ARM
Geothermal, Environmental,
& Well Drilling

August 16, 2019

NCDEQ
Inactive Hazardous Sites Branch
Attn: Ms. Sue Robbins
127 Cardinal Drive Extension
Wilmington, North Carolina 28405

Re: Remedial Action Plan Addendum
Former Wilmington Gun Club
Military Cutoff Road
Wilmington, New Hanover County, North Carolina

Ms. Robbins,

Enclosed please find a copy of the Remedial Action Plan Addendum for the referenced site. This addendum outlines a remediation plan that will allow for removal of the lead impacted soils from the upland areas. Due to the potential for extensive environmental damage to the adjacent wetlands, no remediation of the non-upland areas is recommended or proposed.

As an abatement overview, approximately 1,335 tons of non-hazardous lead impacted soils will be removed from the site and disposed at a Subtitle D landfill. Approximately 270 tons of hazardous lead impacted soil will require on-site fixation utilizing Eviroblend until confirmation soil sampling reveals lead leachate values <5ppm. After successful stabilization, the material will be disposed at the landfill. Confirmation soil and groundwater sampling will be conducted as part of the abatement process. In the event lead impacted soils have been removed, and lead concentrations in groundwater are below 02L Groundwater Quality Standards, it will be recommended that the upland portion of the DPLUR be removed and this designated portion of the property be established for future beneficial use.

If you have questions, please do not hesitate to call our office at (910) 270-2919.

Sincerely,

Joseph L. Zuncich
Project Manager, CWD, Geologist

James L. Cornette, PG, CWD
Project Manager

cc: Raiford Trask III, w/o enclosures
Gardner Nobles, w/ enclosures

Applied Resource Management, P. C.
P. O. Box 882, 257 Transfer Station Road, Hampstead, NC 28443 910.270.2919 Fax 910.270.2988

REMEDIAL ACTION PLAN ADDENDUM
as per
NCDENR Guidelines for Assessment and Cleanup
Inactive Hazardous Sites Program

For The

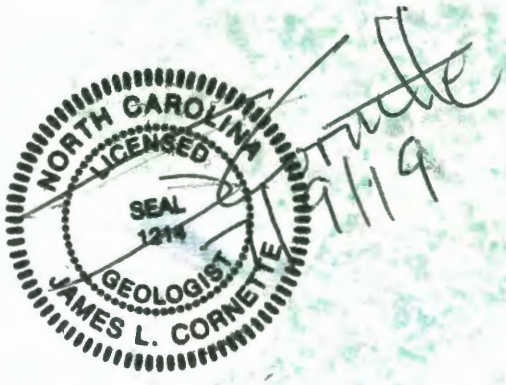
FORMER WILMINGTON GUN CLUB
MILITARY CUTOFF ROAD

WILMINGTON, NEW HANOVER COUNTY NORTH CAROLINA

PREPARED FOR:

OLD GUN RANGE TRACT, LLC
1051 MILITARY CUTOFF ROAD, SUITE 210
WILMINGTON, NORTH CAROLINA

JULY 2, 2019



PREPARED BY:

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REMEDIAL ACTION PLAN ADDENDUM

as per

NCDENR Guidelines for Assessment and Cleanup
Inactive Hazardous Sites Program

For The

FORMER WILMINGTON GUN CLUB

WILMINGTON, NORTH CAROLINA

July 2, 2019

1.0 INTRODUCTION/SITE HISTORY

The subject facility is located on the east side of Military Cut-Off Road and adjacent to the Lucia Point Subdivision in New Hanover County, Wilmington, North Carolina. The property is undeveloped and was formerly utilized as a gun club/shooting range from the 1960s to the 1980s. Figure 1 is a Site Vicinity Map showing the project location. The site consists of an approximate 12.93 acre area of which approximately 8.66 acres are known to be impacted by lead.

May 1999 to Feb 2001	Extensive site assessment activities were conducted by Clark Environmental Services, P.C. (CES). A Site Assessment Plan (SAP), and Site Assessment Report (SAR) and addendum were prepared by CES and submitted to the IHSB for review.
November 2001	A Remedial Action Plan (RAP) was prepared by Southeast Technical Services (STS) and submitted to the State for review.
2002 And 2003	Further assessment and ecological evaluations were performed for the wetland impacted areas by STS.
March 2003	A wetlands analysis and evaluation was conducted by Mitchell and Associated, Inc.
July 2004	A Remedial Action Completion Report was submitted by STS addressing the lead remedial activities within the upland area of the former Gun Club site.
December 3, 2012	A Draft Wetlands Remedial Action Plan (RAP) was prepared by ARM and submitted to the State for review.

ARM's RAP provided the following recommendations:

1. Restrict access to the 8.66 acre wetlands portion of the property that has been impacted by lead. Utilization of fencing as a restrictive measure has been assessed, and it has been determined that the thick over growth and extensive vegetative buffer surrounding the north and east boundary portion of Lucia Point will provide adequate restriction of the area.

2. Properly document its impact by lead with a Declaration of Perpetual Land Use Restrictions (DPLUR).

3. Conduct an annual monitoring program to verify that land use restrictions are in place and no activity is being conducted on the designated property.

As such, a DPLUR was executed and implemented. On July 9, 2014, NCDENR required the owners to submit annual reports documenting that land use restrictions remain in place, that the site remains in compliance with the conditions specified in the DPLUR, and the source monitoring well be sampled annually. A copy of the NCDENR letter is provided in Appendix A.

The site has subsequently been monitored annually by ARM, and remains in compliance. Lead concentration groundwater sampling results from monitoring well MW-1 have ranged from 920 ppb to 467 ppb. Annual reports are on file at the State.

2.0 PURPOSE

The purpose of this addendum is to outline remediation that will allow for removal of the lead impacted soils from the upland areas. Due to the potential for extensive environmental damage to the adjacent wetlands, no remediation of the non-upland areas is recommended or proposed. Lead remediation is proposed to below the soil-to-groundwater concentration of 270 ppm. Soils with TCLP lead concentrations >5ppm will be stabilized on-site using Enviroblend until their TCLP concentrations are <5ppm. All removed soils will be loaded, then transported to a permitted landfill for disposal. Confirmation soil sampling will be conducted following excavation remediation activities. It is anticipated that the source area monitoring well will be destroyed during remediation. The replacement well will be reconstructed, purged, then sampled.

3.0 HISTORICAL INVESTIGATION AND REMEDIATION

3.1 Previous Site Assessment Activities

Extensive soil and groundwater sampling activities have been conducted within and immediately adjacent to the lead impacted wetlands. Assessment activities are summarized as follows:

1999 - 2001 *A Site Assessment Plan (SAP), Site Assessment Report (SAR), and SAR Addendum* were prepared by Clark Environmental Services, PC and submitted to the IHSB. These reports began to present the lead impacts to the adjacent wetlands areas associated with Howe Creek.

March,2002 *An Ecological Evaluation* was conducted by STS in 2001. Reportedly, surface water and sediment samples were collected during a period of high flow through the creek channel and inundation of the wetland areas. Dissolved lead was found; however, the concentrations were compliant when compared to the surface water standard. Non-compliant total lead concentrations were found in sediment samples ranging from 72.2 to 9,825 ppm. It was stated in the evaluation that the lead impacts in these areas are believed to be the result of past activities on the Lucia Point Subdivision. The EER was submitted and is on file at the IHSB. The IHSB requested further assessment of the wetlands.

Sept, 2002 *An EER Addendum* was prepared by STS and submitted to the IHSB for review. Reportedly, a non-compliant lead concentration was found at a surface water sample collected from the flood channel adjacent to Howe Creek. All other surface water samples were below laboratory quantitation limits. As stated, the surface water sampling results confirm that lead is not present in the main creek channel, which is consistent with previous sampling events conducted by CES and STS.

Also, comprehensive sampling confirmed that lead was not being transported through the surface water, and that the wetlands are retaining the lead in the sediment. Soil sampling was conducted to determine lateral and vertical extent of lead impact to the wetland sediments. The highest concentrations of total lead in sediments was found at the north-central transect sample locations east of Lucia Point Subdivision and a sample in the flood channel.

3.2 Areas Impacted By Lead

Based on the assessment and investigative studies conducted by CES and STS, the areas impacted by lead appear to exist to the immediate east, south, and west of the Lucia Point Subdivision. The total wetland impacted area is estimated at approximately 8.66 acres. The fenced in upland area is approximately one acre in size with an estimated 0.25 acre area impacted by lead.

3.3 Historical Lead Remedial Activities

In 2003, STS completed upland lead remediation activities at the Former Wilmington Gun Club site. STS gridded the upland area as shown on Figure 2 within Appendix B. This allowed for them to determine areas to be remediated by In-Situ and Ex-Situ Stabilization. Approximately 388 tons of soil was removed from the berm and grid areas G6, G7, and G16. These lead impacted areas were stabilized with Enviroblend and disposed off-site as a non-hazardous waste. Grid areas G4, G5, G14, G15, G18, G19, G20, G21 and G22 were stabilized by In-Situ Stabilization and left in-place. The area was capped with a one foot thick barrier of clay rich soil and a cover crop of grass seed. A V-swale was constructed within the remedial area and adjacent to the Lucia Point Subdivision lots #38 and #39 in order to provide adequate drainage. The drainage swale is currently operating as designed. Supporting Figures are provided in Appendix B.

4.0 SUMMARY OF RECENT ARM INVESTIGATIVE FINDINGS

Recent updated lead sampling activities were conducted by ARM in July, 2018 within the DPLUR restrictive upland area. As shown in Figure 3, the area grid was re-created in order to provide confirmation geometrical control. Four hand augered soil borings were advanced within each designated area to immediately above the groundwater table (approximately 3.5' deep). One soil sample was collected from each boring. A total of sixty soil samples were obtained from the 1' to 3.5' interval, prepared in laboratory prepared glassware, packed on ice and submitted for total lead analysis. In addition, a composite soil sample was collected from each grid and was prepared for lead analysis after a TCLP extraction. The composite soil samples were frozen to maintain laboratory compliance until the total lead results were received.

Twelve of the sixty soil samples were found to exceed the MSCCLs at 270 ppm. Eleven of these twelve soil samples also exceeded the Residential and Industrial/Commercial Soil Cleanup Level currently at 400 ppm. The non-compliant soil samples were found within grid areas G4, G5, G6, G7, G15, G18, G20, and G21. A Summary of Soil Sample Analytical Results are provided in Table 1, and Laboratory Reports are included in Appendix C. The stored TCLP soil samples for each of these grid squares were then submitted for laboratory analysis. The

laboratory results revealed two of the eight impacted grid areas (G4 and G6) to exceed the TCLP lead limits of 5 ppm. Soils collected within grid areas G5, G7, G15, G18, G20 and G1 were found with TCLP lead concentrations at <5 ppm.

4.1 Lead Resampling Activities With Results

On November 8, 2018, additional total and TCLP lead testing was conducted within the previously identified hazardous areas to further refine the extent of the lead concentrations which were >5ppm. As shown on Figure 3, areas G4 and G6 were gridded, and an additional nine soil borings drilled. Soil samples were obtained from each borehole at the 0' to 3' interval. The samples were designated as G41 through G49 and G61 through G69. These soil samples were submitted for total lead analyses. In addition, one composite soil sample from each area (G4-comp and G6-comp) were submitted for TCLP lead analysis.

4.2 G4 Resampling Results

Lab results revealed 6 of 9 soil samples within the G4 area to be non-compliant with total lead concentrations exceeding the Soil-to-Groundwater Maximum Contaminant Concentration limit (MSCCL) of 270 ppm. The TCLP sample revealed the G4 area to be non-hazardous with a leachate value at 2.21 ppm. Total lead results are as follows:

Sample ID	Total Lead Concentration (ppm)
G41	**2,150**
G42	**1,220**
G43	**549**
G44	**475**
G45	**858**
G46	59.2
G47	**897**
G48	151
G49	48.7

Bolded concentrations exceed the 270 ppm action limit.

4.3 G6 Resampling Results

Lab results revealed all 9 soil samples within the G6 area to be non-compliant with concentrations exceeding 270 ppm. The TCLP sample revealed the G6 area to contain lead leachate values at 35.5 ppm, exceeding 5ppm and should be

considered hazardous. Total lead results are as follows:

Sample ID	Total Lead Concentration (ppm)
G61	**616**
G62	**1,380**
G63	**581**
G64	**1,320**
G65	**703**
G66	**638**
G67	**736**
G68	**369**
G69	**5,580**

Bolded concentrations exceed the 270 ppm action limit.

5.0 PROPOSED LEAD REMEDIATION

5.1 Elevated Lead Fixation

As shown on Figure 4, one grid area, G6, was confirmed to contain lead impacted soils >5ppm after a TCLP extraction. The area has been measured at approximately 40' X 40' and three feet in depth. It is recommended that the lead impacted area at G6 initially be treated in-situ utilizing the stabilizing agent Enviroblend. The manufacturer has recommended a 3% dosage rate by weight to bring the leachable concentration to <5 ppm. We have estimated the G6 area to contain approximately 270 tons of lead impacted soil. This calculates a blending recipe as follows: 270 tons of lead impacted soil X (.03 tons Enviroblend) = 8.1 tons Enviroblend.

The Enviroblend will be ascimilated into the area utilizing rotary auger and a tractor mounted rototiller. Supporting documentation for Enviroblend including, SDS, Specifications, and Case Study are provided in Appendix D. Confirmation soil samples will be collected post treatment to determine the effectiveness of the Enviroblend. After successful stabilization has been confirmed, the material will be excavated and removed from the site.

5.2 Lead Impacted Soil Excavation and Removal

As stated, total lead concentrations were found above 270 ppm in areas G4, G5, G7, G18, G20, and G21. While these areas exceed the MSCCL, their TCLP concentrations were <5 ppm, so are considered non-hazardous. No further fixation will be recommended. The calculated volume of non-hazardous lead impacted soils

is approximately 1,335 tons.

It is recommended that the non-hazardous lead impacted soils be excavated, direct loaded into dump trucks, and the material transported to a landfill for disposal. Confirmation soil samples will be collected from the excavated sidewalls at 20' linear spacing and analyzed for total lead to determine that the site has been remediated to below NC Soil-to-Groundwater Maximum Contaminant Concentration Limits. After laboratory confirmation that the material has been removed, it is recommended that a crusher-run limestone be used to line the excavation base. The presence of the limestone will help lower the groundwater's pH, helping keep the lead from staying in solution.

5.3 Abatement Area Preparation

The following activities will be conducted as part of preparation and planning;

Work Area Preparation and Planning

Prior to conducting abatement activities, a Health, Safety, Excavation, and Loading Plan will be prepared. Points of entry and egress will be established by gravel road preparation. A truck decontamination area will be established to help keep lead soil residuals on-site and off Military Cutoff Road. A Lead Abatement Planning Map is provided on Figure 5.

Vegetative Removal And Erosion Control

Prior to removal of trees, stumps, and vegetative debris, a City of Wilmington tree removal permit will be obtained. Trees, stumps and vegetation removal will be conducted over the tops of the impacted areas. Care will be taken to avoid removal of stumps contaminated with significant lead soils. The work area will be fenced and signed to prevent public access. Vegetation will be removed by hand, or with an excavator. After vegetation has been removed, approximately 300 feet of silt fencing will be installed along the wetland boundary to the north, east and south. Silt fencing area is shown on Figure 5. Constant monitoring of the wetlands areas will be conducted to prevent any sediment in-flow.

Access Road And Staging Areas Preparation

After completion of vegetative removal from the work areas, access road preparation will be conducted to include necessary fill, crusher-run and compaction to support heavy equipment operations into the designated work areas. Staging areas will be established for the Enviroblend and decontamination areas. The Enviroblend will be placed within the grid area south of G18 over and under polyethylene plastic sheeting.

Decontamination Area Preparation

As shown on Figure 5, a decontamination station will be constructed for on-site utilization to clean tools, equipment, sampling devices, trucks and excavators. The station will be constructed with 6" PVC piping and fittings, 10 mil poly plastic for ground surface and on backing to contain over spray. Tools and equipment will be decontaminated as needed with a high powered steam cleaner/pressure washer. In addition, trucks and excavation equipment will be decontaminated as needed to keep lead impacted material within the work zone and from entering onto Military Cutoff Road. Fluids will be contained at the end of each work day within 55 gallon steel drums for temporary storage pending disposal.

Abatement Overview

It is estimated that approximately 1,335 tons of non-hazardous lead impacted soils will be excavated, direct loaded, and transported to a Subtiltle D landfill for disposal. Confirmation soil samples will be collected from the sidewalls of each impacted excavation area to determine lead levels are below the current soil-to-groundwater standards at 270 ppm. In addition, approximately 270 tons of hazardous lead impacted soil will require on-site fixation with approximately eight tons of Enviroblend. The impacted material will be treated with Enviroblend at a minimum 3% mixing rate until confirmation sampling reveal lead leachate values <5ppm. After successful stabilization, the material will be direct loaded onto dump trucks, then hauled to a landfill for disposal. Prior to abatement activities, monitoring well MW-1, utilized as part of the annual monitoring program for the DPLUR, will be properly abandon per NCAC Title 15A guidelines.

Upon laboratory confirmation that the soil-to-groundwater standards have been met, each abated excavation area base will be lined with crusher-run limestone. The remainder of the excavation areas will be backfilled with a clean fill sand material. Abated surface areas will be stabilized with grass. Silt fencing will be left in place until upland site stabilization is achieved. One Type II replacement monitoring well will be installed in place of MW-1, located within grid area G6. The well will be constructed as a 2" diameter Type II monitoring well to a depth of 15 feet. A protective steel standpipe will be installed with an expansion plug and lock at the well head. The well will be developed, gauged, purged and sampled to determine post abatement lead levels within the groundwater.

6.0 Monitoring Recommendations

After completion of the lead abatement activities, final inspections will be conducted within the wetlands to verify no sedimentation has occurred.

Sampling of the replacement monitoring well will be conducted to verify lead levels. If lead impacted soils have been removed, and lead concentrations in groundwater are below 02L Groundwater Quality Standards, it will be recommended that the uplands portion of the DPLUR be removed and this designated portion of the property be established for future beneficial use. Groundwater will be monitored until 02L Groundwater Standards are reached and remain compliant for an additional 90 days at which point No Further Action for the upland portion will be requested.

Annual monitoring will continue within the wetlands DPLUR area to verify that land use restrictions are in place and the wetlands areas are secured. Restricted access will continue for the 8.66 acre wetlands portion of the property.

7.0 REFERENCES

NCDENR, 1998, Groundwater Section Guidelines for the Investigation and Remediation of Soil and Groundwater, Volume 1, pg 91.

USEPA, 1992, RCRA Groundwater Monitoring: Draft Tecnical Guidance, EPA/530/R-93/001.

USEPA, 1994, Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities, Memorandum, EPA.

USEPA, 1999, Presumptive Remedy for Metals-in-Soils Sites, EPA-540-F-98-054.

Ma, Q.Y,T.J. Logan and S.J. Traina, 1995, Lead immobilization from aqueous solutions and contaminated soils using phosphate rocks, Environ.Sci. Technol. 29:1118-1126.

NCDENR-Inactive Hazardous Sites Branch, August 2011, Guidelines for Assessment and Cleanup.

STS, November 2011, Remedial Action Plan for the Former Wilmington Gun Club, Wilmington, NC.

STS, July 2004, Remedial Action Completion Report for the Former Wilmington Gun Club, Wilmington, NC.

STS, April 24, 2003, Ecological Evaluation Addendum for the Former Wilmington Gun Club, Wilmington, NC.

ARM, October 2012, Draft Wetlands Remedial Action Plan for the Former Wilmington Gun Club , Wilmington, NC.

TABLE

TABLE 1 (Page 1 of 4)
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
LEAD

FORMER WILMINGTON GUN CLUB
851 MILITARY CUTOFF ROAD
WILMINGTON, NEW HANOVER COUNTY, NORTH CAROLINA

SAMPLE ID	DATE COLLECTED	SAMPLE DEPTH (FT)	LEAD (Concentrations in ppm)			
			SOIL-to-WATER MAXIMUM CONTAMINANT CONCENTRATION	RESIDENTIAL SOIL CLEANUP LEVEL	INDUSTRIAL/ COMMERCIAL SOIL CLEANUP LEVEL	LEAD TCLP
Area A-A	7/5/18	1-3'	4.54	-	-	NA
Area A-B	7/5/18	1-3'	3.16	-	-	
Area A-C	7/5/18	1-3'	3.82	-	-	
Area A-D	7/5/18	1-3'	6.20	-	-	
Area B-A	7/5/18	1-3'	9.28	-	-	NA
Area B-B	7/5/18	1-3'	17.1	-	-	
Area B-C	7/5/18	1-3'	4.35	-	-	
Area B-D	7/5/18	1-3'	11.7	-	-	
Area C-A	7/5/18	1-3'	18.0	-	-	NA
Area C-B	7/5/18	1-3'	68.4	-	-	
Area C-C	7/5/18	1-3'	25.2	-	-	
Area C-D	7/5/18	1-3'	244	-	-	
G-4A	7/5/18	1-3'	6,480	6,480	6,480	5.63
G-4B	7/5/18	1-3'	94.3	-	-	
G-4C	7/5/18	1-3'	51.9	-	-	
G-4C	7/5/18	1-3'	4.03	-	-	
G4-1	11/8/18	0-3'	2,150	2,150	2,150	2.21
G4-2	11/8/18	0-3'	1,220	1,220	1,220	
G4-3	11/8/18	0-3'	549	549	549	
G4-4	11/8/18	0-3'	475	475	475	
G4-5	11/8/18	0-3'	858	858	858	
G4-6	11/8/18	0-3'	59.2	59.2	59.2	
G4-7	11/8/18	0-3'	897	897	897	
G4-8	11/8/18	0-3'	151	151	151	
G4-9	11/8/18	0-3'	48.7	48.7	48.7	
G-5A	7/5/18	1-3'	569	569	569	<1
G-5B	7/5/18	1-3'	698	698	698	
G-5C	7/5/18	1-3'	259	-	-	
G-5D	7/5/18	1-3'	90.7	-	-	
NCDENR ACTION LEVELS			270	400	400	5*

All results in mg/Kg, or parts per million (ppm).
Gray shaded areas indicate concentrations above Division Of Waste Management Guidelines.
* TCLP Hazardous limit = 5 parts per million (ppm)
Red shaded areas indicate TCLP concentrations at hazardous levels

TABLE 1(Page 2 of 4)
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FORMER WILMINGTON GUN CLUB
851 MILITARY CUTOFF ROAD
WILMINGTON, NEW HANOVER COUNTY, NORTH CAROLINA

SAMPLE ID	DATE COLLECTED	SAMPLE DEPTH (FT)	LEAD (Concentrations in ppm)			
			SOIL-to-WATER MAXIMUM CONTAMINANT CONCENTRATION	RESIDENTIAL SOIL CLEANUP LEVEL	INDUSTRIAL/ COMMERCIAL SOIL CLEANUP LEVEL	LEAD TCLP
G6-A	7/5/18	1-3'	2,050	2,050	2,050	29.1
G6-B	7/5/18	1-3'	1,470	1,470	1,470	
G6-C	7/5/18	1-3'	6.08	-	-	
G6-D	7/5/18	1-3'	3.72	-	-	
G6-1	11/8/18	0-3'	616	616	616	35.5
G6-2	11/8/18	0-3'	1,380	1,380	1,380	
G6-3	11/8/18	0-3'	581	581	581	
G6-4	11/8/18	0-3'	1,320	1,320	1,320	
G6-5	11/8/18	0-3'	703	703	703	
G6-6	11/8/18	0-3'	638	638	638	
G6-7	11/8/18	0-3'	736	736	736	
G6-8	11/8/18	0-3'	369	369	369	
G6-9	11/8/18	0-3'	5,580	5,580	5,580	
G7-A	7/5/18	1-3'	73.4	-	-	2.18
G7-B	7/5/18	1-3'	480	480	480	
G7-C	7/5/18	1-3'	59.8	-	-	
G7-D	7/5/18	1-3'	1,900	1,900	1,900	
G9-A	7/5/18	1-3'	3.16	-	-	NA
G9-B	7/5/18	1-3'	8.69	-	-	
G9-C	7/5/18	1-3'	3.79	-	-	
G9-D	7/5/18	1-3'	2.38	-	-	
G14-A	7/5/18	1-3'	2.48	-	-	NA
G14-B	7/5/18	1-3'	53.7	-	-	
G14-C	7/5/18	1-3'	2.41	-	-	
G14-D	7/5/18	1-3'	2.64	-	-	
NCDENR ACTION LEVELS			270	400	400	5*

All results in mg/Kg, or parts per million (ppm).
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WILMINGTON, NEW HANOVER COUNTY, NORTH CAROLINA

SAMPLE ID	DATE COLLECTED	SAMPLE DEPTH (FT)	LEAD (Concentrations in ppm)			
			SOIL-to-WATER MAXIMUM CONTAMINANT CONCENTRATION	RESIDENTIAL SOIL CLEANUP LEVEL	INDUSTRIAL/ COMMERCIAL SOIL CLEANUP LEVEL	LEAD TCLP
G15-A	7/5/18	1-3'	1.86	-	-	1.79
G15-B	7/5/18	1-3'	51.7	-	-	
G15-C	7/5/18	1-3'	2.06	-	-	
G15-D	7/5/18	1-3'	434	434	434	
G16-A	7/5/18	1-3'	2.52	-	-	NA
G16-B	7/5/18	1-3'	2.36	-	-	
G16-C	7/5/18	1-3'	1.79	-	-	
G16-D	7/5/18	1-3'	3.41	-	-	
G18-A	7/5/18	1-3'	12.3	-	-	<1.0
G18-B	7/5/18	1-3'	290	-	-	
G18-C	7/5/18	1-3'	17.1	-	-	
G18-D	7/5/18	1-3'	7.80	-	-	
G19-A	7/5/18	1-3'	68.0	-	-	NA
G19-B	7/5/18	1-3'	43.9	-	-	
G19-C	7/5/18	1-3'	71.3	-	-	
G19-D	7/5/18	1-3'	16.3	-	-	
G20-A	7/5/18	1-3'	3,530	3,530	3,530	1.10
G20-B	7/5/18	1-3'	63.6	-	-	
G20-C	7/5/18	1-3'	263	-	-	
G20-D	7/5/18	1-3'	8.76	-	-	
NCDENR ACTION LEVELS			270	400	400	5*

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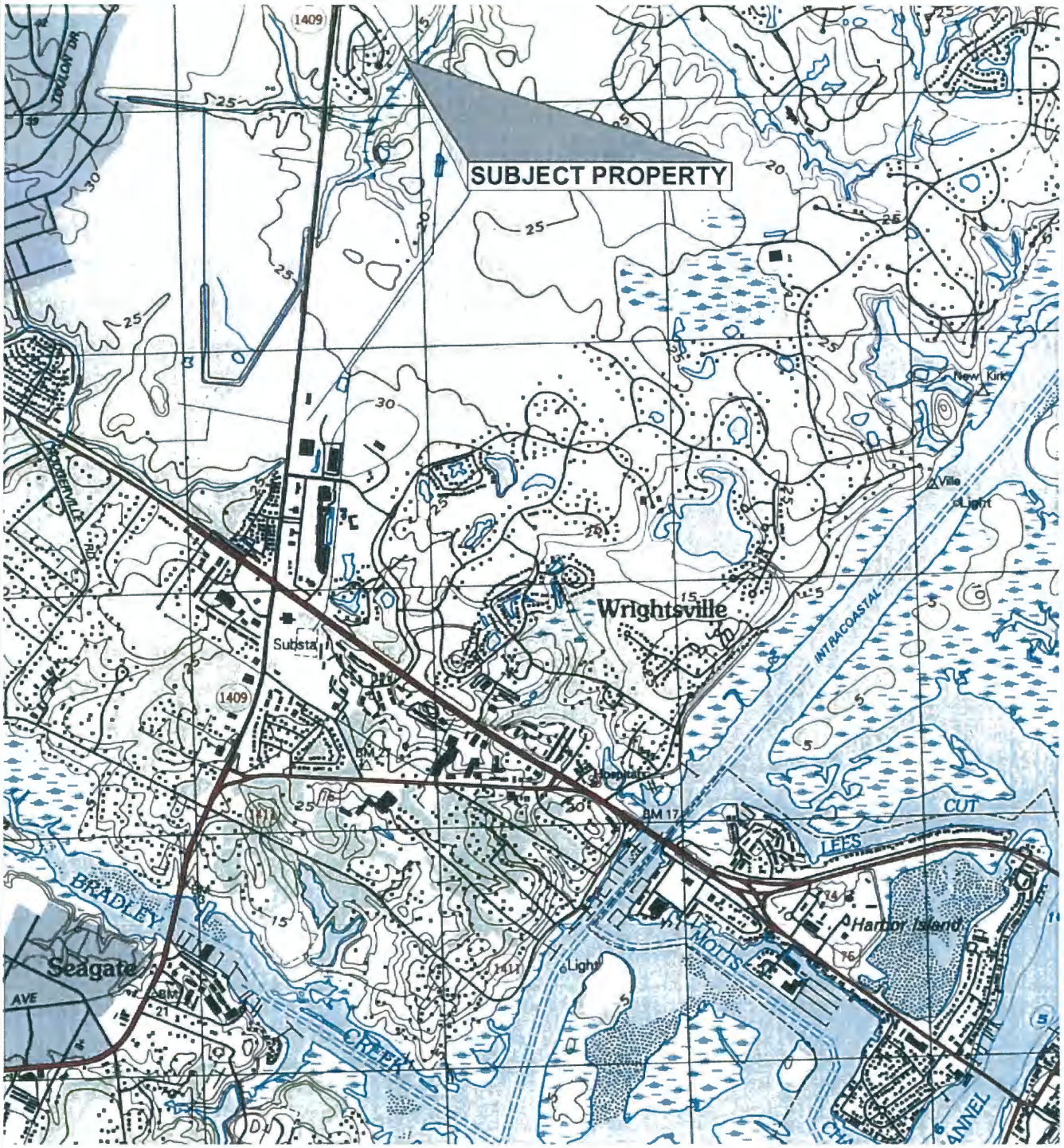
SAMPLE ID	DATE COLLECTED	SAMPLE DEPTH (FT)	LEAD (Concentrations in ppm)			
			SOIL-to-WATER MAXIMUM CONTAMINANT CONCENTRATION	RESIDENTIAL SOIL CLEANUP LEVEL	INDUSTRIAL/ COMMERCIAL SOIL CLEANUP LEVEL	LEAD TCLP
G21-A	7/5/18	1-3'	128	-	-	<1.0
G21-B	7/5/18	1-3'	928	928	928	
G21-C	7/5/18	1-3'	515	515	515	
G21-D	7/5/18	1-3'	78.6	-	-	
NCDENR ACTION LEVELS			270	400	400	5*

All results in mg/Kg, or parts per million (ppm).
Shaded areas indicate concentrations above Division Of Waste Management Guidelines.
* TCLP Hazardous limit = 5 parts per million (ppm)

FIGURES



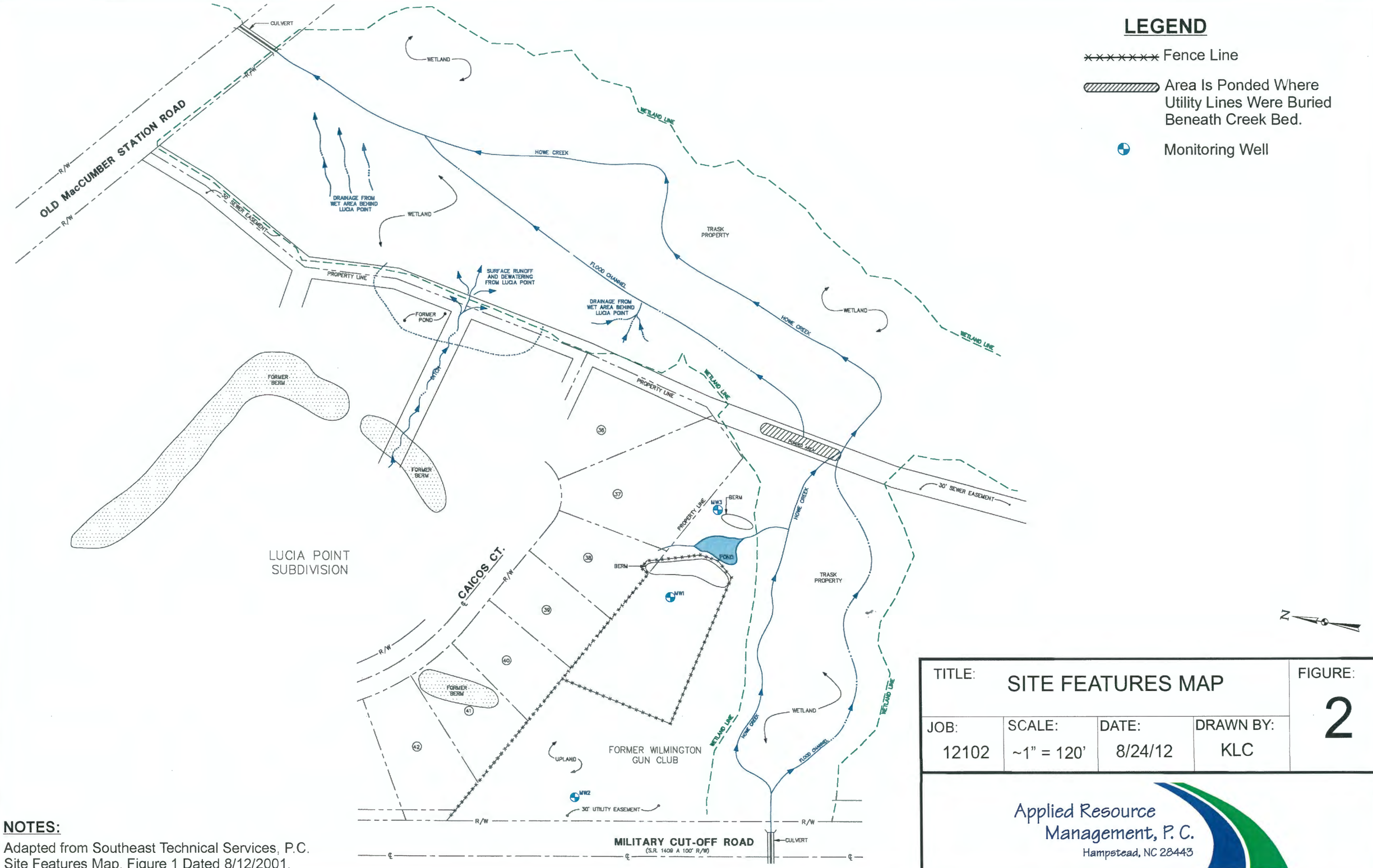
Adapted from USGS Topographic Map
"Wrightsville Beach, NC," 1997

Contour Interval = 5 Feet

N

Applied Resource Management, P.C.
Hampstead, NC 28443

TITLE: SITE VICINITY MAP				FIGURE: 1
JOB: 12102	SCALE: 1"=2,000'	DATE: 8/24/12	DRAWN BY: KLC	



LEGEND

- Fence Line
- Area Is Ponded Where Utility Lines Were Buried Beneath Creek Bed.
- Monitoring Well

N

TITLE:	SITE FEATURES MAP			FIGURE:
JOB:	SCALE:	DATE:	DRAWN BY:	2
12102	~1" = 120'	8/24/12	KLC	

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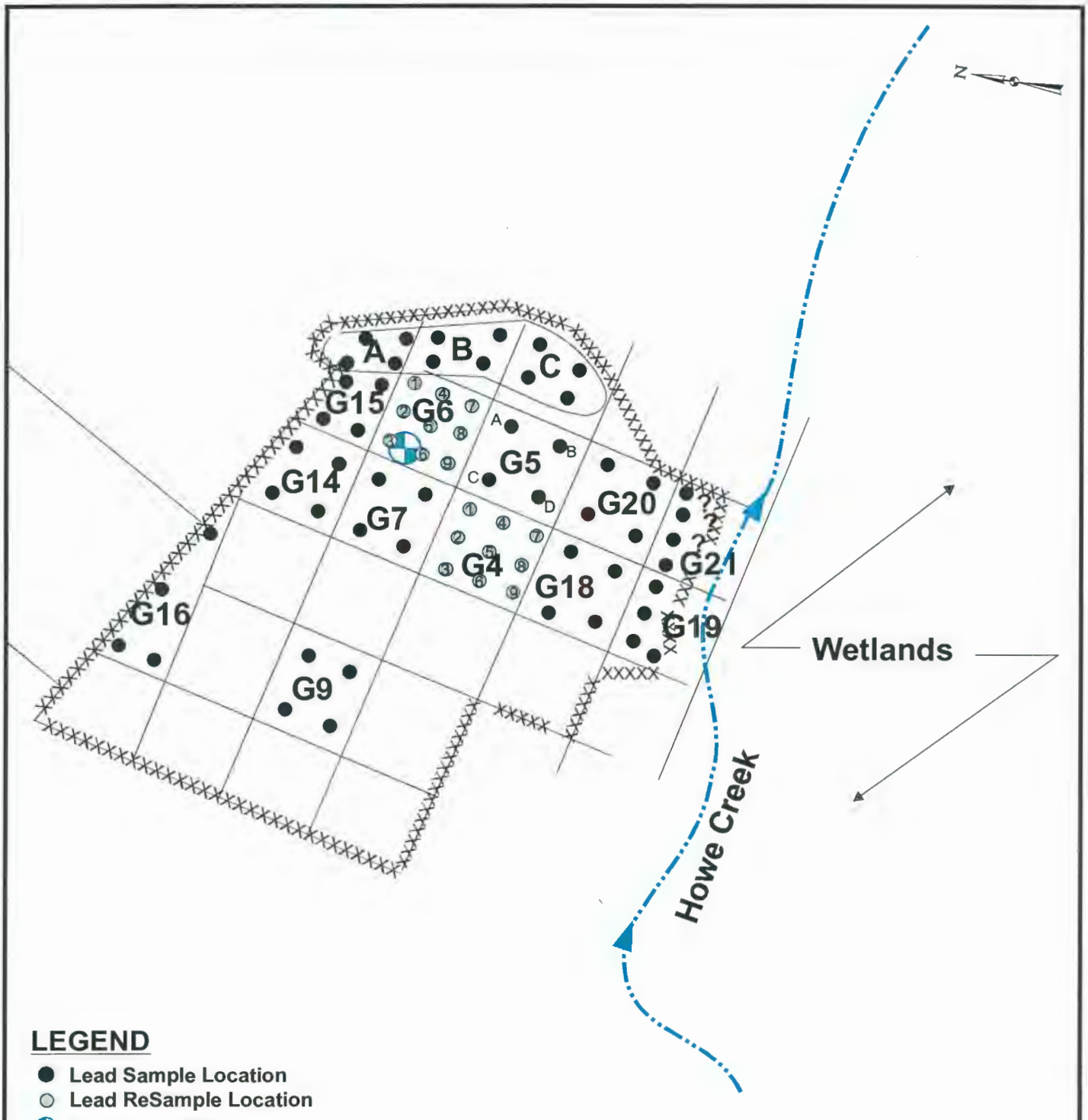
Hampstead, NC 28443

NOTES:

Adapted from Southeast Technical Services, P.C. Site Features Map, Figure 1 Dated 8/12/2001.



LEGEND

- Lead Sample Location
- Lead ReSample Location
- Monitoring Well
- xxx Approximate Fence Location

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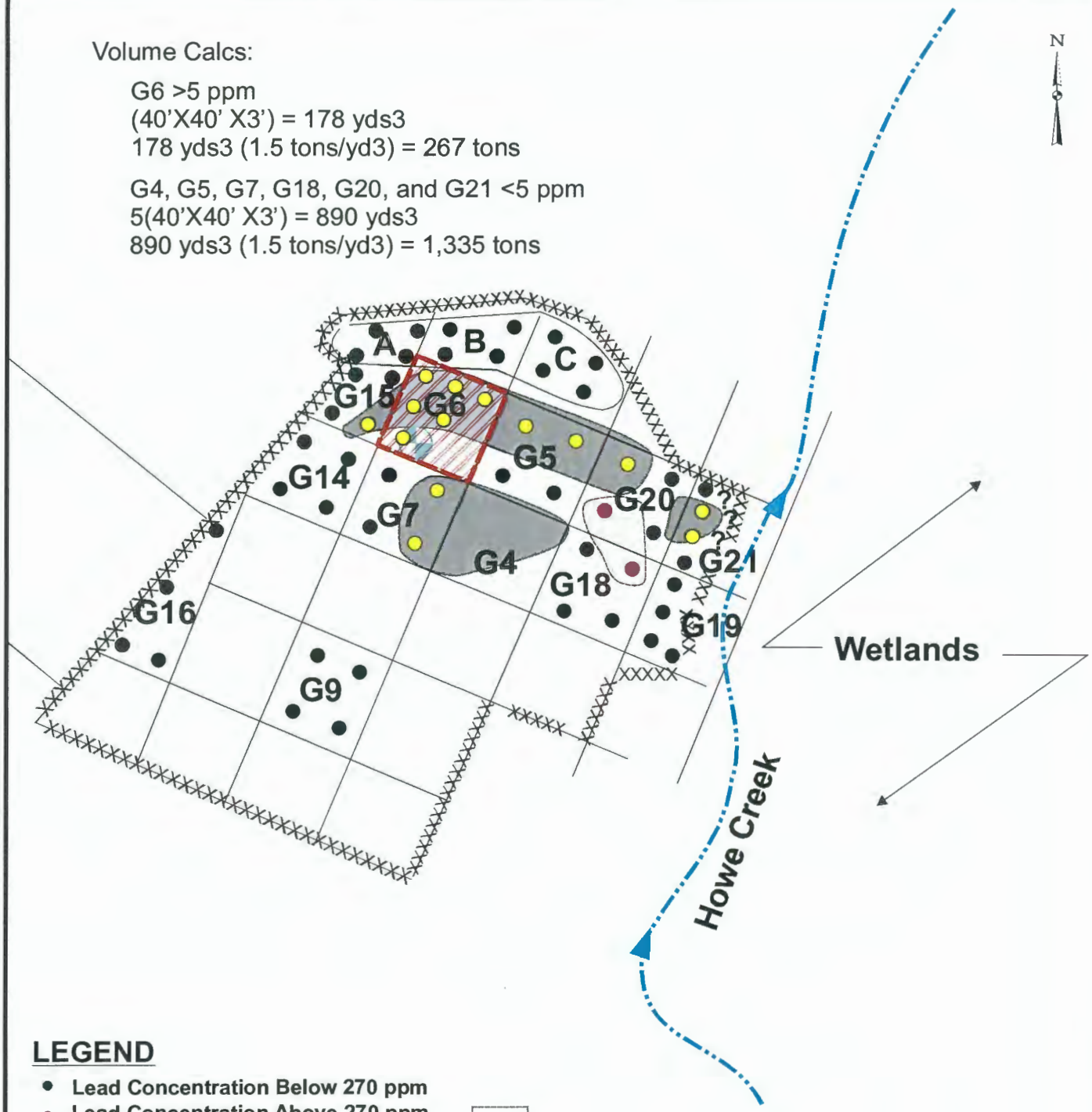
TITLE: SITE MAP WITH SOIL SAMPLING LOCATIONS				FIGURE: 3
JOB: 12102	SCALE: 1"=60'	DATE: 11/6/18	DRAWN BY: JLZ	

Volume Calcs:

G6 >5 ppm
(40'X40' X3') = 178 yds3
178 yds3 (1.5 tons/yd3) = 267 tons

G4, G5, G7, G18, G20, and G21 <5 ppm
5(40'X40' X3') = 890 yds3
890 yds3 (1.5 tons/yd3) = 1,335 tons



LEGEND

- Lead Concentration Below 270 ppm
- Lead Concentration Above 270 ppm
- Lead Concentration Above 400 ppm
- TCLP Lead Concentration >5 ppm
- Monitoring Well
- xxx Approximate Fence Location

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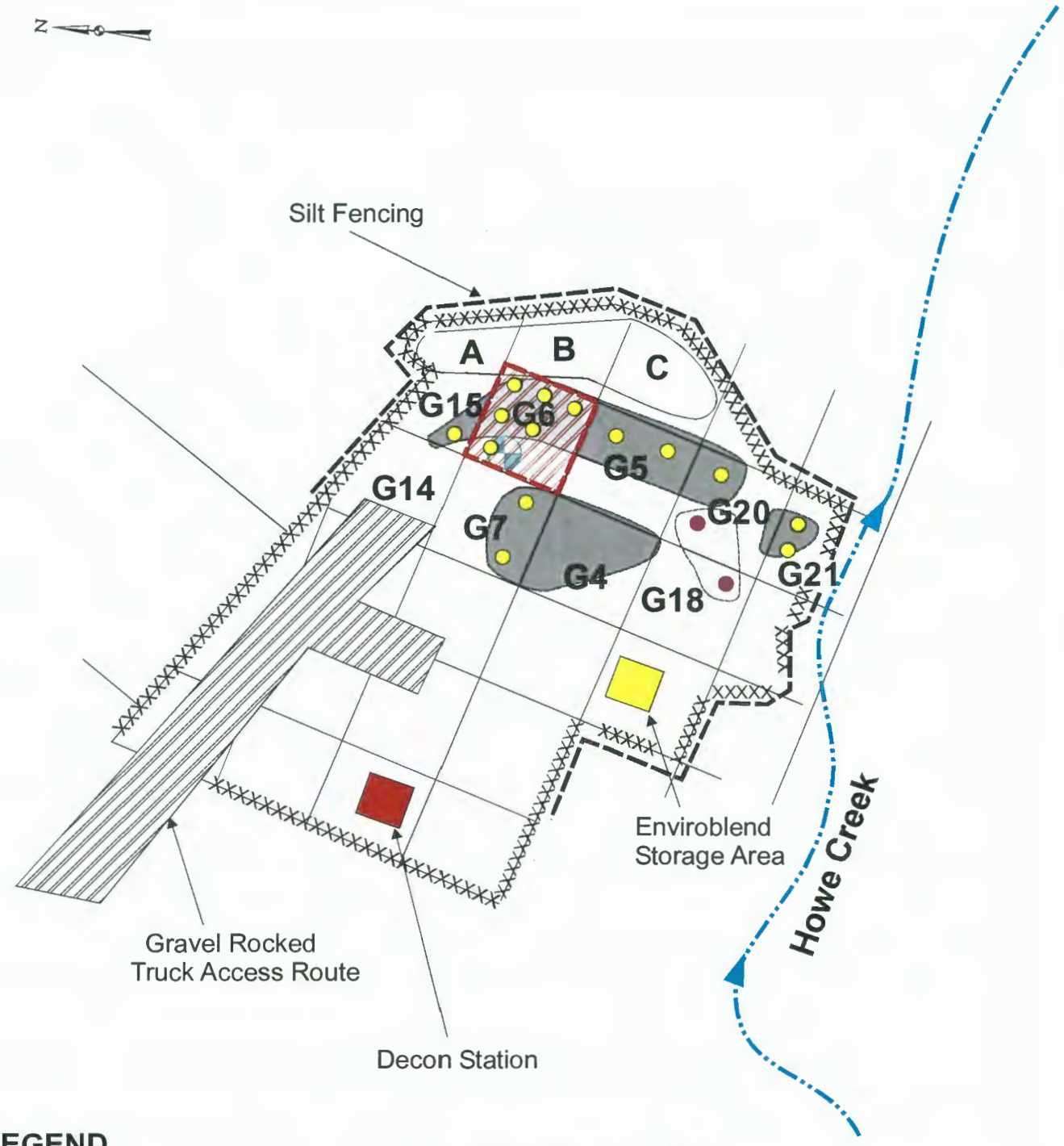
TITLE:			FIGURE:
PROPOSED LEAD ABATEMENT AREAS			4
JOB: 12102	SCALE: 1"=60'	DATE: 1/2/19	DRAWN BY: JLZ



LEGEND

- Lead Concentration Below 270 ppm
- Lead Concentration Above 270 ppm
- Lead Concentration Above 400 ppm
- TCLP Lead Concentration >5 ppm
- Monitoring Well
- xxx Approximate Fence Location

MILITARY CUT-OFF ROAD

Applied Resource Management, P.C.
Hampstead, NC 28443

TITLE: LEAD ABATEMENT PLANNING MAP				FIGURE: 5
JOB: 12102	SCALE: 1"=60'	DATE: 5/14/19	DRAWN BY: JLZ	

APPENDIX A

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Waste Management

Pat McCrory
Governor

John E. Skvarla, III
Secretary

JUL 10 2014

July 9, 2014

Mr. Raiford G. Trask, Jr.
Old Gun Range Tract, LLC
1202 Eastwood Road
Wilmington, NC 28403

RE: Wilmington Gun Club
Wilmington, New Hanover County, NC
NCN000407302

Dear Mr. Trask:

Old Gun Range Tract, LLC has completed remedial activities at the subject site and the Administrative Agreement (Docket Number 00-SF-189) is terminated. The property owner must submit a brief letter report, annually, documenting that the land use restrictions are in place and the site is in compliance with the conditions specified in the recorded Declaration of Perpetual Land Use Restrictions. The letter report must contain a signed and notarized certification by the property owner stating that the site is in compliance with the Declaration of Perpetual Land Use Restrictions.

To simplify your annual reporting requirements you may combine the annual letter reports for the wetlands area, the fenced area and the annual monitoring well sampling into one document with the first report being due on or before January 31, 2015 and on or before January 31 each year thereafter.

If violations of any of the recorded land use restrictions occur or if the property owner fails to submit the annual report, the Branch's approval of the Remedial Action Plan may be immediately withdrawn and the Site reactivated.

No further remedial action will be required unless the Department later determines, based on new information or information not previously provided to the Department, that the site has not been remediated to current standards or that the Department was provided with false or

incomplete information. If there are any questions, please contact me at (910) 796-7411 or Susanne.Robbins@ncdenr.gov.

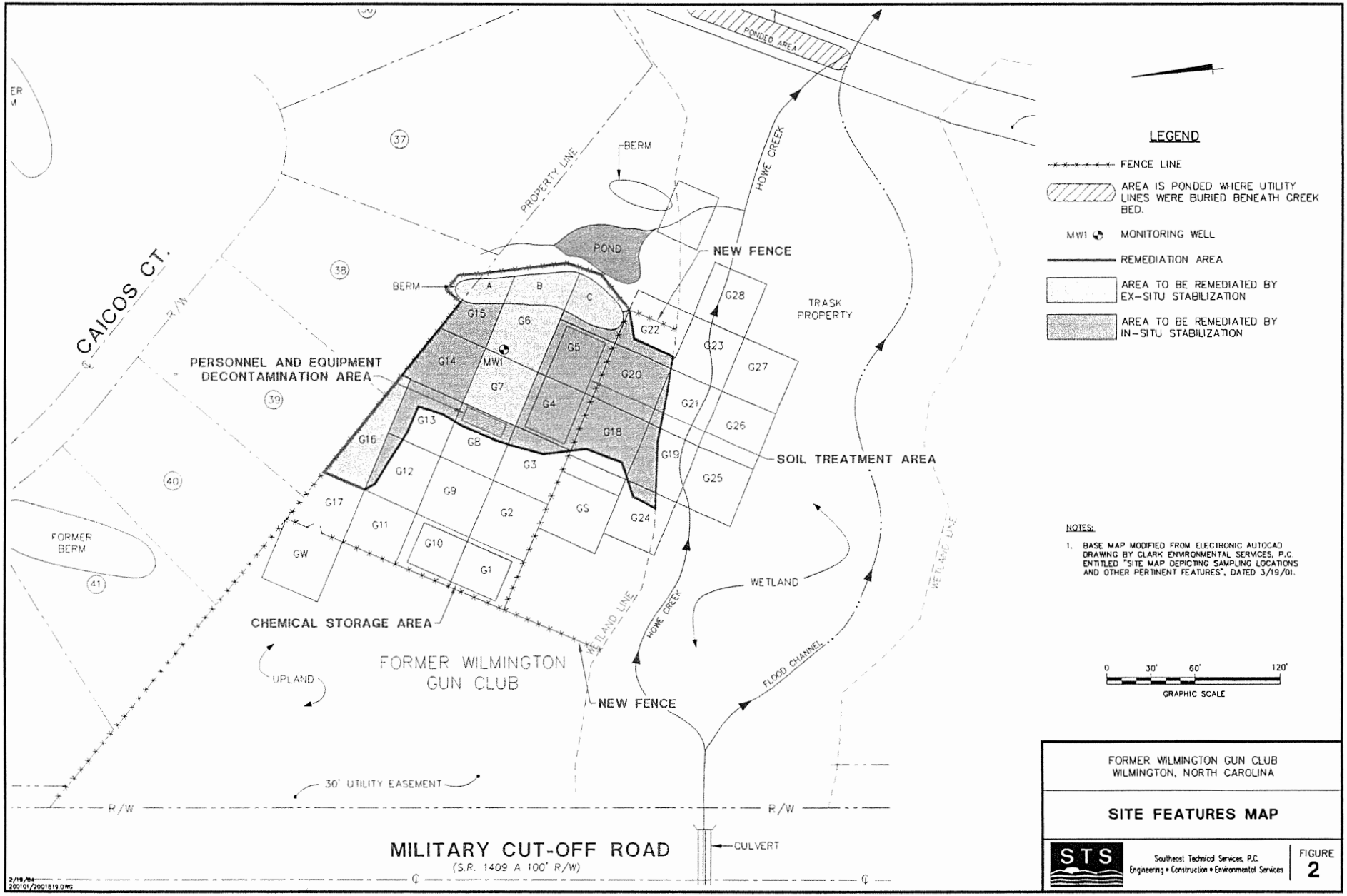
Sincerely,

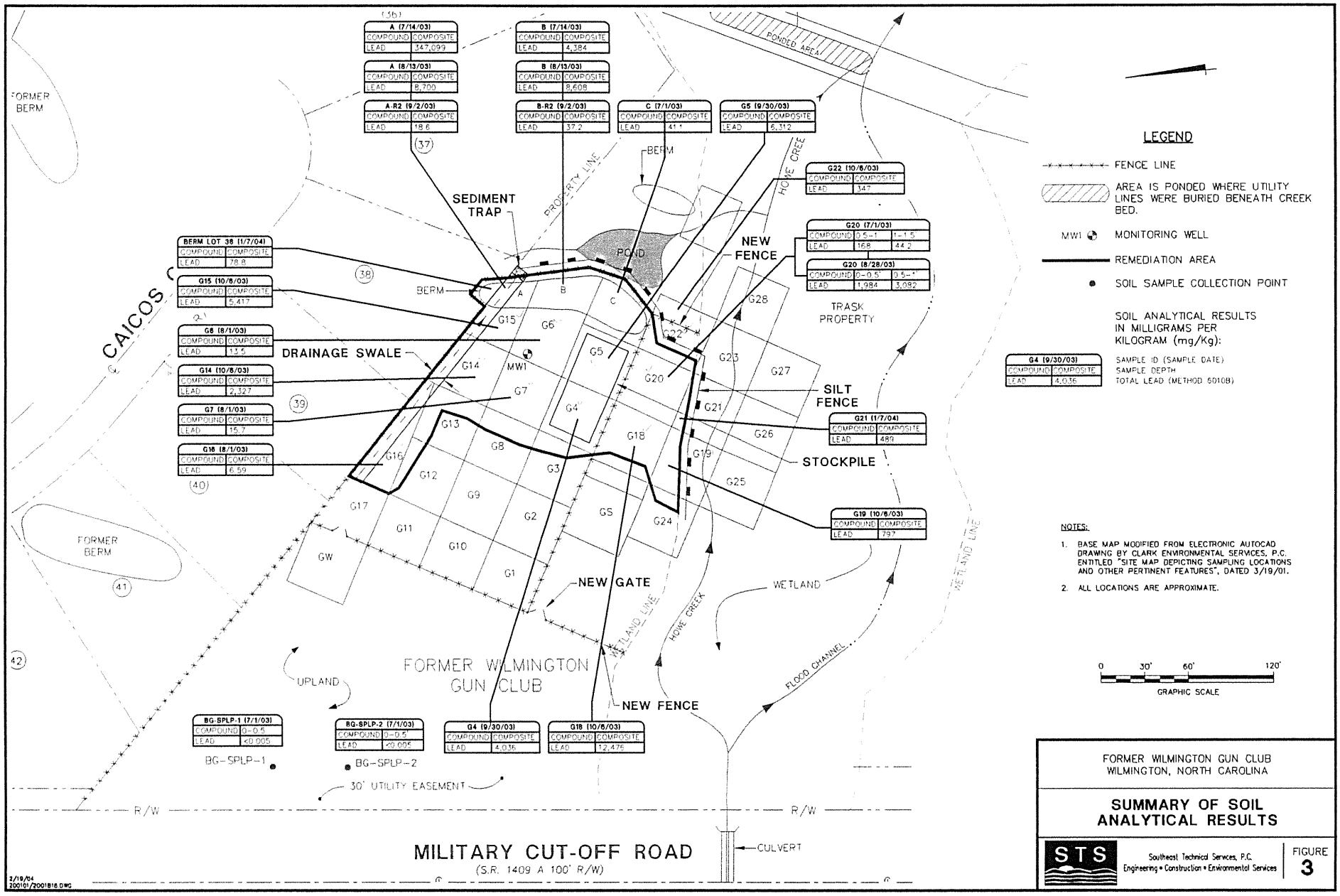
Sue Robbins

Sue Robbins
Hydrogeologist
Inactive Hazardous Sites Branch
Superfund Section
Division of Waste Management

cc: George Rountree, Rountree, Losee & Baldwin LLP, 2419 Market Street, Wilmington, NC 28403
Joe Zuncich, ARM, PC, PO Box 882, Hampstead, NC 28443

APPENDIX B


PONDED AREA
BERM
PROPERTY LINE
HOWE CREEK
POND
NEW FENCE
CAICOS CT.
R/W
BERM
TRASK PROPERTY
PERSONNEL AND EQUIPMENT DECONTAMINATION AREA
MW1
SOIL TREATMENT AREA
FORMER BERM
CHEMICAL STORAGE AREA
WETLAND LINE
WETLAND
FLOOD CHANNEL
UPLAND
FORMER WILMINGTON GUN CLUB
NEW FENCE
30' UTILITY EASEMENT
MILITARY CUT-OFF ROAD
(S.R. 1409 A 100' R/W)
CULVERT
LEGEND
FENCE LINE
AREA IS PONDED WHERE UTILITY LINES WERE BURIED BENEATH CREEK BED.
MONITORING WELL
REMEDIATION AREA
AREA TO BE REMEDIATED BY EX-SITU STABILIZATION
AREA TO BE REMEDIATED BY IN-SITU STABILIZATION
NOTES:
1. BASE MAP MODIFIED FROM ELECTRONIC AUTOCAD DRAWING BY CLARK ENVIRONMENTAL SERVICES, P.C. ENTITLED "SITE MAP DEPICTING SAMPLING LOCATIONS AND OTHER PERTINENT FEATURES", DATED 3/19/01.
0 30' 60' 120'
GRAPHIC SCALE
FORMER WILMINGTON GUN CLUB
WILMINGTON, NORTH CAROLINA
SITE FEATURES MAP
STS
Southeast Technical Services, P.C.
Engineering • Construction • Environmental Services
FIGURE 2

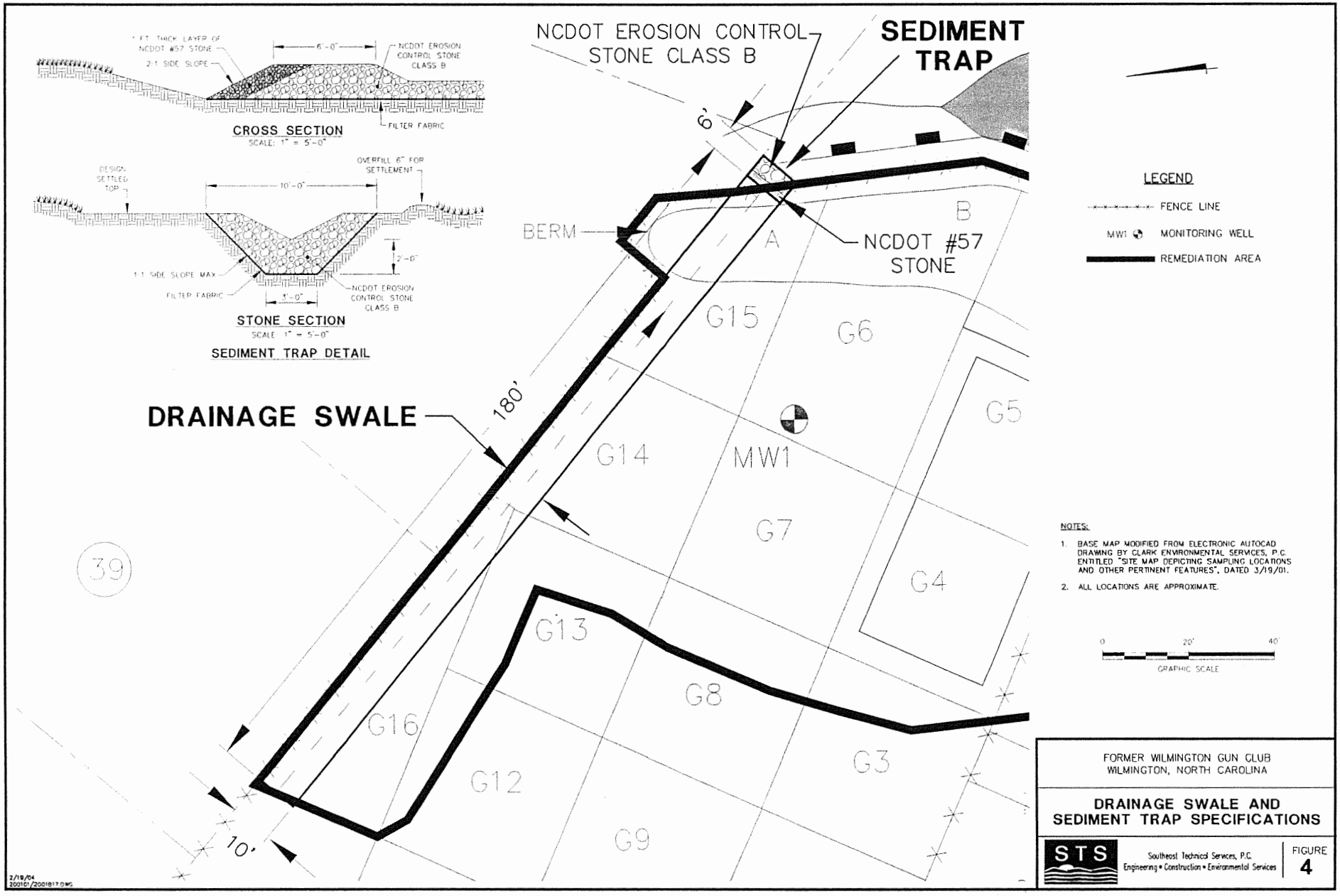


FORMER WILMINGTON GUN CLUB
WILMINGTON, NORTH CAROLINA

SUMMARY OF SOIL ANALYTICAL RESULTS

STS Southeast Technical Services, P.C.
Engineering • Construction • Environmental Services

FIGURE 3



FORMER WILMINGTON GUN CLUB
WILMINGTON, NORTH CAROLINA

DRAINAGE SWALE AND SEDIMENT TRAP SPECIFICATIONS

STS Southeast Technical Services, P.C.
Engineering • Construction • Environmental Services

FIGURE 4

APPENDIX C

Environmental Chemists, Inc.

6602 Windmill Way, Wilmington, NC 28405 • 910.392.0223 Lab • 910.392.4424 Fax
710 Bowsertown Road, Manteo, NC 27954 • 252.473.5702 Lab/Fax
255-A Wilmington Highway, Jacksonville, NC 28540 • 910.347.5843 Lab/Fax

ANALYTICAL & CONSULTING CHEMISTS

info@environmentalchemists.com

Applied Resource Management
Post Office Box 882
Hampstead NC 28443
Attention: Joe Zuncich

Date of Report: Aug 27, 2018
Customer PO #:
Report #: 2018-13020
Customer ID: 08100006
Project ID: ILM Gun Club

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-32708	**Site:** G-4	7/5/2018	Solid/Sludge	Client

Test	Method	Results	Date Analyzed
Lead (TCLP)	EPA 200.7	5.63 mg/L	08/13/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-32709	**Site:** G-5	7/5/2018	Solid/Sludge	Client

Test	Method	Results	Date Analyzed
Lead (TCLP)	EPA 200.7	<1.0 mg/L	08/13/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-32710	**Site:** G-6	7/5/2018	Solid/Sludge	Client

Test	Method	Results	Date Analyzed
Lead (TCLP)	EPA 200.7	29.1 mg/L	08/15/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-32711	**Site:** G-7	7/5/2018	Solid/Sludge	Client

Test	Method	Results	Date Analyzed
Lead (TCLP)	EPA 200.7	2.18 mg/L	08/13/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-32712	**Site:** g-15	7/5/2018	Solid/Sludge	Client

Test	Method	Results	Date Analyzed
Lead (TCLP)	EPA 200.7	1.79 mg/L	08/21/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-32713	**Site:** g-18	7/5/2018	Solid/Sludge	Client

Test	Method	Results	Date Analyzed
Lead (TCLP)	EPA 200.7	<1.0 mg/L	08/13/2018

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255-A Wilmington Highway, Jacksonville, NC 28540 • 910.347.5843 Lab/Fax

info@environmentalchemists.com

Applied Resource Management
Post Office Box 882
Hampstead NC 28443
Attention: Joe Zuncich

Date of Report: Aug 27, 2018
Customer PO #:
Report #: 2018-13020
Customer ID: 08100006
Project ID: ILM Gun Club

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-32714	**Site:** g-20	7/5/2018	Solid/Sludge	Client

Test	Method	Results	Date Analyzed
Lead (TCLP)	EPA 200.7	1.10 mg/L	08/21/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-32715	**Site:** g-21	7/5/2018	Solid/Sludge	Client

Test	Method	Results	Date Analyzed
Lead (TCLP)	EPA 200.7	<1.0 mg/L	08/23/2018

Comment:
Reviewed by: T. Duran | J Duran

Analytical & Consulting Chemists

ENVIRONMENTAL CHEMISTS, INC

NCDENR: DWQ CERTIFICATION # 94 NCDHHS: DLS CERTIFICATION # 37729

6602 Windmill Way Wilmington, NC 28405
OFFICE: 910-392-0223 FAX 910-392-4424
info@environmentalchemists.com

COLLECTION AND CHAIN OF CUSTODY

Client: HCM	PROJECT NAME: Former Ilm Gun Clubs	REPORT NO: 18-13020
ADDRESS: P.O. Box 832	CONTACT NAME: Joe Zinicich	PO NO:
257 Main Station Rd	REPORT TO: HCM	PHONE/FAX: 910 270-2919
Hampstead NC 28443	COPY TO:	email: JOE@HCMNC.COM

Sampled By: Joe Zinicich / Mark Robinson

SAMPLE TYPE: I = Influent, E = Effluent, W = Well, ST = Stream, SO = Soil, SL = Sludge, Other:

Sample Identification	Collection: Date	Time	Temp	Sample Type	Composite or Grab	Container (P or G)	Chlorine mg/L	LAB ID NUMBER	PRESERVATION: NONE	HCL	H2SO4	HNO3	NAOH	THIO	OTHER	ANALYSIS REQUESTED
G-4	7-5-18			SO	C / G	P / G		32708	/							TCLP LEAD
G-5				SO	C / G	P / G		32709	/							
G-6				SO	C / G	P / G		32710	/							
G-7				SO	C / G	P / G		32711	/							
G-15				SO	C / G	P / G		32712	/							
G-18				SO	C / G	P / G		32713	/							
G-20				SO	C / G	P / G		32714	/							
G-21				SO	C / G	P / G		32715	/							
					C / G	P / G										

Transfer	Relinquished By:	Date/Time	Received By:	Date/Time
1.		1640 / 8/8/18		
2.				

Temperature when Received: _____ Accepted: _____ Rejected: _____ Resample Requested: _____

Delivered By: _____ Received By: _____ Date: 8-8-18 Time: 1650

Comments: _____ TURNAROUND: STANDARD

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255-A Wilmington Highway, Jacksonville, NC 28540 • 910.347.5843 Lab/Fax

info@environmentalchemists.com

Applied Resource Management
Post Office Box 882
Hampstead NC 28443
Attention: Jim Cornette

Date of Report: Jul 23, 2018
Customer PO #:
Customer ID: 08100006
Report #: 2018-10779
Project ID: Former Wilmington Gun Club

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27145	**Site:** Area A-A	7/5/2018	1:30 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	4.54 mg/kg	07/08/2018
Total Solids (%)	SM 2540 G	83.6 %	07/09/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27146	**Site:** Area A-B	7/5/2018	1:35 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	3.16 mg/kg	07/08/2018
Total Solids (%)	SM 2540 G	87.9 %	07/09/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27147	**Site:** Area A-C	7/5/2018	1:40 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	3.82 mg/kg	07/08/2018
Total Solids (%)	SM 2540 G	86.9 %	07/09/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27148	**Site:** Area A-D	7/5/2018	1:45 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	6.20 mg/kg	07/08/2018
Total Solids (%)	SM 2540 G	85.9 %	07/09/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27149	**Site:** Area B-A	7/5/2018	2:20 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	9.28 mg/kg	07/08/2018
Total Solids (%)	SM 2540 G	87.1 %	07/09/2018

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Customer ID: 08100006
Report #: 2018-10779
Project ID: Former Wilmington Gun Club

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27150	**Site:** Area B-B	7/5/2018	2:25 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	17.1 mg/kg	07/08/2018
Total Solids (%)	SM 2540 G	85.5 %	07/09/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27151	**Site:** Area B-C	7/5/2018	2:30 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	4.35 mg/kg	07/08/2018
Total Solids (%)	SM 2540 G	86.0 %	07/09/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27152	**Site:** Area B-D	7/5/2018	2:35 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	11.7 mg/kg	07/08/2018
Total Solids (%)	SM 2540 G	84.6 %	07/09/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27153	**Site:** Area C-A	7/5/2018	3:05 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	18.0 mg/kg	07/08/2018
Total Solids (%)	SM 2540 G	85.6 %	07/09/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27154	**Site:** Area C-B	7/5/2018	3:10 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	68.4 mg/kg	07/11/2018
Total Solids (%)	SM 2540 G	87.4 %	07/09/2018

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Date of Report: Jul 23, 2018
Customer PO #:
Customer ID: 08100006
Report #: 2018-10779
Project ID: Former Wilmington Gun Club

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27155	**Site:** Area C-C	7/5/2018	3:15 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	25.2 mg/kg	07/08/2018
Total Solids (%)	SM 2540 G	82.5 %	07/09/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27156	**Site:** Area C-D	7/5/2018	3:20 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	244 mg/kg	07/11/2018
Total Solids (%)	SM 2540 G	87.0 %	07/09/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27157	**Site:** G-4 A	7/5/2018	10:20 AM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	6480 mg/kg	07/11/2018
Total Solids (%)	SM 2540 G	88.2 %	07/09/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27158	**Site:** G-4 B	7/5/2018	10:25 AM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	94.3 mg/kg	07/11/2018
Total Solids (%)	SM 2540 G	86.4 %	07/09/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27159	**Site:** G-4 C	7/5/2018	10:35 AM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	51.9 mg/kg	07/11/2018
Total Solids (%)	SM 2540 G	87.3 %	07/09/2018

Environmental Chemists, Inc.

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255-A Wilmington Highway, Jacksonville, NC 28540 • 910.347.5843 Lab/Fax

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Applied Resource Management
Post Office Box 882
Hampstead NC 28443
Attention: Jim Cornette

Date of Report: Jul 23, 2018
Customer PO #:
Customer ID: 08100006
Report #: 2018-10779
Project ID: Former Wilmington Gun Club

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-27160	**Site:** G-4 D	7/5/2018 10:45 AM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	4.03 mg/kg	07/11/2018
Total Solids (%)	SM 2540 G	83.7 %	07/09/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-27161	**Site:** G-5 A	7/5/2018 11:30 AM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	569 mg/kg	07/11/2018
Total Solids (%)	SM 2540 G	90.8 %	07/09/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-27162	**Site:** G-5 B	7/5/2018 11:35 AM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	698 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	86.4 %	07/09/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-27163	**Site:** G-5 C	7/5/2018 11:45 AM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	259 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	91.4 %	07/09/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-27164	**Site:** G-5 D	7/5/2018 11:50 AM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	90.7 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	89.3 %	07/09/2018

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info@environmentalchemists.com

Applied Resource Management
Post Office Box 882
Hampstead NC 28443
Attention: Jim Cornette

Date of Report: Jul 23, 2018
Customer PO #:
Customer ID: 08100006
Report #: 2018-10779
Project ID: Former Wilmington Gun Club

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27165	**Site:** G-6 A	7/5/2018	9:17 AM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	2050 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	88.0 %	07/09/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27166	**Site:** G-6 B	7/5/2018	9:22 AM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	1470 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	89.1 %	07/09/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27167	**Site:** G-6 C	7/5/2018	9:26 AM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	6.08 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	87.3 %	07/09/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27168	**Site:** G-6 D	7/5/2018	9:29 AM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	3.72 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	87.9 %	07/09/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27169	**Site:** G-7 A	7/5/2018	10:11 AM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	73.4 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	88.2 %	07/09/2018

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255-A Wilmington Highway, Jacksonville, NC 28540 • 910.347.5843 Lab/Fax

info@environmentalchemists.com

Applied Resource Management
Post Office Box 882
Hampstead NC 28443
Attention: Jim Cornette

Date of Report: Jul 23, 2018
Customer PO #:
Customer ID: 08100006
Report #: 2018-10779
Project ID: Former Wilmington Gun Club

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27170	**Site:** G-7 B	7/5/2018	10:16 AM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	480 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	89.7 %	07/09/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27171	**Site:** G-7 C	7/5/2018	10:20 AM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	59.8 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	89.4 %	07/09/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27172	**Site:** G-7 D	7/5/2018	10:24 AM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	1900 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	89.9 %	07/09/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27173	**Site:** G-9 A	7/5/2018	9:25 AM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	3.16 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	82.9 %	07/09/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27174	**Site:** G-9 B	7/5/2018	9:30 AM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	8.69 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	82.0 %	07/09/2018

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Applied Resource Management
Post Office Box 882
Hampstead NC 28443
Attention: Jim Cornette

Date of Report: Jul 23, 2018
Customer PO #:
Customer ID: 08100006
Report #: 2018-10779
Project ID: Former Wilmington Gun Club

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27175	**Site:** G-9 C	7/5/2018	9:35 AM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	3.79 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	84.9 %	07/10/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27176	**Site:** G-9 D	7/5/2018	9:45 AM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	2.38 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	84.1 %	07/10/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27177	**Site:** G14-A	7/5/2018	11:22 AM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	2.48 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	84.4 %	07/10/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27178	**Site:** G14-B	7/5/2018	11:27 AM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	53.7 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	88.8 %	07/10/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27179	**Site:** G14-C	7/5/2018	11:32 AM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	2.41 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	88.1 %	07/10/2018

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Applied Resource Management
Post Office Box 882
Hampstead NC 28443
Attention: Jim Cornette

Date of Report: Jul 23, 2018
Customer PO #:
Customer ID: 08100006
Report #: 2018-10779
Project ID: Former Wilmington Gun Club

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-27180	**Site:** G14-D	7/5/2018 11:37 AM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	2.64 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	87.0 %	07/10/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-27181	**Site:** G15-A	7/5/2018 1:17 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	1.86 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	85.9 %	07/10/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-27182	**Site:** G15-B	7/5/2018 1:22 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	51.7 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	87.8 %	07/10/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-27183	**Site:** G15-C	7/5/2018 1:27 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	2.06 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	85.4 %	07/10/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-27184	**Site:** G15-D	7/5/2018 1:31 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	434 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	89.6 %	07/10/2018

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Applied Resource Management
Post Office Box 882
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Attention: Jim Cornette

Date of Report: Jul 23, 2018
Customer PO #:
Customer ID: 08100006
Report #: 2018-10779
Project ID: Former Wilmington Gun Club

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27185	**Site:** G16-A	7/5/2018	2:14 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	2.52 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	86.4 %	07/10/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27186	**Site:** G16-B	7/5/2018	2:19 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	2.36 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	86.5 %	07/10/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27187	**Site:** G16-C	7/5/2018	2:23 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	1.79 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	88.4 %	07/10/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27188	**Site:** G16-D	7/5/2018	2:29 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	3.41 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	86.5 %	07/10/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27189	**Site:** G18-A	7/5/2018	3:34 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	12.3 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	88.1 %	07/10/2018

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Attention: Jim Cornette

Date of Report: Jul 23, 2018
Customer PO #:
Customer ID: 08100006
Report #: 2018-10779
Project ID: Former Wilmington Gun Club

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-27190	**Site:** G18-B	7/5/2018 3:39 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	290 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	85.4 %	07/10/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-27191	**Site:** G18-C	7/5/2018 3:43 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	17.1 mg/kg	07/20/2018
Total Solids (%)	SM 2540 G	84.9 %	07/10/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-27192	**Site:** G18-D	7/5/2018 3:48 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	7.80 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	84.3 %	07/10/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-27193	**Site:** G19-A	7/5/2018 4:18 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	68.0 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	81.4 %	07/10/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-27194	**Site:** G19-B	7/5/2018 4:22 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	43.9 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	80.2 %	07/10/2018

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Customer PO #:
Customer ID: 08100006
Report #: 2018-10779
Project ID: Former Wilmington Gun Club

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27195	**Site:** G19-C	7/5/2018	4:29 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	71.3 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	88.5 %	07/10/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27196	**Site:** G19-D	7/5/2018	4:33 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	16.3 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	87.0 %	07/10/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27197	**Site:** G20-A	7/5/2018	4:15 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	3530 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	84.0 %	07/10/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27198	**Site:** G20-B	7/5/2018	4:10 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	63.6 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	86.9 %	07/10/2018

Lab ID	Sample ID:	Collect Date/Time		Matrix	Sampled by
18-27199	**Site:** G20-C	7/5/2018	4:00 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	263 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	86.3 %	07/10/2018

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Applied Resource Management
Post Office Box 882
Hampstead NC 28443
Attention: Jim Cornette

Date of Report: Jul 23, 2018
Customer PO #:
Customer ID: 08100006
Report #: 2018-10779
Project ID: Former Wilmington Gun Club

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-27200	**Site:** G20-D	7/5/2018 4:05 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	8.76 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	89.6 %	07/10/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-27201	**Site:** G21-A	7/5/2018 5:20 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	128 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	88.7 %	07/10/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-27202	**Site:** G21-B	7/5/2018 5:15 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	929 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	88.7 %	07/10/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-27203	**Site:** G21-C	7/5/2018 5:05 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	515 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	80.8 %	07/10/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-27204	**Site:** G21-D	7/5/2018 5:10 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	78.6 mg/kg	07/12/2018
Total Solids (%)	SM 2540 G	78.5 %	07/10/2018

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Date of Report: Jul 23, 2018
Customer PO #:
Customer ID: 08100006
Report #: 2018-10779
Project ID: Former Wilmington Gun Club

Comment: Results reported on a dry weight basis.

Reviewed by: Marisela Olivarez

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ENVIRONMENTAL CHEMISTS, INC

NCDENR: DWQ CERTIFICATION # 94 NCDHHS: DLS CERTIFICATION # 37729

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OFFICE: 910-392-0223 FAX 910-392-4424
info@environmentalchemists.com

COLLECTION AND CHAIN OF CUSTODY

Client: ARM	PROJECT NAME: Former Ivan Gun Clubs	REPORT NO:
ADDRESS: P.O. Box 882	CONTACT NAME: Joe Zuneck	PO NO:
257 Towstar Station Rd	REPORT TO: ARM	PHONE/FAX: 910 270-2949
Hampstead NC 28443	COPY TO:	email: joe@armnc.com

Sampled By: Joe Zuneck / Mac Robinson

SAMPLE TYPE: I = Influent, E = Effluent, W = Well, ST = Stream, SO = Soil, SL = Sludge, Other:

Sample Identification	Collection			Sample Type	Composite or Grab	Container (P or G)	Chlorine mg/L	LAB ID NUMBER	PRESERVATION							ANALYSIS REQUESTED
	Date	Time	Temp						NONE	HCL	H2SO4	HNO3	NAOH	THIO	OTHER	
AREA A-A	7-5-18	1330		SO	C (G)	P (G)			/							LEAD
AREA A-B		1335		SO	C (G)	P (G)			/							
AREA A-C		1340		SO	C (G)	P (G)			/							
AREA A-D		1345		SO	C (G)	P (G)			/							
AREA B-A		1420		SO	C (G)	P (G)			/							
AREA B-B		1425		SO	C (G)	P (G)			/							
AREA B-C		1430		SO	C (G)	P (G)			/							
AREA B-D		1435		SO	C (G)	P (G)			/							
AREA C-A		1505		SO	C (G)	P (G)			/							

Transfer	Relinquished By:	Date/Time	Received By:	Date/Time
1.	Mac	7-6-18/0800		
2.				

Temperature when Received: _____ Accepted: _____ Rejected: _____ Resample Requested: _____

Delivered By: _____ Received By: _____ Date: _____ Time: _____

Comments: _____ TURNAROUND: STANDARD

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NCDENR: DWQ CERTIFICATION # 94 NCDHHS: DLS CERTIFICATION # 37729

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info@environmentalchemists.com

COLLECTION AND CHAIN OF CUSTODY

Client: ARM	PROJECT NAME: FORMER TLM GUN CLUB	REPORT NO:
ADDRESS: P.O. Box 207 257 Transfer Station Rd Hampstead NC 28443	CONTACT NAME: JOE ZUNICH	PO NO:
	REPORT TO: ARM	PHONE/FAX: 910 270 2919
	COPY TO:	email: JOE@ARMNC.COM

Sampled By: JOE ZUNICH / MARK ROBINSON

SAMPLE TYPE: I = Influent, E = Effluent, W = Well, ST = Stream, SO = Soil, SL = Sludge, Other:

Sample Identification	Collection Date	Collection Time	Collection Temp	Sample Type	Composite or Grab	Container (P or G)	Chlorine mg/L	LAB ID NUMBER	PRESERVATION NONE	HCL	H2SO4	HNO3	NAOH	THIO	OTHER	ANALYSIS REQUESTED
ARM C-B	7-5-18	1510		SO	C (G)	P (G)			/							LEAD
ARM C-C		1515		SO	C (G)	P (G)			/							
ARM C-D		1520		SO	C (G)	P (G)			/							
G4-A		1020		SO	C (G)	P (G)			/							
G4-B		1025		SO	C (G)	P (G)			/							
G4-C		1035		SO	C (G)	P (G)			/							
G4-D		1045		SO	C (G)	P (G)			/							
G5-A		1130		SO	C (G)	P (G)			/							
G5-B		1135		SO	C (G)	P (G)			/							

Transfer	Relinquished By:	Date/Time	Received By:	Date/Time
1.	Mark	7-6-18 / 0800		
2.				

Temperature when Received: _____ Accepted: _____ Rejected: _____ Resample Requested: _____

Delivered By: _____ Received By: _____ Date: _____ Time: _____

Comments: _____ TURNAROUND: STANDARD

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NCDENR: DWQ CERTIFICATION # 94 NCDHHS: DLS CERTIFICATION # 37729

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OFFICE: 910-392-0223 FAX 910-392-4424
info@environmentalchemists.com

COLLECTION AND CHAIN OF CUSTODY

Client: ARM	PROJECT NAME: Formia Turn Gun Club	REPORT NO:
ADDRESS: P.O Box 882	CONTACT NAME: Joe Tunicia	PO NO:
257 Transfer Station Rd	REPORT TO: ARM	PHONE/FAX: 910 270-29[illegible]
Hampstead NC 28443	COPY TO:	email: joe@armnc.com

Sampled By: Joe Tunicia/Mark Robinson SAMPLE TYPE: I = Influent, E = Effluent, W = Well, ST = Stream, SO = Soil, SL = Sludge, Other:

Sample Identification	Collection			Sample Type	Composite or Grab	Container (P or G)	Chlorine mg/L	LAB ID NUMBER	PRESERVATION							ANALYSIS REQUESTED
	Date	Time	Temp						NONE	HCL	H2SO4	HNO3	NAOH	THIO	OTHER	
G5-C	7-5-16	1145		So	C (G)	P (G)			/							LEAD
G5-D		1150		So	C (G)	P (G)			/							
G6-A		0917		So	C (G)	P (G)			/							
G6-B		0922		So	C (G)	P (G)			/							
G6-C		0926		So	C (G)	P (G)			/							
G6-D		0929		So	C (G)	P (G)			/							
G7-A		1011		So	C (G)	P (G)			/							
G7-B		1016		So	C (G)	P (G)			/							
G7-C	V	1020		So	C (G)	P (G)			/							

Transfer	Relinquished By:	Date/Time	Received By:	Date/Time
1.	[signature]	7-6-16/0800		
2.				

Temperature when Received: _____ Accepted: _____ Rejected: _____ Resample Requested: _____

Delivered By: _____ Received By: _____ Date: _____ Time: _____

Comments: _____ TURNAROUND: STANDARD

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NCDENR: DWQ CERTIFICATION # 94 NCDHHS: DLS CERTIFICATION # 37729

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info@environmentalchemists.com

COLLECTION AND CHAIN OF CUSTODY

Client: AECOM	PROJECT NAME: Former Turkey Gun Clubs	REPORT NO:
ADDRESS: P.O. Box 887	CONTACT NAME: Joe Zuraick	PO NO:
257 Transfer Station Rd	REPORT TO: AECOM	PHONE/FAX: 910 270-2919
Hampstead NC 28443	COPY TO:	email: joe@aecom.com

Sampled By: Joe Zuraick / Max Robinson

SAMPLE TYPE: I = Influent, E = Effluent, W = Well, ST = Stream, SO = Soil, SL = Sludge, Other:

Sample Identification	Collection: Date	Collection: Time	Collection: Temp	Sample Type	Composite or Grab	Container (P or G)	Chlorine mg/L	LAB ID NUMBER	PRESERVATION: NONE	HCL	H2SO4	HNO3	NAOH	THIO	OTHER	ANALYSIS REQUESTED
G7-D	7-5-18	1024		SO	C (G)	P (G)			/							LEAD
G9-A		0925		SO	C (G)	P (G)			/							
G9-B		0930		SO	C (G)	P (G)			/							
G9-C		0935		SO	C (G)	P (G)			/							
G9-D		0945		SO	C (G)	P (G)			/							
G14-A		1122		SO	C (G)	P (G)			/							
G14-B		1127		SO	C (G)	P (G)			/							
G14-C		1132		SO	C (G)	P (G)			/							
G14-D		1137		SO	C (G)	P (G)			/							

Transfer	Relinquished By:	Date/Time	Received By:	Date/Time
1.		7-6-18/0800		
2.				

Temperature when Received: _____ Accepted: _____ Rejected: _____ Resample Requested: _____

Delivered By: _____ Received By: _____ Date: _____ Time: _____

Comments: _____ TURNAROUND: STANDARD

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ENVIRONMENTAL CHEMISTS, INC

NCDENR: DWQ CERTIFICATION # 94 NCDHHS: DLS CERTIFICATION # 37729

6602 Windmill Way Wilmington, NC 28405
OFFICE: 910-392-0223 FAX 910-392-4424
info@environmentalchemists.com

COLLECTION AND CHAIN OF CUSTODY

Client: ARM	PROJECT NAME: FORMER TLM GUN CLUB	REPORT NO:
ADDRESS: P.O. Box 882	CONTACT NAME: JOE ZUNCICH	PO NO:
257 TRANSFER STATION RD	REPORT TO: ARM	PHONE/FAX: 910 270-2949
HAMPSTEAD NC 28443	COPY TO:	email: JOE@MAIL.COM

Sampled By: JOE ZUNCICH / MAX ROBINSON SAMPLE TYPE: I = Influent, E = Effluent, W = Well, ST = Stream, SO = Soil, SL = Sludge, Other:

Sample Identification	Collection			Sample Type	Composite or Grab	Container (P or G)	Chlorine mg/L	LAB ID NUMBER	PRESERVATION							ANALYSIS REQUESTED
	Date	Time	Temp						NONE	HCL	H2SO4	HNO3	NAOH	THIO	OTHER	
G15-A	7-5-18	1317		SO	C / (G)	P / (G)			/							LEAD
G15-B		1322		SO	C / (G)	P / (G)			/							
G15-C		1327		SO	C / (G)	P / (G)			/							
G15-D		1331		SO	C / (G)	P / (G)			/							
G16-A		1414		SO	C / (G)	P / (G)			/							
G16-B		1419		SO	C / (G)	P / (G)			/							
G-16-C		1423		SO	C / (G)	P / (G)			/							
G16-D		1429		SO	C / (G)	P / (G)			/							
G18-A	V	1534		SO	C / (G)	P / (G)			/							

Transfer	Relinquished By:	Date/Time	Received By:	Date/Time
1.	[signature]	7-6-18/0800		
2.				

Temperature when Received:_____ Accepted:_____ Rejected:_____ Resample Requested:_____

Delivered By:_____ Received By:_____ Date:_____ Time:_____

Comments:_____ TURNAROUND: STANDARD

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info@environmentalchemists.com

COLLECTION AND CHAIN OF CUSTODY

Client: ARM	PROJECT NAME: Former ILM Gun Club	REPORT NO:
ADDRESS: P.O. Box 887	CONTACT NAME: Joe Zunich	PO NO:
257 Transfer Station Rd	REPORT TO: ARM	PHONE/FAX: 910 270-2919
Hampstead NC 28443	COPY TO:	email: joe@armnc.com

Sampled By: Joe Zunich / Max Robinson SAMPLE TYPE: I = Influent, E = Effluent, W = Well, ST = Stream, SO = Soil, SL = Sludge, Other:

Sample Identification	Collection			Sample Type	Composite or Grab	Container (P or G)	Chlorine mg/L	LAB ID NUMBER	PRESERVATION							ANALYSIS REQUESTED
	Date	Time	Temp						NONE	HCL	H2SO4	HNO3	NAOH	THIO	OTHER	
G18-B	7-5-19	1529		So	C / (G)	P / (G)			/							LEAD
G18-C		1543		So	C / (G)	P / (G)			/							
G18-D		1549		So	C / (G)	P / (G)			/							
G19-A		1618		So	C / (G)	P / (G)			/							
G19-B		1622		So	C / (G)	P / (G)			/							
G19-C		1629		So	C / (G)	P / (G)			/							
G19-D		1633		So	C / (G)	P / (G)			/							
G20-A		1615		So	C / (G)	P / (G)			/							
G20-B		1610		So	C / (G)	P / (G)			/							

Transfer	Relinquished By:	Date/Time	Received By:	Date/Time
1.	[signature]	7-6-19 / 0800		
2.				

Temperature when Received: _____ Accepted: _____ Rejected: _____ Resample Requested: _____

Delivered By: _____ Received By: _____ Date: _____ Time: _____

Comments: _____ TURNAROUND: STANDARD

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COLLECTION AND CHAIN OF CUSTODY

Client: ARM	PROJECT NAME: FORMER ILM GUN CLUB	REPORT NO:
ADDRESS: P.O. Box 382	CONTACT NAME: JOE ZUNCICH	PO NO:
251 Transfer Station Rd	REPORT TO: ACM	PHONE/FAX: 910 270-2914
Hampstead, NC 28443	COPY TO:	email: JDF@ARMNC.COM

Sampled By: JOE ZUNCICH / MARK ROBINSON SAMPLE TYPE: I = Influent, E = Effluent, W = Well, ST = Stream, SO = Soil, SL = Sludge, Other:

Sample Identification	Collection			Sample Type	Composite or Grab	Container (P or G)	Chlorine mg/L	LAB ID NUMBER	PRESERVATION							ANALYSIS REQUESTED
	Date	Time	Temp						NONE	HCL	H2SO4	HNO3	NAOH	THIO	OTHER	
G20-C	7-5-18	1600		SO	C / (G)	P / (G)			/							LEAD
G20-D		1605		SO	C / (G)	P / (G)			/							
G21-A		1720		SO	C / (G)	P / (G)			/							
G21-B		1715		SO	C / (G)	P / (G)			/							
G21-C		1705		SO	C / (G)	P / (G)			/							
G21-D		1710		SO	C / (G)	P / (G)			/							
					C / G	P / G										
					C / G	P / G										
					C / G	P / G										

Transfer	Relinquished By:	Date/Time	Received By:	Date/Time
1.	Mark	7-6-18 / 0900		
2.				

Temperature when Received:_____ Accepted:_____ Rejected:_____ Resample Requested:_____

Delivered By:_____ Received By:_____ Date:_____ Time:_____

Comments:_____ TURNAROUND: STANDARD

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710 Bowsertown Road, Manteo, NC 27954 • 252.473.5702 Lab/Fax
255-A Wilmington Highway, Jacksonville, NC 28540 • 910.347.5843 Lab/Fax

ANALYTICAL & CONSULTING CHEMISTS

info@environmentalchemists.com

Applied Resource Management
Post Office Box 882
Hampstead NC 28443
Attention: Joe Zuncich

Date of Report: Dec 11, 2018
Customer PO #:
Customer ID: 08100006
Report #: 2018-18559
Project ID: ILM Gun Club

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-46978	**Site:** g4-comp	11/8/2018 3:00 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
TCLP Metals			
Lead	EPA 200.7	2.21 mg/L	12/04/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-46979	**Site:** g6-comp	11/8/2018 3:58 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
TCLP Metals			
Lead	EPA 200.7	35.5 mg/L	12/07/2018

Comment:
Reviewed by: _____

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info@environmentalchemists.com

COLLECTION AND CHAIN OF CUSTODY

Client: ARM	PROJECT NAME: Former TJM Gun Club	REPORT NO: 18-18559
ADDRESS: PO Box 892	CONTACT NAME: Joe Tuscich	PO NO:
257 Junction Station Rd	REPORT TO: ARM	PHONE/FAX: 910 270 2919
Hampton NC 28442	COPY TO:	email: joe@armnc.com

Sampled By: Joe Tuscich / Ray Johnson SAMPLE TYPE: I = Influent, E = Effluent, W = Well, ST = Stream, SO = Soil, SL = Sludge, Other:

Sample Identification	Collection			Sample Type	Composite or Grab	Container (P or G)	Chlorine mg/L	LAB ID NUMBER	PRESERVATION							ANALYSIS REQUESTED
	Date	Time	Temp						NONE	HCL	H2SO4	HNO3	NAOH	THIO	OTHER	
G4-Comp	11-8-18	15		SO	(C)	P		46978								TCLP Lead
					G	(G)										
G6-Comp	11-8-18	1552		SO	(C)	P		46979								↓
					G	(G)										
					C	P										
					G	G										
					C	P										
					G	G										
					C	P										
					G	G										
					C	P										
					G	G										
					C	P										
					G	G										
					C	P										
					G	G										

Transfer	Relinquished By:	Date/Time	Received By:	Date/Time
1.		11-9-18/ 1128		
2.				

Temperature when Received: _____ Accepted: _____ Rejected: _____ Resample Requested: _____

Delivered By: Joe Tuscich Received By: _____ Date: 11-9-18 Time: 1128p

Comments: _____ TURNAROUND: Standard

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255-A Wilmington Highway, Jacksonville, NC 28540 • 910.347.5843 Lab/Fax

ANALYTICAL & CONSULTING CHEMISTS

info@environmentalchemists.com

Applied Resource Management
Post Office Box 882
Hampstead NC 28443
Attention: Joe Zuncich

Date of Report: Nov 29, 2018
Customer PO #:
Customer ID: 08100006
Report #: 2018-18556
Project ID: Former Internation Range Facility

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-46944	**Site:** G4-1	11/8/2018 2:50 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	2150 mg/kg	11/27/2018
Total Solids (%)	SM 2540 G	90.2 %	11/15/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-46955	**Site:** G4-2	11/8/2018 3:05 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	1220 mg/kg	11/27/2018
Total Solids (%)	SM 2540 G	89.2 %	11/15/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-46956	**Site:** G4-3	11/8/2018 3:20 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	549 mg/kg	11/27/2018
Total Solids (%)	SM 2540 G	90.2 %	11/15/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-46957	**Site:** G4-4	11/8/2018 3:40 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	475 mg/kg	11/27/2018
Total Solids (%)	SM 2540 G	89.3 %	11/15/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-46958	**Site:** G4-5	11/8/2018 3:55 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	858 mg/kg	11/27/2018
Total Solids (%)	SM 2540 G	88.0 %	11/15/2018

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ANALYTICAL & CONSULTING CHEMISTS

info@environmentalchemists.com

Applied Resource Management
Post Office Box 882
Hampstead NC 28443
Attention: Joe Zuncich

Date of Report: Nov 29, 2018
Customer PO #:
Customer ID: 08100006
Report #: 2018-18556
Project ID: Former Internation Range Facility

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-46959	**Site:** G4-6	11/8/2018 4:10 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	59.2 mg/kg	11/27/2018
Total Solids (%)	SM 2540 G	89.6 %	11/15/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-46960	**Site:** G4-7	11/8/2018 4:08 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	897 mg/kg	11/27/2018
Total Solids (%)	SM 2540 G	88.0 %	11/15/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-46961	**Site:** G4-8	11/8/2018 4:21 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	151 mg/kg	11/27/2018
Total Solids (%)	SM 2540 G	87.4 %	11/15/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-46962	**Site:** G4-9	11/8/2018 4:20 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	48.7 mg/kg	11/27/2018
Total Solids (%)	SM 2540 G	87.3 %	11/15/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-46963	**Site:** G6-1	11/8/2018 1:26 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	616 mg/kg	11/27/2018
Total Solids (%)	SM 2540 G	88.6 %	11/15/2018

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ANALYTICAL & CONSULTING CHEMISTS

info@environmentalchemists.com

Applied Resource Management
Post Office Box 882
Hampstead NC 28443
Attention: Joe Zuncich

Date of Report: Nov 29, 2018
Customer PO #:
Customer ID: 08100006
Report #: 2018-18556
Project ID: Former Internation Range Facility

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-46964	**Site:** G6-2	11/8/2018 1:38 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	1380 mg/kg	11/27/2018
Total Solids (%)	SM 2540 G	87.6 %	11/15/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-46965	**Site:** G6-3	11/8/2018 1:53 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	581 mg/kg	11/27/2018
Total Solids (%)	SM 2540 G	87.4 %	11/15/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-46966	**Site:** G6-4	11/8/2018 2:12 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	1320 mg/kg	11/27/2018
Total Solids (%)	SM 2540 G	89.2 %	11/15/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-46967	**Site:** G6-5	11/8/2018 2:32 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	703 mg/kg	11/27/2018
Total Solids (%)	SM 2540 G	88.2 %	11/15/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-46968	**Site:** G6-6	11/8/2018 2:51 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	638 mg/kg	11/27/2018
Total Solids (%)	SM 2540 G	88.5 %	11/15/2018

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ANALYTICAL & CONSULTING CHEMISTS

info@environmentalchemists.com

Applied Resource Management
Post Office Box 882
Hampstead NC 28443
Attention: Joe Zuncich

Date of Report: Nov 29, 2018
Customer PO #:
Customer ID: 08100006
Report #: 2018-18556
Project ID: Former Internation Range Facility

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-46969	**Site:** G6-7	11/8/2018 3:08 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	736 mg/kg	11/27/2018
Total Solids (%)	SM 2540 G	90.2 %	11/15/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-46970	**Site:** G6-8	11/8/2018 3:22 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	369 mg/kg	11/27/2018
Total Solids (%)	SM 2540 G	90.3 %	11/15/2018

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
18-46971	**Site:** G6-9	11/8/2018 3:42 PM	Solid/Sludge	Joe Zuncich

Test	Method	Results	Date Analyzed
Lead	EPA 200.7	5580 mg/kg	11/27/2018
Total Solids (%)	SM 2540 G	90.8 %	11/15/2018

Comment: Results reported on a dry weight basis.

Reviewed by: Manola Olijan

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info@environmentalchemists.com

COLLECTION AND CHAIN OF CUSTODY

Client: ARM	PROJECT NAME: Former ILM Gun Club	REPORT NO: 18-18556
ADDRESS: P.O. Box 882	CONTACT NAME: Joe Zuncick	PO NO:
257 Transfer Station Rd	REPORT TO: ARM	PHONE/FAX: 910 270-2919
Hampstead, NC 28443	COPY TO:	email: JOE@ARMNC.COM

Sampled By: Joe Zuncick / Max Robinson

SAMPLE TYPE: I = Influent, E = Effluent, W = Well, ST = Stream, SO = Soil, SL = Sludge, Other:

Sample Identification	Collection Date	Time	Temp	Sample Type	Composite or Grab	Container (P or G)	Chlorine mg/L	LAB ID NUMBER	PRESERVATION NONE	HCL	H2SO4	HNO3	NAOH	THIO	OTHER	ANALYSIS REQUESTED
G4-1	11-8-18	1450		SO	C (G)	P (G)		46944								LEAD
G4-2		1505		SO	C (G)	P (G)		46955								
G4-3		1520		SO	C (G)	P (G)		46956								
G4-4		1540		SO	C (G)	P (G)		46957								
G4-5		1555		SO	C (G)	P (G)		46958								
G4-6		1610		SO	C (G)	P (G)		46959								
G4-7		1608		SO	C (G)	P (G)		46960								
G4-8		1621		SO	C (G)	P (G)		46961								

Transfer	Relinquished By:	Date/Time	Received By:	Date/Time
1.		11-9-18/1110		
2.				

Temperature when Received: _____ Accepted: _____ Rejected: _____ Resample Requested: _____

Delivered By: Joe Zuncick Received By: _____ Date: 11-8-18 Time: 1:28P.

Comments: _____ TURNAROUND: Standard

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ENVIRONMENTAL CHEMISTS, INC

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OFFICE: 910-392-0223 FAX 910-392-4424
info@environmentalchemists.com

COLLECTION AND CHAIN OF CUSTODY

Client: ARM	PROJECT NAME: FORMER ITM GUN CLUB	REPORT NO:
ADDRESS: P.O. Box 887	CONTACT NAME: JOE ZUNCICH	PO NO:
257 Transfer Station Rd	REPORT TO: ARM	PHONE/FAX: 910 270-2919
Hampstead, NC 28443	COPY TO:	email: JOE@ARMNC.COM

Sampled By: JOE ZUNCICH / MAX ROBINSON

SAMPLE TYPE: I = Influent, E = Effluent, W = Well, ST = Stream, SO = Soil, SL = Sludge, Other:

Sample Identification	Collection: Date	Collection: Time	Collection: Temp	Sample Type	Composite or Grab	Container (P or G)	Chlorine mg/L	LAB ID NUMBER	PRESERVATION: NONE	HCL	H2SO4	HNO3	NAOH	THIO	OTHER	ANALYSIS REQUESTED
G4-9	11-8-18	1620		SO	C (G)	P (G)		46962	✓							LEAD
G6-1		1326		SO	C (G)	P (G)		46963	✓							
G6-2		1338		SO	C (G)	P (G)		46964	✓							
G6-3		1353		SO	C (G)	P (G)		46965	✓							
G6-4		1412		SO	C (G)	P (G)		46966	✓							
G6-5		1432		SO	C (G)	P (G)		46967	✓							
G6-6		1451		SO	C (G)	P (G)		46968	✓							
G6-7		1508		SO	C (G)	P (G)		46969	✓							

Transfer	Relinquished By:	Date/Time	Received By:	Date/Time
1.		11-9-18 / 1110		
2.				

Temperature when Received: _____ Accepted: _____ Rejected: _____ Resample Requested: _____

Delivered By: JOE ZUNCICH Received By: _____ Date: 11-9-18 Time: 1128P

Comments: _____ TURNAROUND: STANDARD

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ENVIRONMENTAL CHEMISTS, INC

NCDENR: DWQ CERTIFICATION # 94 NCDHHS: DLS CERTIFICATION # 37729

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OFFICE: 910-392-0223 FAX 910-392-4424
info@environmentalchemists.com

COLLECTION AND CHAIN OF CUSTODY

Client: ARM	PROJECT NAME: Former Elm Gun Club	REPORT NO: 18-18554
ADDRESS: P.O. Box 882	CONTACT NAME: Joe Zunich	PO NO:
257 Transfer Station Rd	REPORT TO: ARM	PHONE/FAX: 910 270-2919
Hampstead NC 28443	COPY TO:	email: joe@armnc.com

Sampled By: Joe Zunich / Mac Robinson SAMPLE TYPE: I = Influent, E = Effluent, W = Well, ST = Stream, SO = Soil, SL = Sludge, Other:

Sample Identification	Collection Date	Collection Time	Collection Temp	Sample Type	Composite or Grab	Container (P or G)	Chlorine mg/L	LAB ID NUMBER	PRESERVATION NONE	HCL	H2SO4	HNO3	NAOH	THIO	OTHER	ANALYSIS REQUESTED
G6-8	11-8-18	1522		SO	C	P		46970								LEAD
					(G)	(G)										
G6-9	11-8-18	1542		SO	C	P		46971								↓
					(G)	(G)										
					C	P										
					G	G										
					C	P										
					G	G										
					C	P										
					G	G										
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					C	P										
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Transfer	Relinquished By:	Date/Time	Received By:	Date/Time
1.		11-9-18 / 1110		
2.				

Temperature when Received: _____ Accepted: _____ Rejected: _____ Resample Requested: _____

Delivered By: Joe Zunich Received By: _____ Date: 11-9-18 Time: 1:28P

Comments: _____ TURNAROUND: Standard

APPENDIX D

EnviroBlend
Metal Waste Treatment by Premier Magnesia, LLC

SAFETY DATA SHEET

Issue Date 02-Dec-2014 **Revision Date** 24-March-2017 **Version** 1

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier
Product Name ENVIROBLEND® CS

Other means of identification
Product Code ENVIROBLEND® CS
Synonyms None

Recommended use of the chemical and restrictions on use
Recommended Use A specialty blend of magnesium oxide, magnesium hydroxide used for heavy metals remediation.
Uses advised against No information available

Details of the supplier of the safety data sheet
Manufacturer Address
Premier Magnesia, LLC, 75 Giles Place, Waynesville, NC 28786

Emergency telephone number
Company Phone Number 828-452-4784
24 Hour Emergency Phone Number Chemtrec 1-800-424-9300
Emergency Telephone Chemtrec 1-800-424-9300

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status
Product dust is classified as a "nuisance particulate, not otherwise regulated" as specified by ACGHI and OSHA. The excessive, long-term inhalation of mineral dusts may contribute to the development of industrial bronchitis, reduced breathing capacity, and may lead to the increased susceptibility to lung disease. Contact with water may cause product to swell, generate some heat and burst its container. Low toxicity.

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Label elements

Emergency Overview

The product contains no substances which at their given concentration, are considered to be hazardous to health

Appearance Fine powder to fine granular **Physical state** Solid **Odor** Odorless

Causes mild irritation to the eyes
Low toxicity by skin contact.
Chronic overexposure by inhalation of airborne particulate may irritate upper respiratory system as well as the throat.
Ingestion is an unlikely route of exposure. If ingested in large amounts it may cause irritation, nausea, vomiting, diarrhea, abdominal pain, black stool, pink urine, coma and possibly death.

Hazards not otherwise classified (HNOC)
Other Information
Unknown Acute Toxicity 100% of the mixture consists of ingredient(s) of unknown toxicity

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Weight-%	Trade Secret
Magnesium Oxide	1309-48-4	70	
Magnesium Hydroxide	1309-42-8	30	

4. FIRST AID MEASURES

First aid measures

Eye contact Rinse thoroughly with plenty of water, also under the eyelids.

Skin Contact Wash with soap and water. Low toxicity by skin contact.

Inhalation Move victim to fresh air. If breathing has stopped, give artificial respiration. Get medical attention immediately.

Ingestion Ingestion is an unlikely route of exposure. If ingested in sufficient quantity and victim is conscious, give 1-2 glasses of water or milk. Never give anything by mouth to an unconscious person. Leave decision to induce vomiting to qualified medical personnel, since particles may be aspirated into the lungs. Seek immediate medical attention.

Most important symptoms and effects, both acute and delayed

Symptoms No information available.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media Water reacts with magnesium oxide producing magnesium hydroxide and heat. Do not allow water to get inside containers: reaction with water will cause product to swell, generate heat, and burst its container. If contact is unavoidable, use sufficient water to safely absorb the heat that may be generated.

Specific hazards arising from the chemical
No information available.

Explosion data
Sensitivity to Mechanical Impact None.
Sensitivity to Static Discharge None.

Protective equipment and precautions for firefighters
Firefighters should wear NIOSH approved, positive pressure, self-contained breathing apparatus and full protective clothing when appropriate.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Ensure adequate ventilation, especially in confined areas.

Environmental precautions

Environmental precautions See Section 12 for additional ecological information.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Carefully clean up and place material into a suitable container, being careful to avoid creating excessive dust. If conditions warrant, clean up personnel should wear approved respiratory protection, gloves and goggles to prevent irritation from contact and/or inhalation.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Use personal protective equipment as required.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep container tightly closed in a dry and well-ventilated place. Avoid generation of dust. Do not allow water to get inside containers; reaction with water will cause product to swell, generate heat and burst its container. Exposed, unprotected magnesium oxide will absorb moisture and carbon dioxide from the air.

Incompatible materials Magnesium Oxide component is soluble in aqueous acids generating heat and steam; violent reaction or ignition with interhalogens (e.g., bromine pentifluoride; chlorine trifluoride). Incandescent reaction with phosphorus pentachloride.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Magnesium Oxide 1309-48-4	TWA: 10 mg/m³ inhalable fraction	TWA: 15 mg/m³ fume, total particulate (vacated) TWA: 10 mg/m³ fume and total particulate	IDLH: 750 mg/m³ fume

NIOSH IDLH Provide workers with NIOSH approved respirators in accordance with requirements of 29 CFR 1910. 134 for level of exposure incurred.

Appropriate engineering controls

Engineering Controls Provide sufficient ventilation, in both volume and air flow patterns to control mist/dust concentrations below allowable exposure limits. Showers. Eyewash stations.

Individual protection measures, such as personal protective equipment

Eye/face protection Avoid contact with eyes. The use of eye protection is recommended.

Skin and body protection The use of eye protection, gloves and long sleeve clothing is recommended.

Respiratory protection Provide workers with NIOSH approved respirators in accordance with requirements of 29 CFR 1910. 134 for level of exposure incurred.

General Hygiene Considerations Wash hands thoroughly after handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Solid		
Appearance	Fine powder to fine granular	**Odor**	Odorless
Color	Brownish	**Odor threshold**	No information available

Property	Values	Remarks • Method
pH	10-11	
Melting point/freezing point	Melting pt >2100 °C Melting pt >3800 °F	
Boiling point / boiling range	No information available	
Flash point	No information available	
Evaporation rate	Not Applicable	
Flammability (solid, gas)	No information available	
Flammability Limit in Air		
Upper flammability limit:	No information available	
Lower flammability limit:	No information available	
Vapor pressure	No information available	
Vapor density	No information available	
Specific Gravity	3.56 g/cc	
Water solubility	Slight <1%	
Solubility in other solvents	No information available	
Partition coefficient	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	

Other Information

Softening point	No information available
Molecular weight	No information available
VOC Content (%)	No information available
Density	No information available
Bulk density	70-80lb/ft3

10. STABILITY AND REACTIVITY

Reactivity
No data available

Chemical stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous polymerization Hazardous polymerization does not occur.

Conditions to avoid
Extremes of temperature and direct sunlight.

Incompatible materials
Magnesium Oxide component is soluble in aqueous acids generating heat and steam; violent reaction or ignition with interhalogens (e.g., bromine pentifluoride; chlorine trifluoride). Incandescent reaction with phosphorus pentachloride.

Hazardous Decomposition Products
Heat and steam.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information Magnesium Oxide # 1309-48-4 Magnesium Hydroxide #1309-42-8 Product does not present an acute toxicity hazard based on known or supplied information.

Inhalation Inhalation of fume (not MgO dust particulate) produced upon decomposition of magnesium compounds can produce a febrile reaction and leukocytosis in humans.

Eye contact Irritating to eyes.

Skin Contact Low toxicity by skin contact.

Ingestion Ingestion is an unlikely route of exposure. If ingested in large amounts it may cause irritation, nausea, vomiting, diarrhea, abdominal pain, black stool, pink urine, coma and possibly death.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Magnesium Hydroxide 1309-42-8	= 8500 mg/kg (Rat)	-	-

Information on toxicological effects

Symptoms No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization No information available.
Germ cell mutagenicity No information available.
Carcinogenicity No information available.
Reproductive toxicity No information available.
STOT - single exposure No information available.
STOT - repeated exposure No information available.
Aspiration hazard No information available.

Numerical measures of toxicity - Product Information

Unknown Acute Toxicity 100% of the mixture consists of ingredient(s) of unknown toxicity

12. ECOLOGICAL INFORMATION

Ecotoxicity

No data available on any adverse effects of this material on the environment

100% of the mixture consists of components(s) of unknown hazards to the aquatic environment

Persistence and degradability
No information available.

Bioaccumulation
No information available.

Other adverse effects No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of wastes This product does not exhibit any characteristics of a hazardous waste. The product is suitable for landfill disposal. Follow all applicable federal, state and local regulations for safe disposal.

Contaminated packaging Do not reuse container.

14. TRANSPORT INFORMATION

DOT Not regulated Not regulated by DOT as a hazardous material. No hazard class, label or placard required, no UN or NA number assigned.

15. REGULATORY INFORMATION

International Inventories

TSCA Complies

Chemical Name	TSCA	DSL/NDSL	EINECS/ELINCS	ENCS	IECSC	KECL	PICCS	AICS
Magnesium Oxide	X	X	X	X	X	X	X	X
Magnesium Hydroxide	X	X	X	X	X	X	X	X

X - Listed

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

US Federal Regulations

SARA 313
This product does not contain any substances reportable under Sections 302, 304 or 313. Sections 311 and 312 do apply. (Routine Reporting and Chemical Inventories)

SARA 311/312 Hazard Categories

Acute health hazard	No
Chronic Health Hazard	No
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

CWA (Clean Water Act)
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

US State Regulations

California Proposition 65
This product does not contain chemicals known to the State of California to cause cancer, birthdefects or other reproductive toxins.

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Magnesium Oxide 1309-48-4	X	X	X

U.S. EPA Label Information
EPA Pesticide Registration Number Not Applicable

16. OTHER INFORMATION

NFPA	**Health hazards** 1	**Flammability** 0	**Instability** 0	**Physical and Chemical Properties** -
HMIS	**Health hazards** 0	**Flammability** 0	**Physical hazards** 0	**Personal protection** X

Issue Date 02-Dec-2014
Revision Date 24-March-2017
Revision Note
No information available

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

EnviroBlend®
Metal Waste Treatment by Premier Magnesia, LLC

ENVIROBLEND® CS

EnviroBlend CS is a coarser size of magnesium oxides. It is typically used for remediation/stabilization of heavy metal contaminated waste. EnviroBlend CS has a high buffering capability for pH neutralization.

Typical Properties

pH	10-11
Specific Gravity	70-80 lbs per cu.ft.
Appearance	Light grey to tan powder
Sizing, wt%	
+12M	0.0
+20M	13
+40M	16
+70M	16
+100M	9
-100M	46

Domestic Shipping Information

DOT Proper Shipping Name	Not Regulated
DOT Hazard Class	Not Regulated
DOT ID Number	Not Regulated

Shipment Options DOT Approved Tank Cars or Trucks

MAS: 10-26-10

Premier Magnesia, LLC, 300 Barr Harbor Drive, Suite 250
West Conshohocken, PA 19428
Tel: 610-828-6929
http://www.premiermagnesia.com

EnviroBlend
Metal Waste Treatment by Premier Magnesia, LLC

Enter Search Term

Enter E-mail Address...

RE3

Remediation, Redevelopment, Results!

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More...

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EnviroBlend is a family of treatment chemicals custom blended to render metal bearing wastes non hazardous.
More...

Save with a Cost Comparison

Many of our clients find that their total waste managements costs can be reduced by 50% -90%
More...

Remedial Applications: Shooting Ranges

Overview

The main concern with lead contamination in the soil is the destination and transport of heavy metals of bullets and bullet fragments. Lead is also considered the top environmental threat to children's health.

Outdoor firing ranges are often contaminated with lead. When lead bullets and fragments from using a firearm settle on the soil, there are a number of elements that will determine the extent of the actual danger that it will have. The quicker the metal moves through the soil, the more risk it poses to the environment. There are a number of factors that solubilization, or the process whereby the lead becomes soluble or more soluble, depends on...

- Metal speciation
- Soil chemistry
- Water chemistry
- Bullet composition and condition

With the exception of metals mining and manufacturing, outdoor firing ranges put more lead into the environment than any other industry! The U.S. Military alone has cleaned up more than 700 shooting ranges across the country since 2005, when the EPA established best practices for remediation of these sites, and there currently over 1,800 commercial firing ranges registered with the National Shooting Sports Foundation.

Shooting Range Remediation Process

In 2005, the EPA developed and outlined best practices for lead and outdoor shooting range remediation.

- Sift firearm fragments from the soil
- Sample and analyze the remaining soil to determine if the leachable level
- Analyze the soil in layers to determine the extent of the contamination
- Remediate the soil
- Option A: Placement in a hazardous waste landfillo
- Option B: Onsite stabilization, solidification, and soil washing

CASE STUDY

*To learn more about the this process, defined by the EPA - **Click Here***

*To get information on how EnviroBlend can help in the remediation of Brownfields - **Click Here***

Tweet

Premier Magnesia, LLC
Glenhardie One
1275 Drummers Lane Suite 102
Wayne, PA 19087

Customer Service:
Bonnie Cassey
828-564-1628

610-828-8142

Technical Questions
Charis Gehret
484-840-7540

Winston-Salem Police Firing Range – Soil Remediation Project $500,000

Project consisted of remediating 2,400 tons of lead contaminated soil from the municipal firing range by stabilizing the soil with the use of "Enviroblend" and transporting stabilized soils to local land fill.

The stabilized lead contaminated soil was required to pass a series of tests, TCLP, MEP and SPLP Metals prior to removal. Working in the different areas and concentrations of lead contamination, CST teamed with Premier Chemical to evaluate and pre test the soil to best determine the proper mixing of "Enviroblend". This enabled CST to provide a competitive bid and win the award of the job.

Working as a team with the City and Premier Chemical, CST was able to complete work under budget and ahead of schedule. The finished product not only met but exceeded the City's expectations allowing the City to continue to use the site for future training rather than abandoning the site.

Thanks to all parties this was a successful for everyone involved.