address: NHDOT, Bureau of Materials and  
Research  
5 Hazen Road, PO Box 0483  
Concord, NH 03302-0483  
Telephone: (603) 271-1657  
Email: kpelham@DOT.state.nh.us

Signatures

Signatures

By Keith W. Robinson Date 4/21/13  
Name: Keith W. Robinson  
Title: Director

By William J. Cass Date 6/24/13  
Name: William J. Cass, P.E.  
Title: Director of Project Development

By \_\_\_\_\_ Date \_\_\_\_\_  
Name:  
Title:

By John J. Conforti Date 6/24/13  
Name: John J. Conforti  
Title: Atty, N.H. Dept. of Justice

By \_\_\_\_\_ Date \_\_\_\_\_  
Name:  
Title:

By \_\_\_\_\_ Date \_\_\_\_\_  
Name:  
Title:

## Proposed Study

# **Determining sources of nitrate in wells near blasting sites in New Hampshire**

In Cooperation between the NH Department of Transportation and  
the US Geological Survey, NH-VT Office of the New England Water Science Center

April 2013

## **Introduction**

Blasting operations have the potential to contaminate groundwater wells with nitrate; however, there are other common sources of nitrate contamination that can exist within close proximity to wells. Standard water quality analyses designed to determine the safety of drinking water may not be sufficient to identify sources of contaminants, and, therefore, additional analyses are warranted. When groundwater contamination of drinking water wells is reported during or after blasting operations, it is not always clear whether the blasting operation is the actual source of the contamination or if there is another source. Analysis of isotopes of nitrogen and oxygen (Böhlke and others, 2007) has been used to indicate sources of nitrate in groundwater (McMahon and others, 2008, Kendall, 1998). Ratios of other constituents, such as bromide and chloride can provide additional evidence of the sources of contamination (Mullaney, 2009).

## **Objectives**

The ability to identify and differentiate contaminant sources in monitoring and drinking water wells will help determine if blasting operations influence groundwater quality. The main objective is differentiating between blasting-related nitrogen and nitrogen from other potential sources, such as septic systems, animal wastes, fertilizer, decomposing vegetation, or landfill leachate. Specific objectives include:

1. Identify sources of nitrate and ammonia in private domestic and monitoring wells by analyzing each for isotopes of nitrogen (and in nitrate, isotopes of the associated oxygen).
2. Corroborate and confirm the source(s) of nitrate with other information, such as geochemical, hydrologic, and geologic data.

## **Approach and Methods**

1. Isotopes of oxygen and nitrogen in nitrate dissolved in groundwater from wells near blasting sites will be used, in conjunction with geologic, hydrologic, and geochemical data to indicate whether the source was fertilizer or waste sources.

Ratios of the isotopes correlate with sources of nitrogen compounds; sources can be identified by comparing these ratios to end-member ratios in the literature and those developed during this study. Dissolved gasses, bromide, and isotopes of nitrogen in ammonium and nitrogen and oxygen in nitrate will be analyzed at USGS laboratories. Information on collection procedures and methods of isotope analysis from the Reston Stable Isotope Laboratory is available at <http://isotopes.usgs.gov/>, dissolved gasses will be analyzed at the Reston Chlorofluorocarbon Laboratory, <http://water.usgs.gov/lab/> and bromide at the National Water Quality Laboratory, <http://nwql.usgs.gov/>.

2. Additional, commonly used, water quality constituents and field parameters, such as temperature, specific conductance, pH, and dissolved oxygen, will be analyzed to provide insight during comparisons with preexisting data and additional lines of evidence to support conclusions. The NHDOT will have analysis completed through their contract lab for volatile organic compounds (including benzene), major anions including nitrate, sulfate, and chloride and major cations including calcium, magnesium, boron, and sodium.
3. Approximately thirty samples will be analyzed for isotopic ratios. Nutrient data analyzed at the NHDOT contract lab will be used as a screening tool to decide which samples will be submitted for isotopic analysis. Ten percent of samples will be used for a quality control analysis including duplicate and equipment blank samples for each constituent. Septic systems and water softening systems may be a source of some major ions, the presence of these systems will be confirmed during sampling.
4. Samples will be collected prior to blasting in the areas of concern to establish a pre-blasting background condition. Also, samples that are believed to contain nitrate from blasting materials will be collected to identify the isotopic fingerprint of the ammonium nitrate used in those materials.
5. After blasting commences, wells will be monitored for indicator parameters, such as specific conductance and nitrate. If nitrate increases over time, samples for isotopes will be collected and analyzed to determine the sources related to the increase. Hydraulic information from previous studies and nitrate data from existing wells will be used to guide the sampling planning. Different wells, samples, and other information may be used as warranted by examination of initial findings.
6. If analysis shows that multiple sources of nitrate are present at some wells, it may be possible to apply simple mixing models to determine the relative contribution of each nitrogen source. A conceptual model of groundwater flow will be developed at the study sites using available data. Wells with persistent contamination that is suspected to be the result of blasting and new blasting sites will be targeted for groundwater sampling and analysis.

## **Products**

Results will be included in a journal article or USGS series report. The report will document the methods used and results from the multiple-lines-of-evidence approach to identification of nitrate sources. All water quality and well data will be stored in the USGS

National Water Information System database. It is anticipated that USGS and NHDOT scientists will co-author the report.

## Relevance and Benefits

The ability to identify and differentiate contaminant sources in drinking water wells will help determine if blasting operations affect groundwater quality. The information will aid the NHDOT by identifying sources of nitrate contamination near blasting sites. Collection and dissemination of the information will meet the broad USGS goal of providing information needed by State agencies for research on groundwater resources of the Nation.

## Timeline and Costs

Field work will be conducted and completed in the third quarter of the federal fiscal year (FY) 2013 and a report would be targeted for completion in FY2014. An update of progress and preliminary results will be provided to the NHDOT in project meetings. The project timeline and the estimated costs of the study are shown in tables 1 and 2.

**Table 1. Proposed timeline for the study:**

Work plan Element	FY13		FY14			
	Apr-June	July-Sept	Oct-Dec	Jan-Mar	Apr-June	July-Sept
Project planning	x	x				
Data collection		x	x			
Database construction		x	x			
Data analysis			x	x	x	
Report					x	x

**Table 2. Estimated summary of costs:**

Element	Project Cost Federal FY13	Project Cost Federal FY14	Total Project Cost
Sample Collection (Direct)	\$8,000	\$3,100	\$11,100
Shipping and Lab Analysis (Direct)	\$16,810	\$7,590	\$24,400
Data handling, analysis, and reporting	\$11,000	\$32,400	\$43,400
Total Direct	\$35,810	\$43,090	\$78,900
Total Indirect Costs	\$12,180	\$20,920	\$33,100
Total Project	\$47,990	\$64,010	\$112,000
USGS share	\$18,000	\$24,000	\$42,000
NHDOT share	\$29,990	\$40,010	\$70,000

## References

Böhlke, J.K., Smith, R.L., and Hannon, J.E., 2007, Isotopic analysis of N and O in nitrite and nitrate by sequential selective bacterial reduction to N<sub>2</sub>O. *Analytical Chemistry*, v. 79, p. 5888-5895.

Kendall, C. and McDonnell, J. J. (Eds.), (1998). *Isotope Tracers in Catchment Hydrology*, Elsevier Science, Amsterdam, 839 p.

McMahon, P.B., Böhlke, J.K., Kauffman, L.J., Kipp, K.L., Landon, M.K., Crandall, C.A., Burow, K.R., and Brown, C.J., 2008, Source and transport controls on the movement of nitrate to public supply wells in

selected principal aquifers of the United States. *Water Resources Research*, v. 44, W04401, doi:10.1029/2007WR006252, p. 1-17.

Mullaney, J.R., Lorenz, D.L., and Arntson, A.D., 2009, Chloride in groundwater and surface water in areas underlain by the glacial aquifer system, northern United States: U.S. Geological Survey Scientific Investigations Report 2009-5086, <http://pubs.usgs.gov/sir/2009/5086/> 41 p.



# United States Department of the Interior

U.S. GEOLOGICAL SURVEY  
New Hampshire - Vermont  
Water Science Center  
361 Commerce Way  
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RECEIVED

March 22, 2007

MAR 26 2007

By: [Signature]  
[Title]

Mr. Denis M. Boisvert, P.E.  
NH Department of Transportation  
Materials & Research Bureau  
Box 483, 5 Hazen Drive  
Concord NH 03302-0483

Dear Mr. Boisvert:

This letter is in response to your request for information concerning the United State Government and specifically, the US Geological Survey, being self insured. The following rules are equally applicable to any official governmental activity:

1. The Government is a self-insurer with respect to loss or damage to government property and the liability of government employees. In the absence of express statutory authority, appropriated funds are not available to purchase such insurance coverage. (Rule summarized in GAO B-158766, Feb. 3, 1977.)
2. The Federal Tort Claims Act (28 USC 2671 et seq.) provides the exclusive remedy for tort claims against the United States. Under it, the Government agrees to assume responsibility for negligent acts or omissions of USGS employees acting within the scope of their employment.
3. The Government may not accept "hold harmless" or "indemnification" clauses in its agreements because the law prohibits the Government from entering into agreements where the Government's liability is indefinite, indeterminate, or potentially unlimited. Such agreements violate both the Antideficiency Act, 31 USC 1341 and the Adequacy of Appropriations Act, 41 USC 11, the latter because it can never be said that sufficient funds have been appropriated to cover the contingency.

Please give me a call at 226-7807 if you need further information on this subject, but I hope this satisfies your needs regarding the USGS being self-insured.

Sincerely,

Keith W. Robinson  
Director