1.0 INTRODUCTION

This document presents sampling and analysis procedures to be conducted at the Hampton Rod and Gun Club located in North Hampton, New Hampshire (Figure 1). In a letter dated March 14, 2015, the Department of Environmental Services (DES) requested that a Sampling and Analysis Plan (SAP) be prepared for surface water and sediment sampling activities at the site. The sampling areas will include the trap range, the pistol/rifle range, the Little River and the drainage channels that flow from the site into the Little River. Exeter Environmental Associates, Inc. (EEA) will be conducting all fieldwork

1.1 Project Team

The project team including the responsibilities of key personnel are summarized in Table 1-1 below.

Table 1-1 – Key Project Personnel Contact Information and Responsibilities

Title	Name	Phone Number Email Address	Responsibilities
Consultant Project Manager	Steven B. Shope Exeter Environmental Associates, Inc.	(603) 770-3988 steveshope@comcast.net	Project manager, data QC review
Consultant Field Team	Julie Shope Samuel Couture	(603) 828-6342 julieshope@comcast.net (603) 686-0209 samcouture1@comcast.net	Sample collection, preparation for delivery to lab, chain-of-custody
Laboratory Quality Assurance Officer	Lorraine Olashaw Eastern Analytical, Inc.	eailabs.com	Assures samples are properly analyzed for target compounds.

2.0 SITE DESCRIPTION and BACKGROUND

2.1 Site Description

The Hampton Rod and Gun Club property is located in a rural, wooded area off the northern side of Route 111 in North Hampton, New Hampshire. The property includes two adjacent parcels of land; Tax Map 13 Lot 81 and Lot 83. The two parcels collectively cover 36± acres of land. Lot 81 consists of undeveloped land. Lot 83 is developed primarily with a single building that is currently used to house the club's meetings. The club building is surrounded by asphalt paving to the northeast, and by wooded land on all other sides.

In addition to the primary club building, the property is developed with a garage located adjacent to the club building, one structure associated with target shooting at the pistol/rifle range, and four structures associated with target shooting at the trap range.

The overall topography of the site slopes down gently to the northeast, towards the Little River. The Little River is located near the northern edge of the Gun Club property, approximately 350 feet north of the northern-most extent of the trap range and 800± feet north of the pistol/rifle range.

The property is abutted by woods to the north, east and west, and by Route 111 to the south. The residential development of Spruce Meadows abuts the gun club property to the south, but the homes are located 1,000± feet to the southeast of the shooting areas.

The site location is shown on the attached US Geological Survey topographic map (Figure 1). The site layout is shown on a site plan that is provided as Figure 2.

2.2 Sampling Area Description

The pistol/rifle range is located on the eastern side of the cleared portion of the site and consists of a shooting gallery, a 100-yard long target area, and a 20± foot-high earthen backstop berm. A drainage swale runs along the front of the berm and drains to the north. The direction of shooting is to the east.

The trap range is located in the northwestern section of the cleared portion of the site and is a "shotgun-use only" area and involves the use of clay shooting targets. The direction of shooting is to the north over wetlands and a surface water channel that flows from west to east.

The channels from the trap range and the pistol/rifle range meet at the tree line and flow east into the Little River. Permanent surface water/sediment sampling locations have been placed in channels on the pistol/rifle range, the trap range, the tributary channel that drains into the Little River, and the Little River itself. The proposed longterm surface water and sediment sampling locations are shown on Figure 3. Surface water flow directions are shown on Figure 4.

2.3 Operational History

Ownership & Operator
Hampton Rod & Gun Club, Inc.
P. O. Box 826
North Hampton, NH 03842-0826

Our understanding of the Hampton Rod & Gun Club history is based upon interviews with members Michael Harris, Jim Clemence and Peter Eaton in 2014. In particular, Mr. Eaton has been a member of the club since the 1960s.

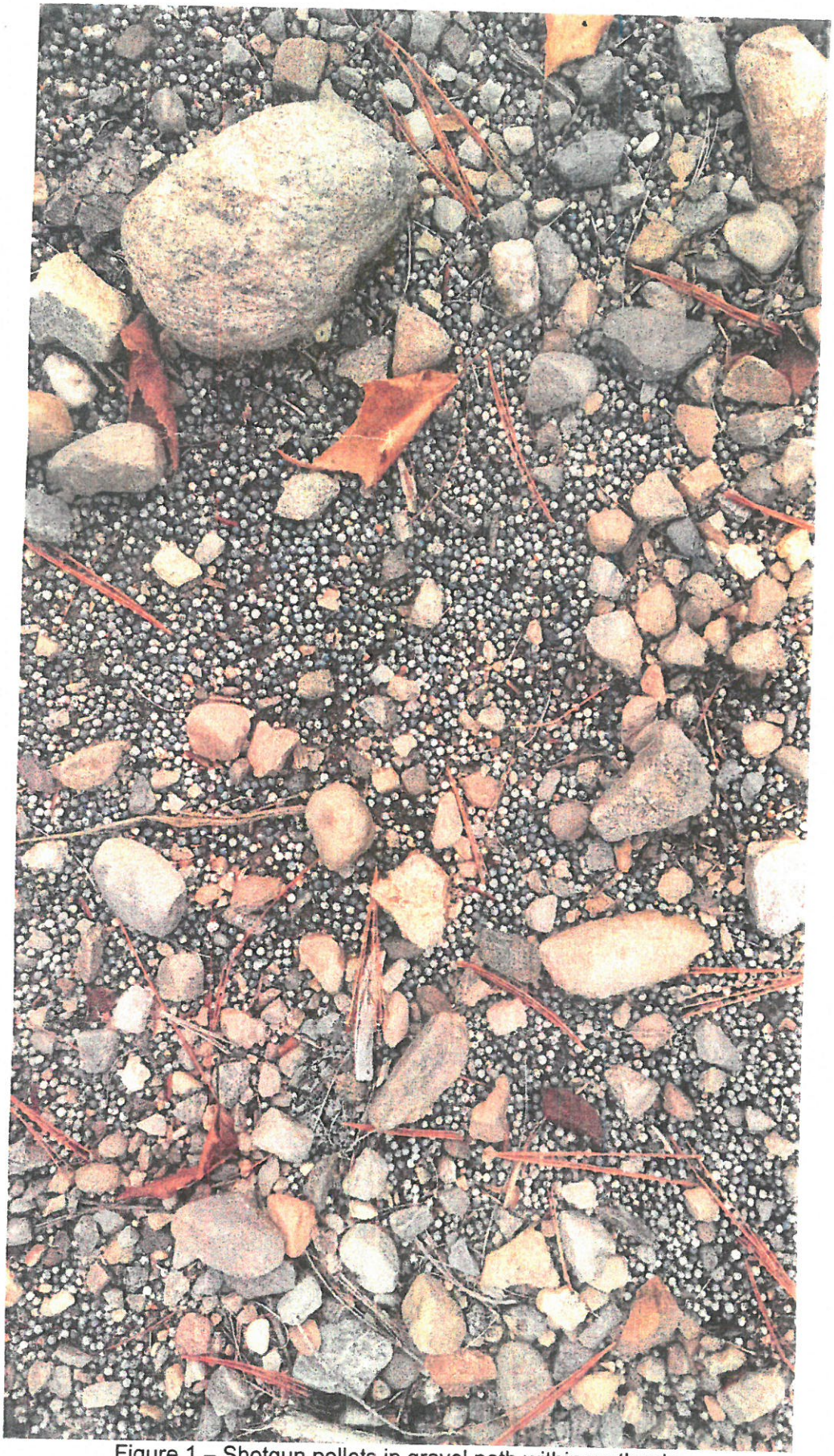


Figure 1 – Shotgun pellets in gravel path within wetlands.

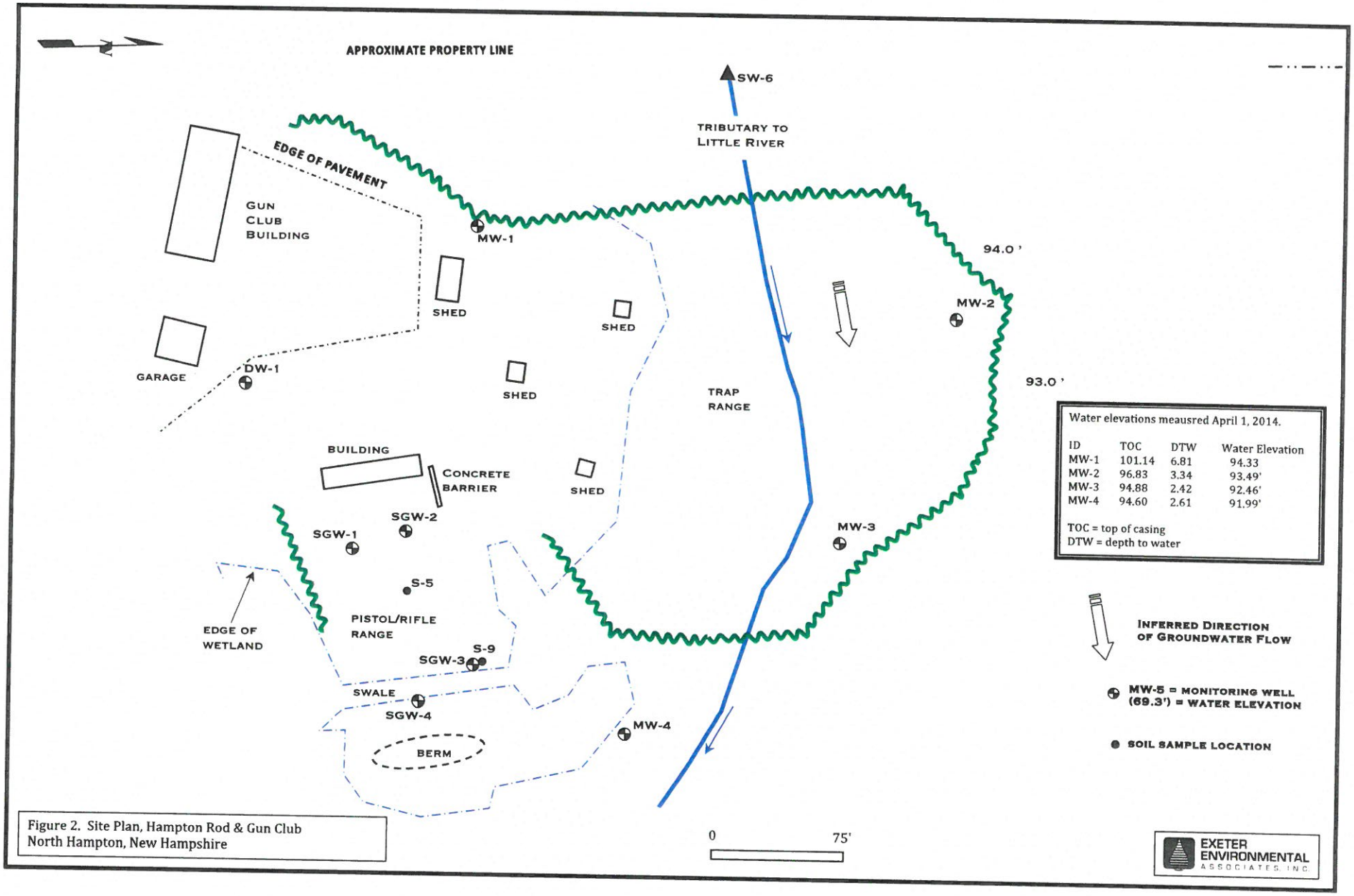


Figure 2. Site Plan, Hampton Rod & Gun Club
North Hampton, New Hampshire

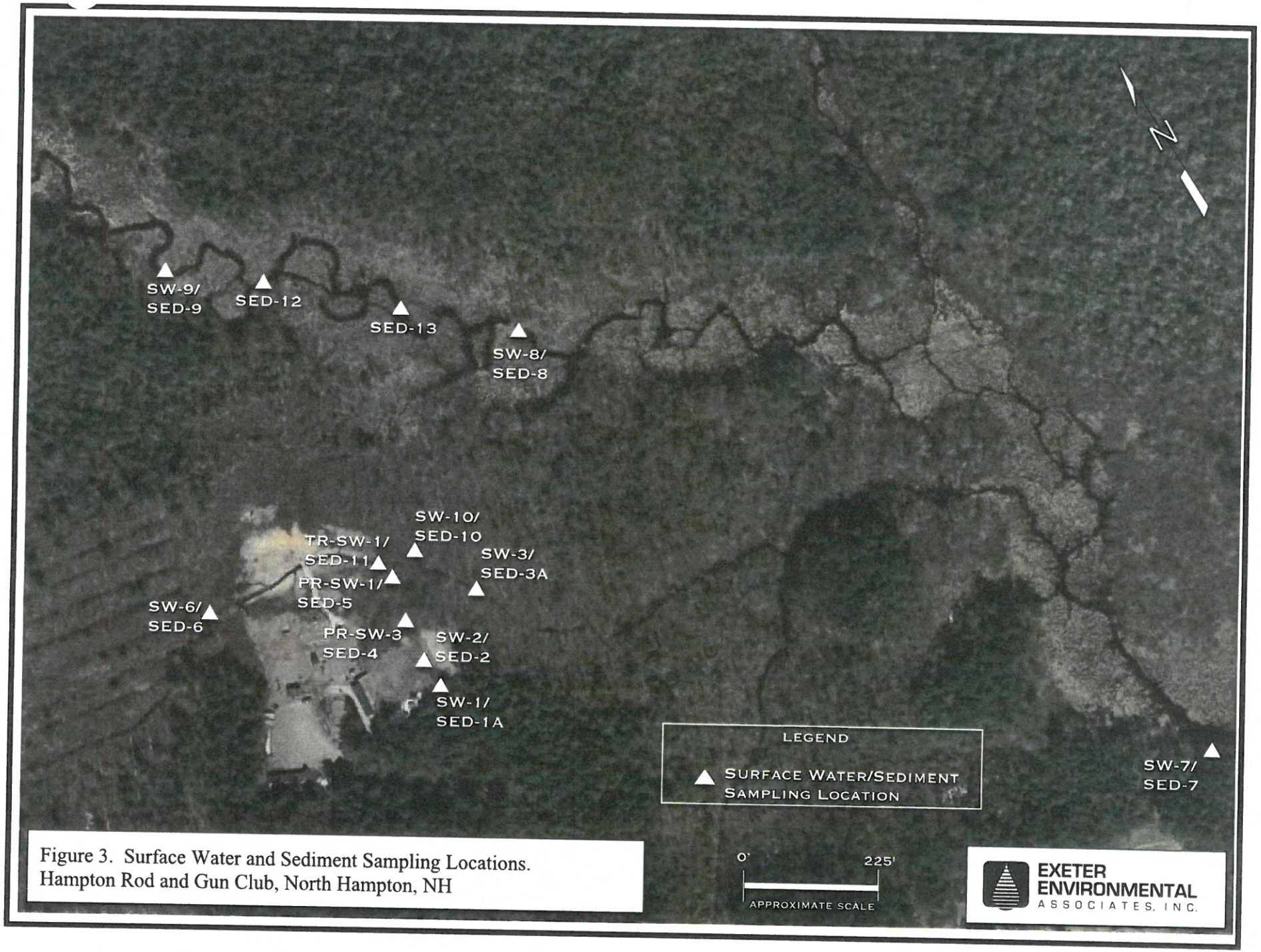


Figure 3. Surface Water and Sediment Sampling Locations.
Hampton Rod and Gun Club, North Hampton, NH

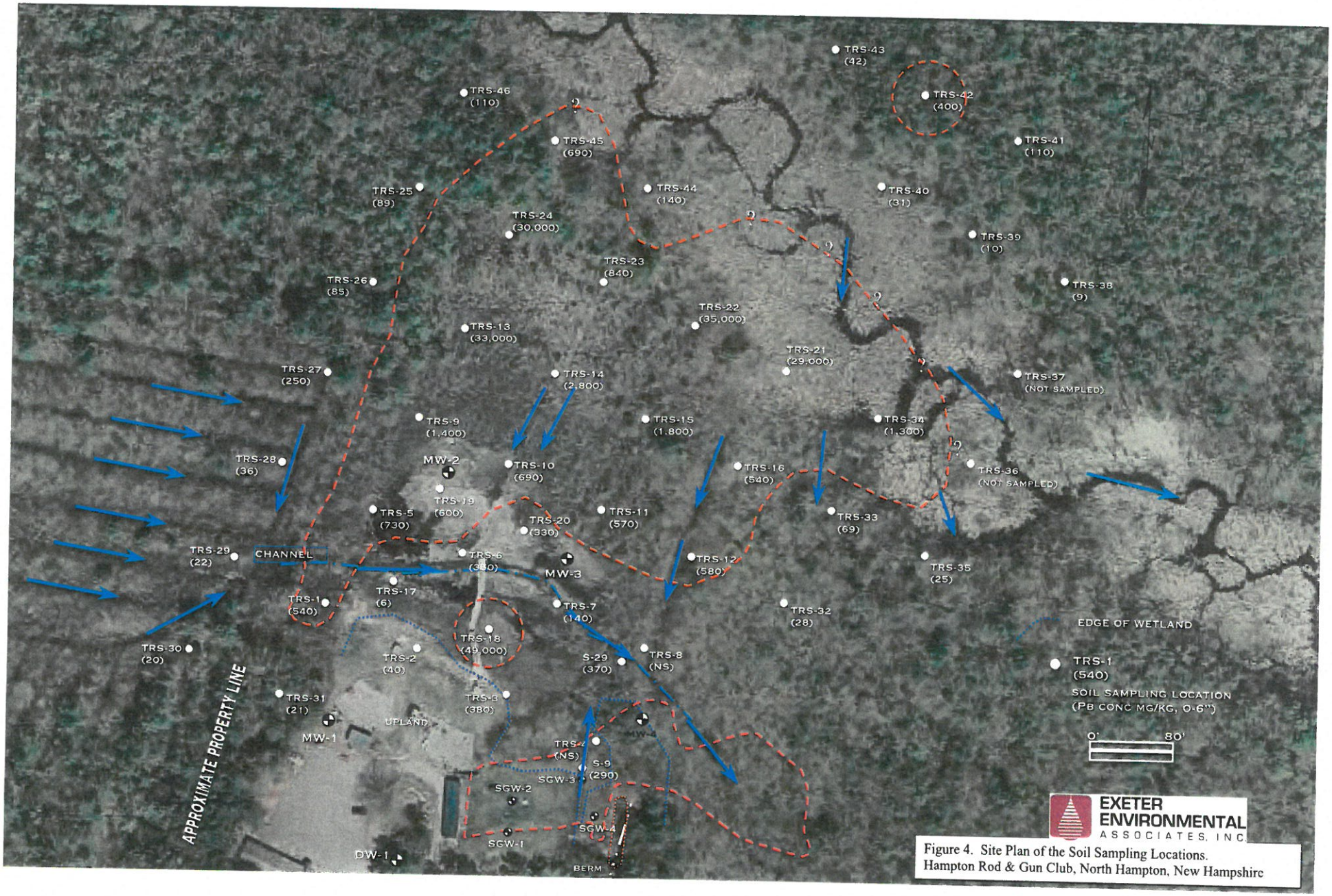
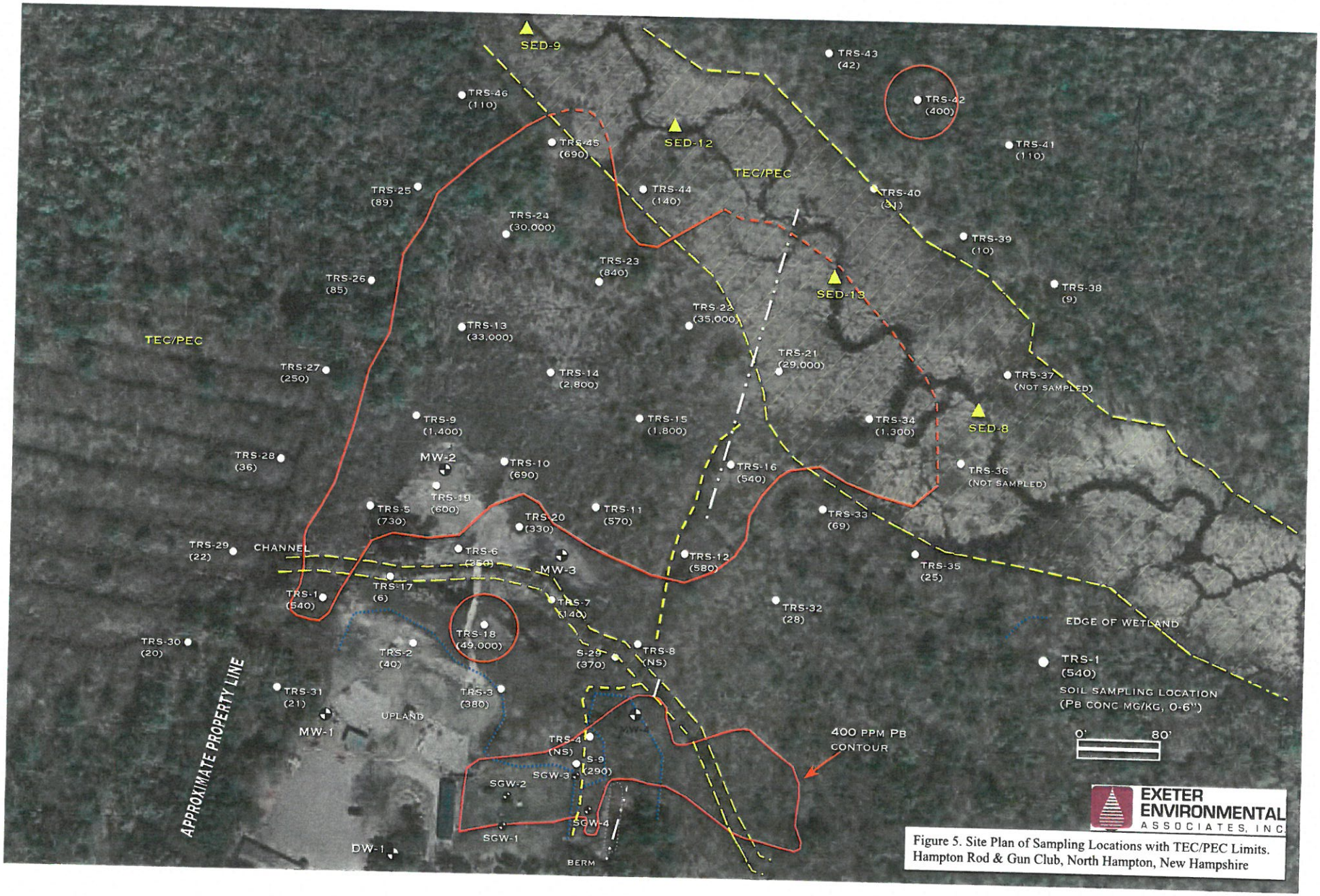


Figure 4. Site Plan of the Soil Sampling Locations.
Hampton Rod & Gun Club, North Hampton, New Hampshire



EXETER ENVIRONMENTAL ASSOCIATES, INC.

Figure 5. Site Plan of Sampling Locations with TEC/PEC Limits.
Hampton Rod & Gun Club, North Hampton, New Hampshire

McLane, Graf,
Raulerson & Middleton
Professional Association

900 Elm Street | P.O. Box 326 | Manchester, NH 03105-0326
Tel: 603.625.6464 | Fax: 603.625.5650 | www.mclane.com

OFFICES IN
MANCHESTER
CONCORD
PORTSMOUTH
WOBURN, MA

THOMAS W. HILDRETH
T: 603-628-1177
M: 603-566-4154
E: Tom.Hildreth@McLane.com
Admitted in NH, ME, MA

December 20, 2012

Via Certified Mail/Return Receipt Requested
7010 0290 0001 6548 8412

Board of Selectmen
Town of North Hampton
233 Atlantic Avenue
North Hampton, NH 03862

Re: Hampton Rod and Gun Club, Inc. (the "Gun Club")

Gentlemen:

I. INTRODUCTION – STATEMENT OF THE PROBLEM

We represent neighbors who live in the vicinity of the Hampton Rod and Gun Club. The noise from shooting at the Gun Club, which increased substantially beginning late last summer, has resulted in distressing and damaging impact to the neighbors and to citizens throughout the impacted portions of North Hampton.

In addition to the adverse impact from the unpredictable and disturbing levels of noise, the neighbors are equally concerned with potential damage to the environment, and with risks to human health, from the uncontrolled and unregulated discharge of lead bullets and shooting targets (and their constituent chemicals), all in proximity to well-known and sensitive wetlands and aquifers.

Because of the heavy activity on the firing ranges, and the complete unpredictability as to when the activity will occur at distressingly loud levels, outdoor activities are often interrupted or cancelled. Even indoors, with doors and windows closed, the noise and shock waves can penetrate, disrupting conversation, relaxation, and the ordinary tasks of everyday life. Noise from the Gun Club can sometimes be heard as far away as Ocean Boulevard to the east and nearly to the intersection of Post and North Roads to the west, the southern portion of Rye to the north, and the northern part of Hampton to the south.

The health and environmental risks associated with outdoor shooting ranges are well known and well documented. Human and animal exposure to lead can occur through ingestion, inhalation, and mere contact with lead-contaminated soil. Lead can be introduced into the

environment at shooting ranges in several ways. Lead oxidizes when exposed to air, and dissolves when exposed to acidic water or soil. Lead bullets, bullet particles, and dissolved lead can be moved by storm water runoff. Lead dust migrates with the wind. Dissolved lead can migrate through soils to groundwater.

Lead poisoning is a serious risk to humans and animals. At higher concentrations, lead can cause learning difficulties, behavioral changes, brain damage, and even death in humans. Animals and waterfowl sickened by lead also suffer increased mortality rates.

The federal EPA, Centers for Disease Control and Prevention, and a large number of states have identified human exposure to all forms of lead as a major health concern in the United States.

As you will see from the outline below, the Gun Club has changed its focus over time. For a long time, it was a sportsmen's club primarily for hunting and fishing on undeveloped property bisected by the Little River. Lately, it has transformed into a full-fledged, 365-days per year, regional shooting range for both its members and the public. We contend that the transformation is in contradiction of the land-use rules and regulations of the Town of North Hampton.

II. LAND USE REQUIREMENTS APPEAR TO HAVE BEEN IGNORED

We have compiled a record of the land use proceedings involving the Gun Club since the time it purchased its property off Atlantic Avenue in 1946.

Our conclusion is that the use being made of the property by the Gun Club today was not permitted in 1946 when it acquired the property, is not permitted today, and has never been permitted at any time in between.

Moreover, the problems being experienced by the Gun Club's neighbors, as well as the potential environmental hazards to land and waters of the Town, are a direct result of the failure of the Gun Club to abide by the land use ordinances and regulations of the Town of North Hampton.

For example, a number of recent developments appear to have taken place at the property. These developments should have been reviewed by the Planning Board pursuant to its site plan review authority. Most notable among the site development activities that have not been reviewed by the Planning Board was the construction in late 2010 of a combination indoor/covered shooting platform and an outdoor shooting range, along with the opening of trap shooting and the near doubling of the size of the clubhouse earlier in that decade.

The North Hampton Land Use records contain only a handful of building permits, all of which appear to have been issued improperly, to wit:

- Permit No. ASR-10-473 issued in September of 2010;
- Permit No. EC-05-59 issued in September of 2005;
- Permit No. RC-05-23 issued in March of 2005;
- Permit No. EC-05-59 issued in September of 2005.

By comparison, the records do not contain a single application to the Zoning Board nor a single application for site plan review by the Planning Board.

The Gun Club's property is identified on the North Hampton Tax Maps as Map 13, Lot 83. The property is an approximately 16-acre landlocked tract, accessed via a right-of-way from Atlantic Avenue across Map 7, Lot 168. The property is bisected by the Little River. According to assessing records, at least 3 of the 16 acres are wet. According to the Rockingham County Conservation District's records, well more than half the property is comprised of wetlands.

Our clients are not members of the Gun Club, have not been on the Gun Club's property, and have not had access to the Gun Club's records. The scant land use records that do exist do not provide much insight into the evolution of the Gun Club's use of its property. However, from publicly available records, it appears that its transformation from a sportsmen's club for hunting and fishing to a full-scale, multi-faceted shooting facility took place in the past decade after the Gun Club incorporated with a new and distinctly different charter.

From the limited record which is available, at least the following is known:

1. The Town of North Hampton enacted its first zoning ordinance on September 15, 1946. Under that zoning ordinance, the property was in the Rural Zoning District which prohibited the establishment of new uses in that District that would be injurious or offensive to the neighborhood by reason of the emission of noise, among other causes. At that time, the property was undeveloped, it was not served by utilities, it bore no structures, and supported no active uses.

2. On October 26, 1946, the property was conveyed by its then owner, Dorothy Hobbs, to the Hampton Rod and Gun Club (although, at that time, such an entity did not yet legally exist; see No. 3 below.)

3. On March 2, 1948, eight individuals – five from North Hampton and three from Rye – executed and filed Articles of Agreement to create a New Hampshire nonprofit corporation to be known as "The Hampton Rod and Gun Club, Incorporated." The Articles of Agreement describe the purpose for which the corporation was established as:

> ***"To promote the recreation of hunting and fishing in the vicinity and to that end pay particular attention to the protection of forests, fish and game, to assist in the propagation of fish and game, and to foster the principles of good fellowship, social intercourse, and a high standard of sportsmanship, not only among its members but throughout the vicinity."***

4. October 8, 1981, is the earliest property assessment record the Town could provide on the Gun Club's property despite repeated requests for historic records. The town administrator's secretary reported there are no earlier assessment records for the Gun Club. In 1981, the property is shown to include one large shed and three small sheds. The large shed measured 25' x 33', the three small sheds measured 9' x 10', 4' x 4', and 9' x 14'. The assessing record does not indicate the ages of the sheds nor any information on the condition of the sheds for their age. There are no notations or other information on

the 1981 property assessment record to give any indication as to the use of the property at that time.

5. On October 19, 1983, North Hampton enacted its first site plan review regulations empowering its Planning Board to review site plans for the establishment or expansion of nonresidential uses, among other things.

6. Effective January 2, 1986, The Hampton Rod and Gun Club, Incorporated was dissolved under state law. (Thirteen years later, in 1999, a new corporation was formed, see #8 below.)

7. On May 28, 1996, the Gun Club purchased an adjacent undeveloped lot of approximately 20 acres for $9,100. According to the Rockingham County Conservation District, most of that property is classified as wetlands with a small section of uplands.

8. On September 14, 1999, five individuals – one each from the towns of North Hampton, Hampton, Rye, Dover, and Stratham - executed and filed Articles of Agreement for the formation of "Hampton Rod & Gun Club, Inc." This time, the object for which the nonprofit corporation was formed is described as follows:

> ***"To acquire, preserve and maintain a place for hunting and fishing and related activities for the good and welfare of the general public, including residents of the State of New Hampshire, including but not limited to a place for trap shooting and also a place for rifle and pistol shooting."***

9. By 1999, the zoning classification of the property had changed to R-2 Medium Density. Gun clubs are not permitted uses in that district. However, there are two uses permitted by special exception in that district that might apply to the Gun Club: those are use #3, "Nonprofit Recreational Use," and use #11, "Private Club."

10. 2000 to Present: As noted above, since the year 2000, there is evidence of four building permits having been issued to the Gun Club for enumerated improvements. Also, in 2000, the Gun Club invited the Town of North Hampton Police Department to use its facilities at no charge for training activities, and the department continues to use those facilities to this date.

11. Today, the Gun Club, via its website, boasts that it consists of a 38-acre facility with a paved access road, a clubhouse, a pistol and rifle range with an enclosed building and expanded berms, 2 trap bunkers (including a wobble trap), an 8 trap 5-stand course, and a 3-D archery range. The facilities are available for members seven days per week, for ten hours per day, from 9:00 AM to 7:00 PM (or one-half hour before dusk, whichever is earlier).

12. Today the Gun Club, according to its website, has a membership of 250 people. Each member is entitled to bring guests to the facility. The Club allows the law enforcement agencies of at least two communities – North Hampton and Rye - to use its property. The Club's facilities are open to the public 52 Sundays a year from 9:00 AM until Noon and on Saturdays, 8 months of the year (April through November) from 9:30 AM until Noon.

13. You may recall that, earlier in 2012, during the debate about a proposed noise ordinance, the Gun Club reported that it had been allowing several other police agencies to use its facilities, but that it was ending that practice with all agencies except the North Hampton and Rye police departments.

III. CONSEQUENCES OF THIS RECORD

Sometime between 1946 and today – after North Hampton had already adopted a zoning ordinance – this property was acquired by the Gun Club and converted from an undeveloped back lot with no structures and no utilities, which was probably known to be a desirable place for fishing and hunting seasonally, into a fully modern, semi-commercial, 365-day-per-year, sport shooting facility, for 250 members, their guests, the public, and two law enforcement agencies.

All of that transformation, all of that intensification of use in the past few years, all of the increase in the adverse impacts on the nearby neighborhoods and to the environment, has occurred **without a single public hearing before either the Zoning Board or the Planning Board**.

Because of the scarcity of Town records, the timing of the transformation is not entirely clear. However, three important conclusions are crystal clear:

1. The original Gun Club, formed to promote hunting and fishing, died in 1986. The new Gun Club was formed 13 years later for a very different purpose – to provide a place for organized skeet, trap, rifle, and pistol shooting.

2. That use – a semi-public club for organized league shooting of skeet, trap, rifle, and pistol – has never been a permitted use since in the "R" zoning districts since 1946, and would have required a variance from the Zoning Board.

3. The improvements that are documented - by the handful of building permits in the 2000s, all of which furthered the club's development as a commercial shooting range - all required review and approval by the Planning Board under its site plan review authority.

IV. DESIRED ACTION

Based on the status of this record, the citizens concerned about the Gun Club ask that the Board of Selectmen issue an Order of Abatement to the Gun Club requiring that the Gun Club apply to the Zoning Board for a variance to conduct its business either as a "nonprofit recreational use" or a "private club." If zoning approval is granted, then the Gun Club should also be required to submit an application for site plan review and approval to the Planning Board. Moreover, any and all outstanding Certificates of Occupancy should be suspended and use of the property as a firing range should be halted pending the outcome of the zoning and planning proceedings.

There are many benefits of the public hearing process that the Gun Club is required to go through to legitimize its use of its property. One benefit is the ability of the land use boards to require tests and studies to be performed at the Gun Club's expense for the benefit of the land use regulators. Noise studies and environmental studies, among others, can begin to provide the empirical data on which the land use boards can begin to understand the impact of this use on the land and its neighbors, both past and future. To assist you in that regard, we are enclosing two

reference documents that others have found helpful in understanding and regulating the risks inherent in outdoor shooting ranges.

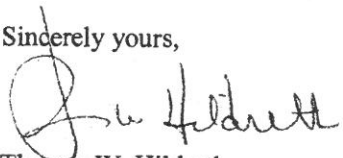
The neighbors who are now suffering from the unpredictable and intolerable levels of noise, and growing fears of the impact of the unregulated and uncontrolled discharge of lead into the environment, have a right to ask for public hearings on applications by the Gun Club. The impact of the operations of the Gun Club – which is governed by an 11-member Board of Directors, at least nine of whom live outside North Hampton – is substantial and affects many, many citizens of the Town.

The adverse impact on the environment is totally unknown and has never been investigated or tested, at least according to town records. The Town, through the conduct of its police department, is now also a potentially responsible party – along with every other individual or entity who has ever shot at the Gun Club's property – with a legal obligation to contribute to the cost of cleaning up the existing pollution.

The Gun Club is not a "pre-existing nonconforming use." Its 13-year hiatus, its reincorporation as a shooting range rather than a sportsmen's club, its rapid expansion of a variety of shooting platforms, and its development as a public shooting range on the weekends all required approval by the Zoning Board and Planning Board.

Thank you for your attention to and assistance with this matter. We look forward to hearing from you.

Sincerely yours,



Thomas W. Hildreth

TWH/mg
ec: Monaghan, et al.
92733 6149273_1.doc

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

Submit Complaints to: DES WETLANDS BUREAU
29 Hazen Drive, PO Box 95
Concord, NH 03302-0095
Phone: (603) 271-2147
FAX (603) 271-6588

LAND RESOURCE MANAGEMENT PROGRAM COMPLAINT FORM

Wetlands Bureau, Shoreland Program, Alteration of Terrain Program, Subsurface Bureau

This complaint form is a means for the general public to report violations of New Hampshire environmental laws falling under the jurisdiction of the NH Department of Environmental Services Land Resource Management Program. Due to the vast amount of complaints submitted, DES depends on the public to provide thorough and accurate information. DES will utilize the information below to assess environmental harm and determine if an investigation is warranted. Please be advised that incomplete forms and anonymous complaints may not be investigated.

1) ALLEGED VIOLATOR AND RELATED PARTIES CONTACT INFORMATION

Who is responsible for the alleged violation(s)? (Please check the responsible party(ies).)

☐ Property Owner ☐ Contractor ☒ Other (describe) CORPORATION - ASSOCIATION ?

a) Property Owner Name: HAMPTON ROD & GUN CLUB

Mailing Address: P.O. BOX 826 HAMPTON N.H. 03843 (ATLANTIC AVE

Phone #: 603-502-9062

b) Contractor Name:

Mailing Address:

Phone #:

c) Other Name: | Phone #:

Mailing Address:

2) COMPLAINANT CONTACT INFORMATION

Your Name: KEVIN KELLEY N. HAMPTON BUILDING INS. | Phone #: 964-8650 W 608-9489 C

Mailing Address: 233 ATLANTIC AVE

Would you like DES to keep your information confidential? ☐ Yes ☐ No

Please be advised that DES may be required to reveal this information if the case goes to a trial or hearing.

3) LOCATION OF ALLEGED VIOLATION(S)

Street Address: ATLANTIC AVE | Town: NORTH HAMPTON

Tax Map # / Lot #: 013-083 | Waterbody (If applicable.): LITTLE RIVER

☐ Attach directions to the property and a map indicating the location of the property in reference to nearby major routes and/or highways.

4) THE RESOURCE

a) What type of resource(s) has been impacted? (Please check appropriate resource(s) impacted.)

☐ Lake/Pond ☒ River/Stream ☐ Non-tidal Wetland ☐ Salt Marsh ☐ Prime Wetland Buffer (Disturbance within 100' of a Prime Wetland.) ☐ Tidal Buffer Zone ☐ Sand Dunes ☐ Protected Shoreland (Disturbance within 250' of a public waterbody.) ☐ Upland (Disturbance of 100,000 sq ft or greater or disturbance of 50,000 sq ft or greater if within the Shoreland Protection Zone.) ☐ Failing Septic System ☐ Other: (Describe)

b) What is the estimated impact to the resource(s) in square feet, acres, or linear feet?
UNKNOWN

THE ACTIVITY

a) When did the activity begin and end? Begin Date: 1940/1956 | End Date: CURRENT

b) Please describe the suspected violation in your own words.
☐ Attach a sketch locating the alleged violation(s) in relation to landmarks on and off the property.
☐ Attach photographs of the impacts mounted/printed on 8.5" x 11" white paper. Please date and describe.

I RECIEVED A COMPLAINT IN REGARDS TO THE HAMPTON FISH & GUN CLUB WHICH HAS BEEN OPERATING A SHOOTING RANGE SINCE POSSIBLE ~~1956~~ 1940. THE TRAP + SKEET RANGE APPEARS TO SHOOT DIRECTLY OVER WETLANDS TOWARDS THE LITTLE RIVER A MAJORITY OF THE BACK LOT (M 13-L 87) IS POORLY DRAINED SOIL THE COMPLAINT IS OVER NOISE + POSSIBLE POLLUTION

ALL INFORMATION MUST BE OBTAINED WITHOUT TRESPASS.

c) Is there evidence that the alleged violator had previous knowledge of DES's processes or has the alleged violator been warned the work he/she is doing may not be in compliance with DES regulations?
☐ Yes ☒ No Explain: GUN CLUB HAS BEEN IN OPERATION FOR 70+ YEARS

OTHER INFORMATION

a) Have you contacted your local conservation commission, health or code enforcement officer, or any other municipal, state, or federal official regarding this matter? ☑ Yes ☐ No If so, who, and what action have they taken?
INITIAL COMPLAINT 11/29/12
INVESTIGATION STARTED JAN 2013
CONTACTED EBEN LEWIS ON 1/30/2013
/ FAXED TO E.L. 2/1/13

I understand that I am providing the information in this complaint to the Department of Environmental Services, a state agency with the authority to investigate and take legal action for certain violations of law. I understand that any information I provide in this complaint must be true and accurate to the best of my knowledge.

Signature: Kevin Kelly Date: 2/1/2013

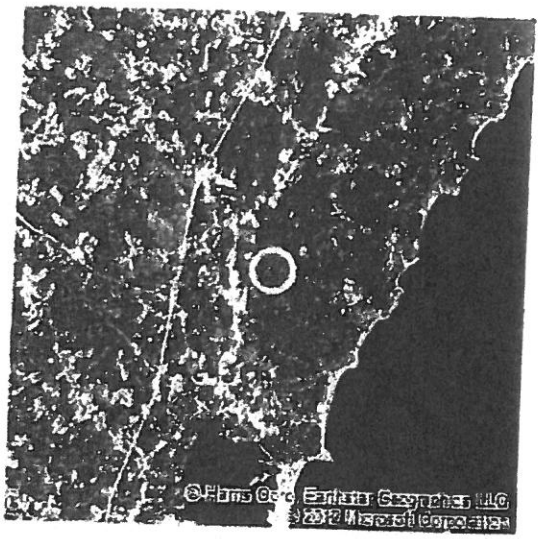
Contacts for other regulated activities in New Hampshire:
Burying or dumping waste: NHDES Waste Management Division (603) 271-2942
Logging operations: NH Division of Forest and Lands (603) 271-2214
Agricultural operations: NH Department of Agriculture (603) 271-3685
Swim lines, moorings, and swim rafts: NH Department of Safety Marine Patrol 1-877-642-9700 (toll free)

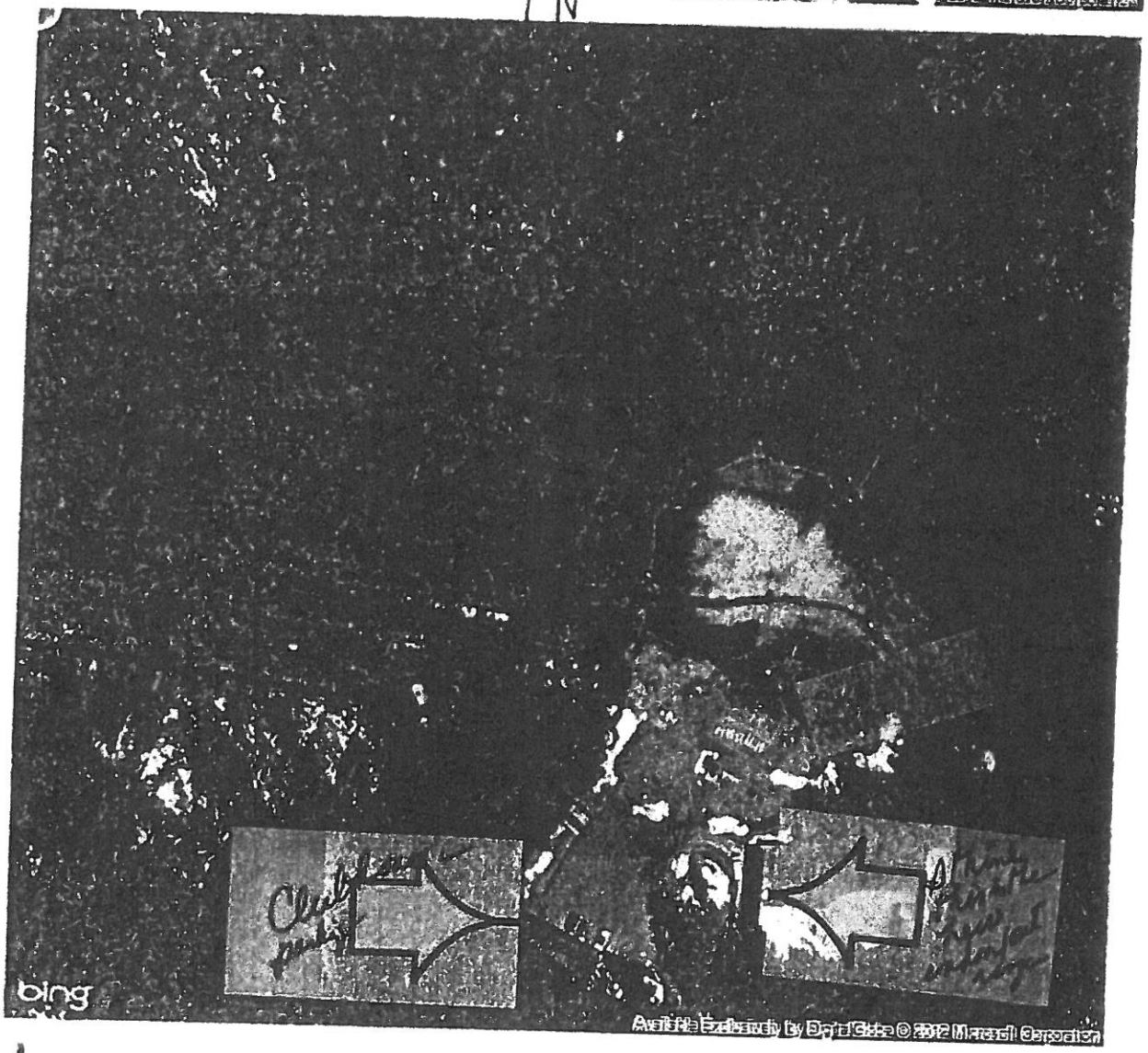
bing Maps

189 Atlantic Ave, North Hampton, NH 03862

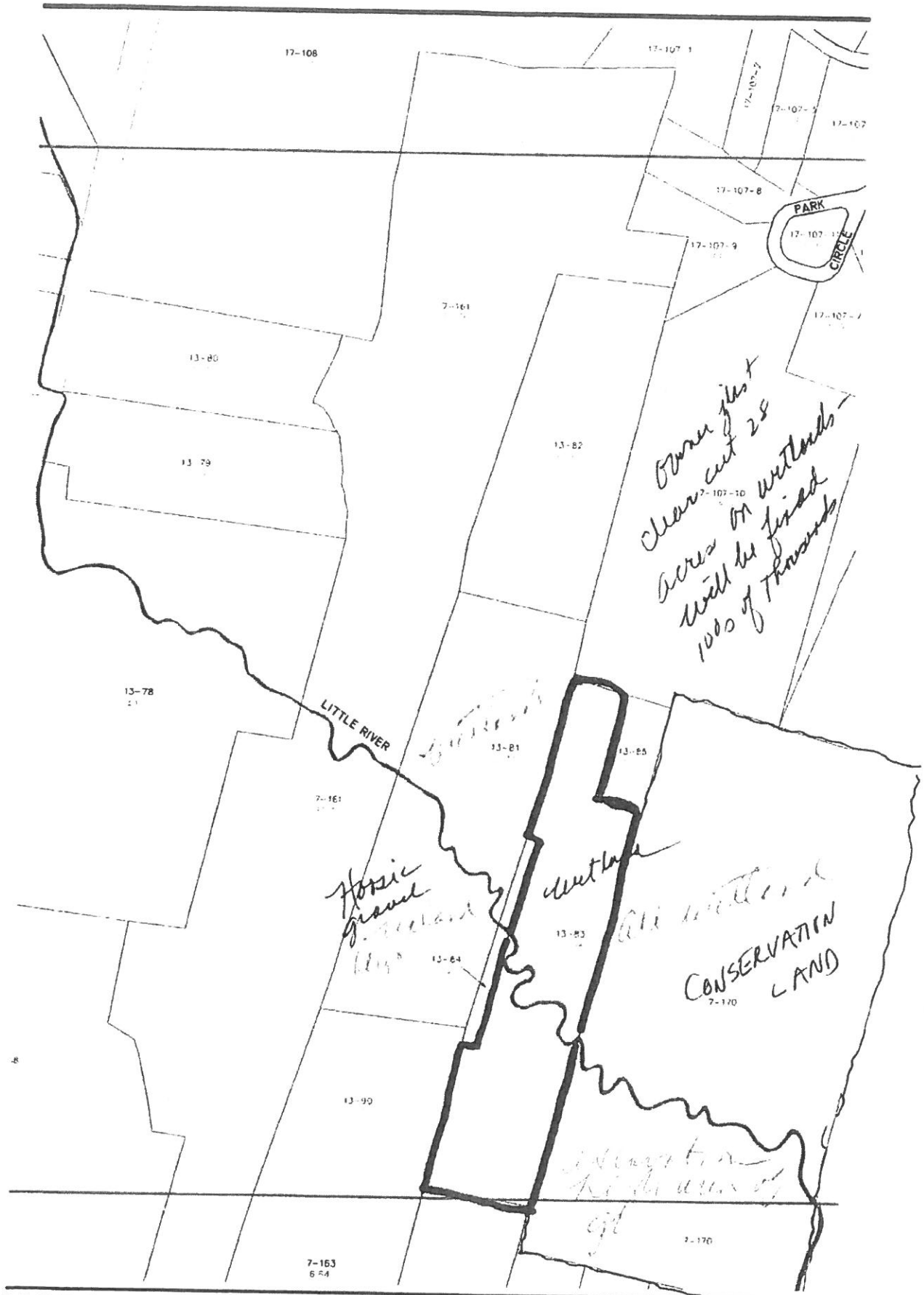
My Notes

m bing.com





Bird's eye view maps can't be printed, so another map view has been substituted.



SSOR'S MAP OF THE TOWN OF
HAMPTON, NEW HAMPSHIRE
500 1000 1500

THIS MAP IS TO BE USED FOR ASSESSING PURPOSES ONLY, NOT FOR THE CONVEYANCE OF REAL ESTATE.

J
NEW

The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES

Thomas S. Burack, Commissioner

March 18, 2014

James Clemence, Sr.
Club President
Hampton Rod & Gun Club, Inc.
PO Box 826
Hampton, NH 03842-0826

SUBJECT: **North Hampton** – Hampton Rod & Gun Club, Atlantic Avenue
DES Site **# 201310001**, Project # 31644

Proposed Scope of Work – Site Investigation, prepared by Exeter Environmental Associates, Inc., dated March 10, 2014

Dear Mr. Clemence:

The New Hampshire Department of Environmental Services (Department) has reviewed the Proposed Scope of Work – Site Investigation (SOW) prepared by Exeter Environmental Associates, Inc. (Exeter).

The Department understands that the site investigation will be conducted in two separate areas; the Pistol/Rifle range and the Trap range. The Department approves this approach based on the proposed schedule to complete site investigation activities on the entire site and submit a report in 2014. Please find the following comments relative to the proposed site investigation activities.

Pistol/rifle range

1. The Department approves the proposed soil sampling locations shown and described in the SOW totaling 12 locations. Nine sample locations will be collected from the 25 foot by 50 foot grid shown on Figure 1 and three additional locations between the berm and the drainage swale for lead analyses. The Department understands that samples will be collected for 0-6 and 6-12 inch intervals.

   The Department recommends that lead shot be screened from soil samples analyzed for lead content to accurately represent the concentration of lead in soil. A sampling log for each location recording the amount of lead shot within the depth interval may assist in an understanding of the amount of lead shot screened from each interval sampled. An understanding of the lead shot distribution is likely to be important in future evaluations for site remediation.

2. The SOW describes the intent to collect three sediment samples from the drainage swale. Please ensure that the locations selected lie directly in front of the berm in the area of line of fire.

   Sediment quality data is to be compared both to the NH Evaluation of Sediment Quality Guideline (April 2005) and to the Department's Soil Remediation Standards.

3. Two surface water samples are proposed in the SOW for up and downstream collection points for lead analyses. The Department recommends moving the downstream location to be centered in front of the berm in the line of fire.

Trap Range

4. The Department approves the proposed soil sampling locations shown and described for investigation of the Trap range for lead analyses. The SOW describes sampling depths of 0-6, 6-12, and 12-24 inch intervals. The SOW also proposes to analyze 10% of soil samples for copper and arsenic. Additionally, five soil samples collected from the 0-12 inch depth in the area of clay target fill will be analyzed for polynuclear aromatic hydrocarbons (PAHs).

   As described above, lead shot should be screened from soil samples analyzed for lead content to accurately represent the concentration of lead in soil. A sampling log or description for each location and depth interval may assist in documenting the amount of lead shot and target debris screened from each interval sampled. An understanding of the lead shot and debris distribution is likely to be important in future evaluations for site remediation.

5. The SOW proposes to collect five soil samples for Total Characteristic Leaching Procedure (TCLP) analyses. TCLP analyses are for waste disposal characterization and the Department recommends that this type of analyses be conducted subsequent to completion of the investigation and pending an evaluation of remedial options.

6. Two surface water samples are proposed in the SOW for up and downstream collection points for lead analyses. The Department recommends adding a third surface water sampling location centered in the target fill area. Please note surface water quality data is to be compared to the Surface Water Quality Standards contained in Env-Ws 1700.

7. Sediment sampling is proposed for three locations from the surface water feature at the trap range area. Please ensure that sampling locations are selected directly within the stream section impacted by target and lead shot debris. In addition to lead, PAHs, copper and arsenic are to be included for laboratory analyses. Sediment quality data is to be compared both to the NH Evaluation of Sediment Quality Guideline (April 2005) and to the Department's Soil Remediation Standards.

Groundwater Monitoring

8. The Department understands that the monitoring wells were installed on March 7, 2014 as proposed in Figure 1 of the SOW. The Department approves the locations and proposal for analyses of dissolved lead, copper and arsenic.

Please be advised that all necessary permits and approvals relative to disruption of wetlands, as part of this investigation, are to be obtained prior to the work conducted. Please contact Eben Lewis if the Department's Land Resource Management Program at Eben.Lewis@des.nh.gov.

The Department looks forward to receipt of the pistol/rifle range investigation results by May 30, 2014 and a comprehensive site investigation report including the trap range area by December 15, 2014. If you have questions feel free to contact me at the Department's Waste Management Division.

Sincerely,

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Waste Management Division
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cc: Rene Pelletier, WD
Linda Magoon, WD
Eben Lewis WD
John Regan, HWRB
Steven Shope, Exeter Environmental
Michael Harris, Hampton Rod & Gun Club
Evan Mulholland, DOJ
Richard Uchida, Hinckley Allen

The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES

Thomas S. Burack, Commissioner

July 17, 2014

James Clemence, Sr.
Club President
Hampton Rod & Gun Club, Inc.
PO Box 826
Hampton, NH 03842-0826

SUBJECT: **North Hampton** – Hampton Rod & Gun Club, Atlantic Avenue
DES Site # 201310001, Project # 31644

Environmental Sampling Report - Pistol/Rifle Range, prepared by Exeter Environmental, Inc. and dated May 22, 2014

Proposal for Addendum to Environmental Sampling Report, prepared by Exeter Environmental, Inc. and dated June 18, 2014

Dear Mr. Clemence:

The New Hampshire Department of Environmental Services (Department) has reviewed the Environmental Sampling Report – Pistol/Rifle Range (Report) prepared by Exeter Environmental, Inc. in response to the Department letter dated March 18, 2014 approving the site investigation scope of work. The Department has also reviewed the Proposal for Addendum (Proposal) to Environmental Sampling Report dated June 18, 2014. The Department's response relative to both documents is provided below.

Groundwater:

The Department understands that four groundwater monitoring wells were installed on the property. One round of groundwater samples were collected and analyzed for the presence of dissolved lead, copper and arsenic. Lead was detected at monitor well MW-3 at a concentration of 2 µg/L which is below the Ambient Groundwater Quality Standard (AGQS) of 15 µg/L.

Additionally, the bedrock water supply well was also sampled and analytical results detected that the presence of total lead was also below AGQS at 7 µg/L. There were no groundwater analytical results above AGQS.

Sediment, Surface Water and Soil:

Three sediment samples were collected from the drainage swale directly in front of the pistol/rifle range berm. The samples were analyzed for lead content and the results compared to the Soil Remediation Standards (SRS). All analytical results indicated concentrations above the 400 mg/kg SRS.

While the Department's Evaluation of Sediment Quality Guidance Document does not include referenced look-up tables, there are several sources of screening values identified. The primary source identified is the NOAA SQuiRT tables, which references a screening value for lead of 35.8 mg/kg based on MacDonald et al. (Arch. Environ. Contam. And Toxicology Vol 39:20-31). The Department will continue to refer to the 35.8 mg/kg sediment screening value rather than the 47 mg/kg value referred to in the Report.

Two surface water sample samples were collected for lead analyses from the drainage swale. SW-1 is located at the southern edge of the swale (presumed upstream location) and SW-2 is centered in front of the berm. Report text states that samples were analyzed for dissolved lead using EPA method 200.8. Surface water sample SW-2 was analyzed for total hardness to calculate an adjusted Surface Water Quality Criteria (SWQC). Lead concentrations detected at both SW-1 and SW-2 exceeded the adjusted SWQC.

Please note that the Report text indicates the surface water samples were analyzed for dissolved lead, but the laboratory report and chain of custody seem to indicate analyses was performed for total lead. Surface Water Quality Regulations Env-Wq 1703.22, indicate that the surface water quality lead values (Water Quality Criteria For Toxic Substances) are dissolved metals. Please clarify the Report text, analytical results and conversion process employed to reconcile the information presented in the Report with the SWQC.

Additionally, a surface water sample (SW-6) was collected from the surface water feature located to the north of the pistol/rifle range, which transects the shotgun range. The report indicates that the sample location was selected to provide background data for the site. The Department notes that while the location of SW-6 may represent surface water flowing on to the site from the west, it is not representative of the background surface water quality in the wetland to the south of the drainage swale.

Laboratory results are attached to the Report for sampling points SW-3, SW-4 and SW-5. These sampling locations are not discussed in the Report text or included on plans or tables. Please clarify.

A total of 24 soil samples were collected from 12 locations at intervals of 0-6" depth and 6-12" depth for lead analyses in the pistol/rifle range. Locations were established in a grid pattern between the shooting line and the berm. Based on the poor correlation between XRF lead analytical results and the initial laboratory analytical results, all soil samples were sent to the laboratory for analyses.

Lead was detected in soil at six of the twelve sampling locations above the SRS (400 mg/kg). Out of these locations, four presented lead levels above the SRS in the top 0-6" horizon, with the 6-12" horizon indicating lead concentrations below the SRS. At sample locations S-5 and S-9, the 0-6" horizon had lead detections below the SRS and lead concentrations were above the SRS in the 6-12" horizon. Location S-5 indicated 28,000 mg/kg in the 6-12" range. The text indicates that projectile fragments were present in the deeper soil samples from locations S-5 and S-9. The Report indicates that soils samples were screened to remove bullet and bullet fragments and a sample log was kept which was not included in the Report. Please provide the sample log and screening/sieve size details for Department review.

The Report provides information that the pistol berm was previously located near sampling location S-5 and later consolidated with the current berm located beyond (down range) of the drainage swale. Further information reported during an onsite meeting indicated that the very high lead concentrations in soil may be due to historical spreading of the former pistol berm in the shooting line area. The Department acknowledges that these site activities may have contributed to increase of lead concentrations with depth at soil sampling locations S-5 and S-9.

Soil samples analyzed for lead presented some of the highest lead concentrations in the center of the sample grid and towards the shooting line building. Lead concentrations were detected at 38,000 mg/kg at S-6 and 31,000 mg/kg at S-2. Based on the spatial distribution of lead concentrations in soil and the proximity of the wetland surrounding the shooting line at the pistol/rifle range, storm water runoff may also be impacting surface water and sediment quality. Additional investigation activities should be designed to provide information regarding this issue.

Proposed Activities:

The Report proposes a presumptive remedy of excavation of the lead contaminated soil in the drainage swale. The Proposal indicates a revision to that conceptual remedial approach by indicating plans may be submitted to design a combination of low permeable cap and/or paving on the contaminated soils. The Proposal also discusses the possibility of employing the use of bullet containment systems in the target area. Since at this time a specific remedial action plan has not been approved and the proposal for the use of bullet traps has not been submitted, the Department will wait for a more detailed plans before providing comment. The extent of impacts to the surface water and flow of the surface water immediately adjacent to the pistol/rifle range will be a needed component in evaluating any proposals to direct water through and/or around the pistol/rifle range.

Please be advised, however, that the remedial action plan will need to include the additional information on the extent of contamination , define the area(s) of proposed excavation, provide information on post excavation confirmatory soil sampling and disposal of contaminated soil, and may require a permit application to the Land Resource Management Program Additionally once a proposal is made relative to the use of bullet traps, performance monitoring may be required to confirm that future activities would not contribute to the impairment of surface water and sediment.

Summary and Next Steps:

The data presented in the Report indicate that there has been an impact to surface water quality in the drainage swale resulting in lead concentrations above SWQC. The Report data also indicate that sediment in the drainage swale contains lead at concentrations above the SRS. Lead in soil above SRS present between the shooting line and the drainage swale represent a potential source for surface water impacts due to storm water runoff, and due to the concentrations, may also represent a leaching potential to groundwater.

The currently available information is insufficient to determine whether the observed surface water impacts are solely related to shooting over the drainage swale or if soil conditions represent an ongoing source of contamination to surface water, sediment or groundwater. Therefore, additional work is necessary to; a) define the limits of both surface water and sediment impacts, b) determine if the soils between the shooting line and the drainage swale contribute to surface water/sediment impacts due to runoff and/or have an impact on groundwater, and c) evaluate impact of the current pistol/rifle range berm soils on surface water/sediment. The information generated by the additional work would then be evaluated as the basis for assessing appropriate remedial actions. The additional information would also be helpful to evaluate whether plans to the resume of shooting activities would contribute to surface water impacts and, if so, what engineered solutions would be necessary or possible to prevent those impacts

Specifically, based on lead concentrations at surface water sample location SW-1 above the SWQC, additional work is necessary to determine a) the extent of surface water impacts in the wetland south of the drainage swale, and b) the condition of sediment quality in the wetland south of the drainage swale. Additionally, the drainage swale's outlet is to the north and a similar investigation is necessary to define the limits of surface water and sediment impacts in this direction.

Soil sampling around the berm's perimeter is recommended to provide information regarding soil quality and its contribution to runoff into the wetland. Additional soil sampling in a similar grid type pattern is necessary west of the shooting line building given the long history of activity and the movement of the pistol berm as previously indicated.

The Proposal indicates that six additional surface water samples have already been collected and installation of groundwater monitoring wells is in progress with all samples being analyzed for lead only at this time. While the Department believes that the work being conducted as described in the Proposal will facilitate an understanding of the site conceptual model, the previously described work will still need to be addressed to provide a complete understanding of site conditions.

A scope of work is to be provided to address the above-mentioned concerns, along with the results of work described in the Proposal and submitted to the Department for approval by September 15, 2014.

The Department looks forward to continuing to work together to bring these site concerns to a successful outcome. Please feel free to contact me at the Waste Management Division with any questions or to set up a meeting to discuss these issues.

Sincerely,

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Linda Magoon, LRM/WD
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Dave Larson, M.P.H., EHP
Steve Shope, P.G., Exeter Environmental, Inc.
Attention Health Officer, Town/City of North Hampton

The State of New Hampshire
Department of Environmental Services

Thomas S. Burack, Commissioner

March 4, 2015

James Clemence, Sr.
Club President
Hampton Rod & Gun Club, Inc.
PO Box 826
Hampton, NH 03842-0826

Subject: **North Hampton** – Hampton Rod & Gun Club, Atlantic Avenue
DES Site **#201310001**, Project #31644

Addendum to Environmental Sampling Report, prepared by Exeter Environmental, Inc., and dated September 8, 2014

Results of Additional Soil Sampling, prepared by Exeter Environmental, dated October 20, 2014

Dear Mr. Clemence:

The New Hampshire Department of Environmental Services (Department) has reviewed the Addendum to Environmental Sampling Report, dated September 8, 2014 and the Results of Additional Soil Sampling, dated October 20, 2014, (Reports) both prepared by Exeter Environmental, which are submitted as part of the site investigation focused on the Pistol/Rifle range at the Hampton Rod & Gun Club.

The Reports presented results of additional soil sampling, surface water sampling, and groundwater sampling efforts. The Departments observations and comments are as follows.

Groundwater
Findings

- Four additional GeoProbe wells (SGW-1 thru SGW-4) were installed in the Pistol/rifle range during July 2014. The new and the previously installed wells were sampled July 29, 2014 and samples measured in the field for pH and specific conductance. Additionally, samples were field filtered and analyzed for dissolved lead.

- Lead was detected at 21ug/L, which is above the Ambient Groundwater Quality Standard (AGQS) of 15ug/L at the newly installed monitor well SGW-2 located in the pistol/rifle range shooting area. Lead was not detected above AGQS in any other groundwater samples.

- The monitor well locations were not surveyed nor elevations taken. Additionally no information was provided to indicate depth to groundwater. The Report indicates that boring logs are to be submitted with the complete Site Investigation Report. Please also include a description of the procedures used to develop the wells.

Department Comments

- Based on the detection of lead above AGQS at monitor well SGW-2, a confirmatory groundwater sample is to be collected at SGW-2.

- The wells are to be surveyed and information provided to the Department regarding groundwater elevation, depth to groundwater and flow contours. This information is not only required under Env-Or 606.03, but necessary given the suspected shallow depth to groundwater at the site (based on the topography, presence of wetlands and surface water at the site) to evaluate groundwater contact with contaminated soils.

- The proposed remedy of a 6 inch clay cap does not meet the definition or requirements of a presumptive remedy under Env-Or 600. The proposed cap does not address the current presence of lead above AGQS in groundwater. If the presence of lead in groundwater above the AGQS is confirmed, definition of the extent of contamination will then be needed and a remedial action plan (RAP) required, addressing the groundwater impact along with a proposal for ongoing groundwater monitoring. In addition, several soil samples exceed the Upper Concentration Limit (UCL) for lead of 4,000mg/kg, and would require further evaluation of remedial options prior to selecting a remedial alternative.

Soil:
Findings

- Initial soil sampling results detected the presence of lead above Soil Remediation Standards (SRS) at 6 sampling locations at the pistol range at depths of 0-6" and 6-12" below ground surface. At two of these locations (S-5 and S-9), the lead concentration was greater in the 6-12" horizon. The Reports transmit results from additional soil sampling conducted July 14, 2014. Soil samples were collected at the S-5 and S-9 locations at a depth of 20-24" below ground surface, The analytical results were 6 mg/kg and 250 mg/kg respectively, which is below the SRS. Therefore, this appears to define the vertical extent of lead contamination in soil at this location.

- On October 3, 2014, sixteen additional locations were selected for soil sampling at intervals of 0-6" and 6-12" below ground surface surrounding the pistol range and behind the pistol berm. These samples were analyzed in the laboratory for the presence of lead.

    - The Reports indicate that any bullets or shards were removed from samples in the field.

    - Lead was detected at two soil sampling locations above the soil remediation standards (SRS) of 400mg/kg. Lead was detected in the 0-6" sampling horizon at locations S-22 and S-24 at concentrations of 990mg/kg and 660mg/kg respectively. Soil samples taken from the other 14 locations did not detect lead above the SRS.

- Sample location S-22 (with lead above the SRS) is located behind and northeast of the berm on the abutting property.

- Additionally, previous analytical results detected lead above the UCL of 4,000 mg/kg in three locations. Analytical results indicated the presence of lead at sample location S-2 (31,000 mg/kg), S-5 (28,000 mg/kg) and S-6 (38,000 mg/kg).

Department Comments:

- Clarification is needed to adequately determine if the material sampled in the 16 new locations was soil or sediment (at each location) given the plan representation of presumed wetland features.

- The remedy, as currently submitted, proposes a 6 inch clay cap and other provisions which serve to control the direct contact risk. However, it does not adequately address the presence of lead contaminated soil above the UCL, or the presence of lead above SRS in soils on the abutting property.

- A remedial action plan is required to address the presence of soils contaminated above the SRS, including the on-site soil above the UCL and the soil above SRS on the abutting property. Typically, a presumptive remedy would be one which includes a proposal that would serve to address all the sources of contamination at a site and all environmental media affected.

Surface water
Findings

- A total of 28 surface water quality samples were collected at up to 13 locations (i.e., sampling stations) from two drainage channels within and adjacent to the property on five occasions: 4/24/14 (2 stations), 5/12/14 (4 stations), 6/6/14 (3 stations), 6/13/14 (6 stations) and 8/14/14 (13 stations). The trap range drainage channel includes five stations which from upstream to downstream include SW-6, SW-5, SW-4, TR-SW-1 and SW-3. Water in the trap range channel eventually flows into the Little River. The pistol/rifle range channel (which connects to the trap range channel at approximately station TR-SW-1) includes five stations which from upstream to downstream include SW-1, SW-2, PR-SW-3, PR-SW-3, and PR-SW-1. The Little River which is approximately 800 feet north of the pistol/rifle range includes three stations which from upstream to downstream include SW-9, SW-8 and SW-7.

- Samples were analyzed for total recoverable or dissolved lead. Hardness was measured on three occasions [on 4/24/14 at SW-2 (hardness = 28 mg/L), on 5/12/14 at SW-4 (hardness = 73 mg/L) and on 6/6/14 at SW-8 (hardness = 80 mg/L)]. Samples collected on 8/14/14 were analyzed for dissolved lead. Samples collected on the other four sampling dates were analyzed for total lead. Samples collected on 6/13/14 and 8/14/14 were reported to be during wet conditions (i.e., during a low intensity storm event on 6/13/14 and during a 24 hour storm on 8/14/14). Weather conditions (i.e., wet or dry) were not indicated for the other three sampling dates.

- The results indicate that activities at the trap range and the pistol/range are impacting lead concentrations in adjacent surface waters. The highest values of lead (210 and 310 ug/L) occurred at SW-3 which is in the trap range channel downstream of the confluence with the pistol/rifle range channel. Values between 20 and 90 ug/L occurred at other stations in the trap range channel (SW-4 and TR-SW-1), in the pistol/rifle range channel (SW-1, SW-2, PR-SW-3, PR-SW-2 and PR-SW-1) and in the Little River (SW-8). Lead values in the upstream section of the trap range channel (SW-6 and SW-5) and at the upstream and downstream stations in the Little River (SW-9 and SW-7) were all no greater than 3 ug/L.

- Acute and chronic NH surface water quality criteria for lead are hardness dependent; consequently, hardness samples should be taken concurrently with each lead sample so that the appropriate lead water quality criteria at that location and time can be determined. Lead water quality criteria become more stringent (i.e., decrease) as hardness decreases.

- As mentioned above, hardness was only measured in three of the 28 samples and ranged from 28 to 80 mg/L. At a hardness of 28 mg/L, the total chronic and acute lead criteria are 0.63 and 16.15 ug/L respectively and the dissolved chronic and acute lead criteria are 0.61 and 15.77 ug/L respectively. At a hardness of 80 mg/L, the total chronic and acute lead criteria are 2.39 and 61.45 ug/L respectively and the dissolved chronic and acute lead criteria are 1.97 and 50.61 ug/L respectively. Based on the hardness and lead results for these three samples, there were three "hardness confirmed" exceedances of the chronic lead criteria (one each at SW-2 (pistol/rifle range), SW-4 (trap range) and SW-8 (Little River) and two exceedances of the acute lead criteria (one each at SW-2 and SW-8).

- For the other 25 lead samples, hardness was not measured, consequently one cannot determine conclusively if the lead criteria have been exceeded in these samples since the appropriate hardness dependent lead criteria cannot be accurately determined. However, based on the range of hardness values collected at the site (28 mg/L to 80 mg/L), it is likely that additional exceedances of the lead water quality criteria occurred. For example, if it is assumed that minimum measured hardness value of 28 mg/L is representative of the hardness in the 25 samples without hardness measurements, all 25 (100%) would exceed the chronic water quality criteria for lead and 17 out of 25 (68%) would exceed the acute water quality criteria for lead. If it is assumed that maximum measured hardness value of 80 mg/L is representative of the hardness in the 25 samples without hardness measurements, 23 out of 25 (92%) would exceed the chronic water quality criteria for lead and 10 out of 25 (40%) would exceed the acute water quality criteria for lead.

- The September 8, 2014 report states that a large difference was not observed between total and dissolved lead results suggesting that the lead is soluble as opposed to being transported with small soil particles. The report further states that since pH levels were measured to be somewhat acidic (5-6 pH units), the acidic values are likely to promote lead mobility in surface water. The above statement may be true however the fraction

that is dissolved cannot be accurately determined since samples analyzed for total lead were collected on different dates than dissolved lead samples. To determine the dissolved fraction, total and dissolved lead samples should be collected concurrently.

- The report further concludes that the source of the soluble lead in surface water is attributable to stormwater runoff and not to shallow groundwater discharge. This is not entirely supported by the data which indicated a relatively high lead concentration of 21 ug/L at monitoring well SGW-2, which is in the vicinity of the pistol/rifle range. Further a lead concentration of 6 ug/L was identified in well SGW-3 which is adjacent to the channel draining the pistol/rifle shooting range. As indicated above, 6 ug/L exceeds total and dissolved chronic surface water quality lead criteria at a hardness of 80 mg/L or less. Consequently groundwater contributions could contribute to surface water quality exceedances of lead. In addition, more clarity is needed on lead levels during dry weather conditions (i.e., when stormwater runoff is not occurring). Of the 28 lead samples, 18 were taken during wet conditions (on 6/13/14 during a low intensity storm event and on 8/14/14 during a 24 hour storm). Weather conditions for the other 3 sampling events were not found in the reports.

- The surface water lead concentrations at SW-3 (the station in the trap range channel downstream of the confluence with the pistol/rifle range channel) is approximately 3 to 6 times the values in the next upstream station in the trap range channel (TR-SW-1) and the pistol/rifle range channel (PR-SW-1). At this time, the causes influencing these data are not defined. Additionally, the source of lead concentrations in the Little River at station SW-8, which is over 800 feet away from the target area are not yet determined

Department Comments:

- Further investigation should be conducted to determine the extent of surface water lead exceedances and typical background levels. For example, Station SW-1 is the most upstream location sampled in the swale running across the pistol/rifle range and both times it was sampled it appears to have exceeded the water quality standard for lead. Additional upstream locations should be sampled to determine the full spatial extent of surface water quality exceedances for lead.

- The NH surface water quality criteria for lead is based on dissolved lead. All future lead sampling should therefore include dissolved lead. Hardness should also be measured at all locations and all occasions when dissolved lead is measured so that the appropriate water quality criteria for lead can be determined for each sample.

- Further investigation should be conducted to determine the difference between dry and wet weather lead results and the fraction of total recoverable lead that is dissolved under wet and dry conditions. Measurements of pH should also be included to help explain results.

- The surface water pathways to the Little River are unclear from the maps provided in the reports. If possible a more detailed map should be provided showing all surface water channels on the property and the course they travel to the Little River.

- Prior to conducting any additional sampling, a Sampling and Analysis Plan (SAP), which includes Quality Assurance / Quality Control provisions, should be prepared and submitted to the Department for approval. Clean techniques per EPA method 1669 for collecting and analyzing samples for lead should be considered.

- Once the major pathway(s) for lead contamination of surface waters are confirmed, and a Department approved remediation plan is developed and implemented, a post-remediation SAP should be prepared and submitted to the Department for approval. The Department approved SAP should then be implemented.

- In accordance with RSA 485-A:12,I, no additional activity at the gun range which could increase lead concentrations in the surface waters should be conducted.

Sediment
Findings

- One round of sediment sampling was conducted on 4/1/14 at three locations (SED1 through SED3) along the open water channel that runs perpendicular to the rifle/pistol range. Sediment samples were collected to a depth of 6 inches. All three samples exceeded the SRS of 400 mg/Kg as well as thresholds for the protection of aquatic life specified in Department's sediment guidance[1] which includes the Threshold Effect Concentration (TEC) for lead of 35.8 mg/kg and the Probable Effect Concentration (PEC) for lead of 128 mg/kg. The TEC is a screening value threshold below which adverse biological effects are unlikely and the PEC is a screening value above which adverse biological effects are likely.

- On 10/3/14, sediment samples were collected at nine stations (S-16 through S-23 and S-25) in what are shown as wetlands in the report submitted on 10/20/14. Sediment samples were collected at depths of 0-6 inches and 6–12 inches. At depths up to 6 inches, all 9 samples exceeded the TEC for lead, 6 samples exceeded the PEC (S-18 through S-20, S-22, S-23 and S-25). At a depth of 6-12 inches, 6 samples exceeded the TEC (S-18, S-20 through S-23 and S-25), and 2 samples exceeded the PEC (S-18 and S-25).

  According to the Department's Sediment Guidance[1], exceedances of the chemical thresholds is the first step in a potential three step process for determining toxicity of sediments to aquatic life. To confirm if toxicity is occurring, bioassays or insitu toxicity tests can be conducted. In addition, a bioaccumulation risk potential study may be necessary to determine the risk that elevated lead levels in the sediment pose on higher trophic levels.

[1] Evaluation of Sediment Quality Guidance Document. New Hampshire Department of Environmental Services. NHDES-WD-04-9. April 2005.

Department Comments:

- Sediment samples should be taken in areas not influenced by activities at the gun club to determine typical background (i.e., reference) levels of lead in the sediment.

- The spatial extent of exceedances of TEC and PEC sediment thresholds and exceedances of typical background (i.e., reference) levels of sediment in lead should be determined. This includes additional samples in wetlands and possibly in and adjacent to the Little River where high lead concentrations have been documented in the surface water.

- Prior to collecting additional sediment samples, a sampling and analysis plan (SAP) should be prepared and submitted to the Department's Watershed Management Bureau for review and approval. The plan should include provisions for Quality Assurance/Quality Control. The Department approved plan should then be implemented.

- In accordance with RSA 485-A:12,I, no additional activity at the gun range which could increase lead concentrations in the sediments (and associated surface waters) should be conducted.

- Once the extent and magnitude of sediment contamination is determined a remediation plan should be prepared for approval by the Department. The Department approved remediation plan should then be implemented.

Wetlands

- In light of the recently reported soil analytical data from samples collected on the abutter's property, the proposed remedy for the contaminated wetland will require authorization from the abutter for the impacts on their property.

- Additionally, written concurrence from the abutter will be required for those impacts within 20-feet of the abutter's property boundary in accordance with Env-Wt 304.04(a).

Certain proposals included in the Reports are beneficial in an active shooting range and should be considered for inclusion in the appropriate area.

In summary, please respond to the Department's above-mentioned comments by June 1, 2015. The above, represent comments from several Department Bureaus regarding the various affected media at the site. Please feel free to contact the following Department personnel; Eben Lewis - Land Resource Management Bureau, eben.lewis@des.nh.gov, with questions pertaining to wetlands issues; Greg Comstock - Water Quality Planning Section, gregg.comstock@des.nh.gov, with questions regarding surface water quality issues; and Rebecca Williams - Hazardous Waste Remediation Bureau, rebecca.williams@des.nh.gov, regarding groundwater and soil related questions.

The Department appreciates the cooperative manner in which the environmental work has been conducted and is available to meet to discuss the next steps required in this letter so that the Club may use its resources to the greatest efficiency.

Sincerely,

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Kevin Kelley, North Hampton Building Inspector
Robert Landman, Co-Chair, North Hampton Water Commission
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Rene Pelletier, Assistant Director WD
Linda Magoon, WD
Eben Lewis, WD
Gregg Comstock, P.E., WD
Ted Walsh, WD
Dave Larson, BEOH, ARD
Richard Uchida, Hinckley Allen
Attention Health Officer, Town of North Hampton

The groundwater at the site is relatively shallow, on the order of one to four feet below grade. Based upon the water elevations measured during previous studies, the inferred direction of shallow groundwater flow is to the east-northeast, towards the Little River. We have measured a relatively flat horizontal water table gradient of 0.01 feet per feet across the pistol/rifle range.

The site is poorly drained due to the underlying marine silts and clays. Drainage at the site is directed into two primary channels; the drainage channel in the pistol/rifle range and the drainage channel from the trap range. The drainage channel in the pistol/rifle range originates immediately to the south of the range and flows to the north where it intersects the drainage channel from the trap range, which flows from west to east. An additional drainage channel flows from north to south along the eastern edge of the trap range and discharges downstream of the confluence of the pistol/rifle range and trap range channels. Surface water at the site ultimately drains to the east-northeast and empties into the Little River.

2.6 Environmental and/or Human Impact

With the exception of the clubhouse supply well, there are no supply wells within a 1,000-foot radius of the shooting areas. The clubhouse supply well was sampled for total lead on April 24, 2014. A concentration of .007 mg/L was reported, which is less than the applicable drinking water standard of .015 mg/L. In summary, there are no identified human drinking water receptors relative to the site.

As stated previously, mobilized lead has impacted surface waters at the site. Based on the hardness and lead results, there were three "hardness confirmed" exceedances of the chronic lead criteria; specifically, SW-2 (pistol/rifle range), SW-4 (trap range) and SW-8 (Little River). In addition, there were two "hardness confirmed" exceedances of the acute lead criteria (SW-2 and SW-8).

Lead was detected in all three sediment samples collected from the drainage swale in the pistol/rifle range. All three sediment samples surpassed the thresholds for aquatic life at both the Threshold Effect Concentration (TEC- 36 mg/kg) and the Probable Effect Concentration (PEC- 128 mg/kg). TEC is a screening value below which adverse biological effects are unlikely; PEC is a screening value above which adverse biological effects are likely.

No evaluations of environmental risk characterization have been conducted to date.

Table 2-1: Contaminants of Concern – Previous Investigations **(Matrix = Surface Water)**

Analytical Parameter (Contaminants of Concern)	Date of sampling	Sampling contractor	Laboratory Analytical Results	Regulatory Limit (*u*g/L)
Lead (Pb)	4/24/14; 5/12/14; 6/6/14; 6/13/14; 8/14/14	Exeter Environmental Associates. Inc.	3-310 *u*g/L	0.6 (chronic): 15 (acute)
Hardness	4/24/14; 5/12/14; 6/6/14		28-80 mg/L	

NH DES = New Hampshire Department of Environmental Services Surface Water Quality Standards

Table 2-2: Contaminants of Concern – Previous Investigations **(Matrix = Sediment)**

Analytical Parameter (Contaminants of Concern)	Date of sampling	Sampling contractor	Laboratory Analytical Results (mg/kg)	Regulatory Limit (mg/kg)
Lead (Pb)	4/24/14	Exeter Environmental Associates. Inc.	440-1,000	36 (TEC) 128 (PEC)

NH DES = New Hampshire Department of Environmental Services Surface Water Quality Standards
TEC = Threshold Effect Concentration
PEC = Probable Effect Concentration