The State of New Hampshire
**Department of Environmental Services**

**Thomas S. Burack, Commissioner**

June 2, 2016

Mr. Steven B. Shope, PG
President,
Exeter Environmental Associates, Inc.
P.O. Box 451
Exeter, NH 03833-0451



Re: Response to EEA Letter Dated April 11, 2016
Regarding Surface Water Sampling & Analysis Plan
Hampton Rod & Gun Club
Atlantic Avenue, North Hampton, New Hampshire

Dear Mr. Shope:

Thank you for your letter of April 11, 2016 in which Exeter Environmental Associates (EEA), on behalf of the Hampton Rod and Gun Club (HRGC), responded to comments made by the New Hampshire Department of Environmental Services (NHDES) in a letter dated March 22, 2016 regarding the proposed surface water and sediment sampling and analysis plan (SAP). In your letter EEA asks if their response is sufficient to allow surface water and sediment sampling to proceed per the SAP. Please find our response below (in bold font).

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*3/22/16 NHDES Comment 1. As requested in DES's letter dated March 3, 2015, please provide a more detailed map that, in addition to the proposed sampling stations, shows all surface water channels, and the course they travel to the Little River. Arrows showing the direction of flow should also be provided.*

4/11/16 EEA Response: Attached, find an air photo-based site plan showing current soil sampling locations at the trap range and a draft 400 mg/kg lead contour for both the trap and pistol/rifle ranges. Arrows showing the direction of surface water flow are provided for all primary channels. The arrows are based on our field observations and aerial reconnaissance with a camera-mounted quadcopter.

**6/1/16 NHDES Response: We understand that direction of flow is approximate and difficult to determine in some areas due to the flat terrain. No further action is required at this time, however, please be aware that there may be a need to obtain more accurate information (i.e., survey) in some areas in the future to confirm flow direction.**

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*3/22/16 NHDES Comment 2. A stated goal of the SAP is to determine lateral limits of lead contamination. To help determine this and where sampling should occur, please include on the plan discussed in comment 1 above, the area were lead associated with*

*the shooting range is likely to have fallen on the land or water. This should take into account the direction(s) that shooting has been allowed to occur in the past and the distance that bullets/shot typically travel. Is it possible that lead shot could have traveled north of the Little River?*

4/11/16 EEA Response: The area where lead is likely to have fallen on the land or water is reasonably delineated by the 400 mg/kg contours shown on the attached plan. The pattern of the contours is coincident with the direction of shooting that is known to have taken place in the past. The extent towards the Little River is commensurate with the distance that shot typically travels (less than 700 feet). As shown on the plan, it appears that lead shot has travelled up to the Little River and to the north of the river at one isolated location.

**6/1/16 NHDES Response: We concur that the 400 mg/kg contours appear to be a good estimate of the approximate area of concern with the possible exception of the area north of Little River as discussed below and with the understanding that it does not yet include sediment sample results that exceed the TEC and/or PEC (see our response to Comment 6 below). We note that sediment sampling was not conducted north of the Little River within the area approximately bounded by an extension of the property lines to the north (i.e., north of TRS – 44, TRS -45 and TRS-46). It would seem that shot likely extended in this area and that additional sampling should be conducted to confirm the outer limits of the 400 mg/kg contours. Please advise.**

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*3/22/16 NHDES Comment 3. The proposed sampling locations are acceptable, however, more may be needed based on your response to comments 1 and 2 above.*

4/11/16 EEA Response: No response required.

**6/1/16 NHDES Response: Please see our response to Comment 2 above.**

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*3/22/16 NHDES Comment 4. Two surface water samples are proposed; one during wet weather and one during dry weather. The SAP should define what constitutes a wet weather (i.e., storm size, minimum precipitation, etc.) and dry weather event (i.e., antecedent dry period) and how the sampling team will know when the wet or dry criteria has been met so they know when to sample.*

4/11/16 EEA Response: Wet weather will be defined as a storm with a minimum rainfall of 0.5 inches over a 24-hour period. A dry weather event will be defined as having an antecedent dry period of greater than seven days with less than 0.1 inches of rainfall in the study area. The minimum rainfall amount for a wet weather sampling event will be confirmed after the sampling event using the following website http://www.weather.unh.edu/multiple.mp.
The event data will not be considered usable if the 0.5 inch minimum rainfall amount is not confirmed. The dry criteria will be evaluated and met using data from the same website prior to the dry sampling event.

**6/1/16 NHDES Response: For the wet weather event, please specify how soon sampling will begin after at least 0.5 inches has fallen.**

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*3/22/16 NHDES Comment 5. The SAP should specify when sediment samples will be collected (i.e.,during the wet weather or dry weather event).*

4/11/16 EEA Response: Sediment sampling will be conducted during a dry weather event to minimize disturbance.

**6/1/16 NHDES Response: No further comment.**

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*3/22/16 NHDES Comment 6. Page 16 the SAP defines sediments as the following: Sediments means solid material, either mineral or organic, that is in suspension, is transported, or has been moved from its site of origin, situated on the bottom of lakes, ponds, streams, rivers or the ocean. Sediments are found in tidal waters below the mean high water line and below the upper boundary of a bank that abuts and confines a water body. Samples collected previously from areas mapped as wetlands are considered to be hydric soil, not sediments." For the purposes this SAP, defining sediment in this manner is acceptable to DES with the following understanding:*

> *a. that additional samples collected in wetlands and upland soils in the future (under a different SAP to be approved by yes DES) so that the stated goal of determining the lateral and vertical extent the contamination can be determined.*
>
> *b. That samples of the substrate in wetlands will be compared to the TEC and PEC thresholds for lead. This is because wetlands are considered surface waters (see Env-Wq 1702.46) in the NH surface water quality regulations (Env-Wq 1700). The surface water quality regulations are designed to protect designated uses, such as aquatic life. The TEC and PEC thresholds are screening thresholds to help determine if aquatic life will be protected. These values are less than the DES Soil Remediation Standards which are based on human exposure.*
>
> *c. That the future SAP for sampling in soils and wetlands will be identify how wetland substrate samples will be distinguished from upland soil samples so that the appropriate criterion/threshold can be selected for comparison to the sampling result.*

4/11/16 EEA Response: We agree that additional soil sampling may be required to characterize site conditions, be it hydric or upland soil. However, the vast majority of the soil sampling has already been completed as a number of soil samples have been collected since the SAP was submitted in June 2015. With this in mind, we disagree that a different SAP is required to collect soil samples.

Sample results from hydric soils will be compared to SRS, not PEC or TEC. In your comment letter, DES is essentially saying that they agree with our definition of

sediments, but that PEC/TEC standards (the sediment standards) will apply to hydric soils, even though they don't meet the agreed-upon definition of sediments. This is contradictory and will not be agreed to. We note that UNH Professor Matt Davis pointed this out to the Town of North Hampton[1] "If NH DES is treating hydric soils as sediments, it is not clear that the findings of MacDonald et al (2000) that set the TEC and PEC limits are applicable to hydric soils. The TEC and PEC limits determined in MacDonald et al. (2000) represent a compilation of studies on a number of compounds throughout the United States. The freshwater environments were typically larger rivers and/or water bodies. The applicability of the state PEC and TEC limits to lead contamination in hydric soils in the Northeast is unclear.

**6/1/16 NHDES Response: Please provide a copy of Professor Davis' correspondence to the Town of North Hampton. With regards to MacDonald et al (2000), we concur that they considered toxicity and chemistry data from sediments collected from rivers and other waterbodies such as harbors. However, their analysis to determine TEC and PEC thresholds included toxicity in aquatic organisms [(such as oligochaete (*Lumbriculus variegatus)*] which can occur in wetlands with seasonal standing water[2]. Where such wetlands exist that may have been affected by the shooting range (as well as all rivers and streams that may have been affected), the TEC and PEC sediment thresholds should apply. Please identify in the SAP where wetlands with seasonal standing water exist (and how their location was determined) and specify that the sediment in these wetlands will be tested for comparison to the TEC and PEC values. If it is not known where such wetlands exist, please acknowledge that their location will be determined in the future via a method approved by NHDES and that the sediment in these wetlands will be tested for comparison to the TEC and PEC values.**

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*3/22/16 NHDES Comment 7. Please note that PECs and TECs are screening level thresholds. As explained in the DES sediment guidance, where PECs and/or TECs are exceeded, there is an option to conduct toxicity tests to confirm that sediments are adversely impacting aquatic organisms.*

4/11/16 EEA Response: Acknowledged.

**6/1/16 NHDES Response: No further comment.**

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*3/22/16 NHDES Comment 8. On page 12 it is stated that "Information is also needed to evaluate how lead is being transported into surface water and how it migrates within the surface*

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[1] Davis, J. M., 2015. Correspondence to Paul Apple, North Hampton Town Administrator, Summary of Document Review, Hampton Rod & Gun Club. May 27, 2015.

[2] see http://www.eeob.iastate.edu/faculty/DrewesC/htdocs/Lvgen4.htm , https://en.wikipedia.org/wiki/Lumbriculus_variegatus, and *Absence of species replacements between permanent and temporary lentic communities in New Zealand.* Scott A. Wissinger, Hamish Greig and Angus McIntosh J.N. Am. Benthol. Soc., 2009, 28(1):12-23.

*water and is deposited in sediment." Please explain how either this SAP or future SAPs will address this need.*

4/11/16 EEA Response: This SAP is intended to standardize the sampling technique for a given media. Once the data have been collected, the scientific method and reliance on published studies will be used to evaluate how lead is transported and deposited in the environment. We know that lead weathers and will migrate in the direction of surface water flow. Deposition and sediment movement is a function of flow velocity and substrate and is expected to be heavily influenced by storm events. This will be further addressed in the Site Investigation Report.

**6/1/16 NHDES Response: Please note that if the sampling data is inconclusive, additional sampling may be required to confirm assumptions that were based on literature.**

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*3/22/16 NHDES Comment 9. On page 21 it is stated that lead fragments will be removed prior to analysis. If lead fragments are found in the field or by the lab, it should be properly documented in the field notes and/or by the lab and included in the report. The SAP should explain how this will be accomplished.*

4/11/16 EEA Response: Any lead fragments found in the field will be documented in the field sampling logs. The laboratory will be requested to document any lead fragments found. Sampling logs and laboratory reports will be provided in the Site Investigation Report.

**6/1/16 NHDES Response: No further comment.**

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*3/22/16 NHDES Comment 10. All data should be uploaded into the DES Environmental Monitoring Database (EMD).*

4/11/16 EEA Response: Acknowledged.

**6/1/16 NHDES Response: No further comment.**

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*3/22/16 NHDES Comment 11. 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.*

4/11/16 EEA Response: Acknowledged.

**6/1/16 NHDES Response: No further comment.**

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*3/22/16 NHDES Comment 12. With respect to the April 9, 2015 letter DES concurs with the following recommended actions: a. Collect a confirmatory groundwater sample from SGW-2; b. Survey the top of casing of the wells and provide the following information; groundwater elevations, depth to groundwater, groundwater contour map, and evaluation of whether groundwater is in contact with the lead impacted soil.*

4/11/16 EEA Response: This information has been collected and will be included in the Site Investigation Report.

**6/1/16 NHDES Response: No further comment.**

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Finally, please change the units for the laboratory reporting or quantification limits in Table 3-1 of the SAP from mg/L to ug/L.

Sincerely,

Gregg Comstock, P.E.
Supervisor,
Water Quality Planning Section
Tel: (603) 271-2983
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gregg.comstock@des.nh.gov

cc: Henry Fuller, Co-Chair, North Hampton Water Commission

ec: Mr. James Clemence, Sr, Hampton Rod and Gun Club
Paul Apple, Administrator, North Hampton
Kevin Kelley, North Hampton Building Inspector
Robert Landman, Co-Chair, North Hampton Water Commission
Michael Wimsatt, P.G., Director, WMD
Rene Pelletier, Assistant Director, WD
Linda Magoon, WD
Eben Lewis, WD
Ted Diers, WD
Ted Walsh, WD
Dave Larson, BEOH, ARD
Richard Uchida, Hinkley Allen
Attention Health Officer, Town of North Hampton

# TOWN OF NORTH HAMPTON

13-83

May 10, 2016

Gregg Comstock, P.E., Supervisor
Water Quality Planning Section

John Regan, Administrator
Waste Management Division

Department of Environmental Services
STATE OF NEW HAMPSHIRE
29 Hazen Drive
Post Office Box 95
Concord, New Hampshire 03302-0095

RE: North Hampton – Hampton Rod and Gun Club
DES Site # 201310001, Project #31644

Gentlemen:

I write again to request a meeting of all interested parties in the above-entitled matter. The Board has read with interest your March 22, 2016 correspondence to Mr. Clemence regarding the proposed sampling in sediment and surface water. The comments are extensive and would suggest a coordinated effort is necessary to ensure the highest standards of water quality here in North Hampton.

While I understand that coordination of the many departments involved in this effort is vital, further delay is likely to result in public confusion about the issues presented at the Gun Club. There has already been a 9 month interval between plan submission and the drafting of comments.

Rather than respond to public confusion, the Select Board seeks a meeting of all parties in North Hampton – broadcast on Channel 22 -- so that the discussion can inform the public that their public officials are acting decisively and with dispatch to ensure the quality of their natural resources.

Please advise as soon as possible when this meeting may be undertaken and who will attend on behalf of the Department.

Respectfully,

Paul L. Apple

Copy: Thomas D. Burack, NH DES Commissioner
James Clemence, Sr.

Paul L. Apple
Town Administrator

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The State of New Hampshire
**Department of Environmental Services**

**Thomas S. Burack, Commissioner**

March 22, 2016

RECEIVED
MAR 23 2016

Mr. James Clemence, Sr.
Hampton Rod & Gun Club, Inc.
P.O. Box 826
North Hampton, NH 03842-0826

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

**Surface Water Sampling and Analysis Plan**, prepared by Exeter Environmental, Inc., and dated June 10, 2015

**Response to DES Letter Dated March 4, 2015**, prepared by Exeter Environmental, Inc., and dated April 9, 2015

Dear Mr. Clemence,

The New Hampshire Department of Environmental Services (DES), has reviewed the Surface Water & Sediment Sampling and Analysis Plan dated June 10, 2015 for the Hampton Rod and Gun Club. Our comments are provided below.

Overview of Proposed Sampling in Sediment and Surface Water

This Sampling and Analysis Plan (SAP) only addresses sampling of sediment and surface water with a focus on lead. Additional sampling of groundwater and soil samples for lead will be addressed in a future SAP. The combined data (sediment, surface water, groundwater and soil) will be used to determine lead concentrations across the study area and to delineate the lateral and vertical limits. In addition to identifying areas of elevated lead concentrations and background concentrations, information is also needed to evaluate how lead is transported into surface water and how it migrates within the surface water and is deposited in sediment[1]. Under this SAP, two surface water samples (one during dry and one during wet weather) will be collected at eleven sites and analyzed for dissolved lead, hardness and pH. One sediment sample will be collected at ten of the eleven surface water sites and analyzed for lead[2].

DES Comments:

1. As requested in DES' letter of March 3, 2015, if possible, please provide a more detailed map that, in addition to the proposed sampling stations, shows all surface water channels

[1] The above is from p. 12 of the SAP.
[2] A sediment sample is not proposed at SED-2 since one was collected in April 2014 (see p. 12 of SAP). The lead concentration in SED-2 was 440 mg/kg.

and the course they travel to the Little River. Arrows showing the direction of flow should also be provided.

2. A stated goal of the SAP is to determine the lateral limits of lead contamination. To help determine this and where sampling should occur, please include on the plan discussed in comment 1 above, the area where lead associated with the shooting range is likely to have fallen on the land or water. This should take into account the direction(s) that shooting has been allowed to occur in the past and the distance that bullets/shot typically travel. Is it possible that lead shot could have traveled north of the Little River?
3. The proposed sampling stations are acceptable, however, more may be needed based on your response to comments 1 and 2 above.
4. Two surface water samples are proposed; one during wet weather and one during dry weather. The SAP should define what constitutes a wet weather (i.e., storm size, minimum precipitation, etc.) and dry weather event (i.e., antecedent dry period) and how the sampling team will know when the wet or dry criteria has been met so that they know when to sample.
5. The SAP should specify when sediment samples will be collected (i.e. during the wet weather or dry weather event).
6. Page 16 of the SAP defines sediments as the following: Sediments "*means solid material, either mineral or organic, that is in suspension, is transported, or has moved from its origin, situated on the bottom of lakes, ponds, streams, rivers or the ocean. Sediments found in tidal waters below the mean high water line and below the upper boundary of a bank that abuts and confines a water body. Samples collected previously from areas mapped as wetlands are considered to be hydric soil, not sediments.*" For the purpose of this SAP, defining sediment in this manner is acceptable to DES with the following understanding:
    a. That additional samples will be collected in wetlands and upland soils in the future (under a different SAP to be approved by DES) so that the stated goal of determining the lateral and vertical extent of lead contamination can be determined.
    b. That samples of the substrate in wetlands will be compared to the TEC and PEC thresholds for lead. This is because wetlands are considered surface waters (see Env-Wq 1702.46) in the NH surface water quality regulations (Env-Wq 1700). The surface water quality regulations are designed to protect designated uses, such as aquatic life. The TEC and PEC thresholds are screening thresholds to help determine if aquatic life will be protected. These values are less than the DES Soil Remediation Standards which are based on human exposure.
    c. That the future SAP for sampling in soils and wetlands will identify how wetland substrate samples will be distinguished from upland soil samples so that the appropriate criterion/threshold can be selected for comparison to the sampling result.
7. Please note that the PECs and TECs are screening level thresholds. As explained in the DES sediment guidance[3], where PECs and/or TECs are exceeded, there is an option to

[3] Evaluation of Sediment Quality Guidance Document. NHDES. April 2005. See http://des.nh.gov/organization/divisions/waste/hwrb/documents/ws-04-9_evaluation_of_sediment.pdf.

conduct toxicity tests to confirm that sediments are adversely impacting aquatic organisms.

8. On page 12 it is stated that "Information is also needed to evaluate how lead is being transported into surface water and how it migrates within the surface water and is deposited in sediment." Please explain how either this SAP or future SAPs will address this need.
9. On page 21 it is stated that lead fragments will be removed prior to analysis. If lead fragments are found in the field or by the lab, it should be properly documented in the field notes and/or by the lab and included in the report. The SAP should explain how this will be accomplished.
10. All data should be uploaded into the DES Environmental Monitoring Database (EMD).
11. 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.
12. With respect to the April 9, 2015 letter DES concurs with the following recommended actions:
    a. Collect a confirmatory groundwater sample from SGW-2;
    b. Survey the top of casing of the wells and provide the following information; groundwater elevations, depth to groundwater, groundwater contour map and evaluation of whether groundwater is in contact with lead impacted soil.

DES recommends a meeting to discuss these comments and the possible next steps for work at the site.

Sincerely,

Waste Management Division

Digitally signed by Waste Management Division
DN: cn=Waste Management Division, o=NHDES, ou=Waste Management Division, email=kimberly.durgin@des.nh.gov, c=US
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Rene Pelletier, Assistant Director, WD
Linda Magoon, WD
Eben Lewis, WD

Ted Diers, WD
Ted Walsh, WD
Dave Larson, BEOH, ARD
Richard Uchida, Hinkley Allen
Attention Health Officer, Town of North Hampton