



October 16, 2015

Ms. Robin Proctor  
NCDEQ Division of Waste Management  
Hazardous Waste Section  
P.O. Box 4488  
Cary, North Carolina 27519

Reference Initial Site Sampling Plan – Sediment and Surface Water Sampling  
Southwestern Community College Firing Range  
Sylva, Jackson County, North Carolina  
ECS Project 31-2739

Dear Ms. Proctor:

ECS Carolinas, LLP (ECS) is pleased to provide the following Initial Site Sampling Plan (ISSP) for environmental assessment services for the Southwestern Community College Firing Range site located east of River Road and the Tuckasegee Wastewater Treatment Facility in Sylva, Jackson County, North Carolina. This proposal contains our understanding of the project, proposed scope of services, activity schedule, cost estimate, and authorization requirements.

#### **PROJECT INFORMATION**

The site consists of approximately 1.5 acres located east of River Road and the Tuckasegee Wastewater Treatment Facility in Sylva, Jackson County, North Carolina. We understand that the site is currently used by the Southwestern Community College as an active firing range and has been in similar use since the early 1980's. The practice areas consist of two separate areas located on the north side of the access road into the site. Both practice areas are predominantly cleared and covered in grass.

According to a conversation with Mr. Daniel Manring with the Southwestern Community College, the site is used for shooting practice with conventional ammunition. Weapons consist of conventional handguns, shotguns, and rifles. No other incendiary or explosive materials have been used at the site to Mr. Manring's knowledge. The upper/eastern range is used for stationary target practice and the lower/western range is used to target clay skeet.

Since bullets, shell shot, and spent casings typically contain metals (predominately lead) that can be hazardous, there are concerns of potentially contaminated sediment exiting the site into a nearby stream during rainfall events. ECS has been requested to perform an environmental assessment to assist with determining whether or not an approximate 40 foot long by 15 foot wide area located downgradient of the firing range has been adversely impacted by the current and historic use of the site as a firing range. If the downgradient area is adversely impacted, ECS has been requested to determine the quantity of material that would be removed for remediation of the downgradient area.

In order to help develop an appropriate scope of services, ECS met with Mr. Manring at the firing range on August 12, 2014. The scope of this proposal is generally intended to satisfy the requirements of the North Carolina Department of Environmental Quality (NCDEQ), Division of Waste Management, Hazardous Waste Section, *Generator Closure Guidelines* dated December 2, 2013 (the Guidelines).

ECS conducted soil sampling activities in general accordance with Initial Site Sampling Plans (ISSPs) dated February 3, 2015 and July 8, 2015. The sampling area consisted of five 10-foot by 15-foot quadrants located on the western end of the firing range. Composite soil samples were collected from 0 inches to 6 inches below the ground surface (bgs), 2 feet to 3 feet bgs, and 4 feet to 5 feet bgs within each quadrant. Grab soil samples were also collected from 0 inches to 6 inches bgs to the west of the sampling area. Laboratory analysis of the samples indicated elevated concentrations of lead. A summary of the sample results are as follows:

Sample	Sample Type	Total Lead Concentration (mg/kg)	IHSB* Protection of Groundwater PSRG* (mg/kg)
A 0"-6"	Composite	340	270
A 2'-3'	Composite	257	
A 4'-5'	Composite	186	
B 0"-6"	Composite	22,400	
B 2'-3'	Composite	1,740	
B 4'-5'	Composite	458	
C 0"-6"	Composite	24,300	
C 2'-3'	Composite	11,100	
C 4'-5'	Composite	10,200	
D 0"-6"	Grab	33.4	
E 0"-6"	Grab	632	
F 0"-6"	Grab	4,790	
G 0"-6"	Composite	10,500	
G 2'-3'	Composite	3,750	
G 4'-5'	Composite	NS	
H 0"-6"	Composite	1,440	
H 2'-3'	Composite	1,310	
H 4'-5'	Composite	NS	
I 0"-6"	Composite	781	
I 2'-3'	Composite	3,710	
I 4'-5'	Composite	9.9	
J 0"-6"	Composite	8,010	
J 2'-3'	Composite	557	
J 4'-5'	Composite	NS	
K 0"-6"	Composite	58,200	
K 2'-3'	Composite	3,990	
K 4'-5'	Composite	3,230	
M 0"-6"	Grab	23,000	
N 0"-6"	Grab	3,530	
O 0"-6"	Grab	4,870	

\* IHSB = Inactive Hazardous Sites Branch

\* PSRG = Preliminary Soil Remediation Goal

Sample locations and lead concentrations are depicted on the attached figure.



ECS also collected one grab surface water sample from the adjoining stream at a downgradient location from the firing range. Laboratory analysis of the sample indicated an elevated concentration of lead. A summary of the sample results are as follows:

Sample	Sample Type	Lead Concentration (ug/L)	NC2BSWS* (ug/L)
SW-1	Grab	247	25

\* North Carolina 2B Surface Water Standard

Sample location and lead concentration are depicted on the attached figure.

The surface water sample results indicate that lead contamination is leaving the firing range and entering the adjoining stream. Based on a conversation with Ms. Robin Proctor with the NCDEQ, additional assessment is required to determine the extent of lead contamination in the surface water and sediment along the adjoining stream and to assess the extent of soil contamination along the slope between the previously sampled quadrants and the stream.

### **SCOPE OF SERVICES**

Based on our understanding of the project information, ECS proposes the following scope of services. Activities will be performed under the responsible charge of a North Carolina Registered Professional Engineer or Professional Geologist. The scope of work is based on correspondence between Ms. Robin Proctor and Mr. James Bevers with ECS.

- ECS will conduct the work using the previously prepared site-specific health and safety plan.
- ECS will prepare an ISSP per Appendix 3 of the *Guidelines* that formally outlines our site assessment activities for submittal to the Hazardous Waste Branch for approval.
- As required by law, ECS will contact North Carolina One Call utility locating company to identify public underground utilities at the site. Please note that NC One Call only locates public utilities and utilities within public rights-of-way. Therefore, we ask that representatives of the Southwestern Community College assist us by locating private underground utility lines near the subject firing ranges. If necessary and if requested, ECS can provide a private utility locating service for an additional cost.
- ECS will utilize a hand spade to collect grab sediment samples along the stream bed to determine if there is lead contamination present. It is ECS' understanding that portions of the stream have been piped for the development of the wastewater treatment plant (WWTP) to the west of the firing range. Sediment samples will be collected from the stream bed at the following locations:
  - Upstream from the firing range
  - Prior to entering the piping under the WWTP
  - After exiting the piping under the WWTP
  - Every 100 feet along the approximate 500 foot length of drainage from exiting the piping to River Road
  - Prior to entering the culvert under River Road
  - Between River Road and the Tuckasegee River

Sampling equipment will be decontaminated before each sample location by washing in a solution of Alconox and water followed by a distilled water rinse.

- ECS will collect grab surface water samples along the stream to determine the extent of lead contamination present. Surface water samples will be collected from the stream at the following locations:
  - Upstream from the firing range
  - Prior to entering the piping under the WWTP
  - After exiting the piping under the WWTP
  - Halfway along the approximate 500 foot length of drainage from exiting the piping to River Road
  - Prior to entering the culvert under River Road
  - Between River Road and the Tuckasegee River
- ECS estimates that a total of nine sediment samples and six surface water samples will be collected. Sediment and surface water sample locations are depicted on the attached figures. ECS will expedite the sediment and surface water samples collected at the locations indicated above.
- ECS will utilize a hand spade, hand auger, and/or shovel to collect soil samples along an approximate 100 foot by 30 foot grid area located along the slope between the previously sampled quadrants and the stream. Three samples will be collected at 15 foot intervals along the length of the grid area. The soil sample locations will be adjusted in the field based on the actual site conditions. Soil sample locations are depicted on the attached figure. ECS proposes that soil samples will be collected from each sample location at depths of 0 to 12 inches bgs, or until refusal. Each soil sample will be prepared by placing the soil collected in a new, disposal resealable plastic bag and transferred into laboratory prepared sample containers. Sampling equipment will be decontaminated before each sample location by washing in a solution of Alconox and water followed by a distilled water rinse. ECS will prepare a sample location map to document the location of each sampling point.
- Depths at each sampling location will be dependent on subsurface conditions. Based on previous samples collected in this area, refusal occurred prior to 12 inches bgs.
- ECS estimates a total of 19 grab samples will be collected from the grid area. ***Please note that, while numerous soil samples will be collected from the above-referenced area, not all of the samples will likely be tested in the laboratory. In an effort to reduce laboratory costs, ECS will analyze the outermost samples and hold the remaining samples collected until the laboratory results are received, then assign additional samples for testing as necessary to define the extent of the contamination.*** The soil samples will be tested for total lead using EPA Method 6010.
- ECS will prepare one equipment rinsate blank sample to document field quality control and decontamination procedures.

- The collected samples will be appropriately packaged and shipped under chain-of-custody protocol to a NC Certified Laboratory for chemical analysis. In order to provide a cost-conscious approach to the analytical laboratory costs, we propose to hold the samples and submit them to the laboratory in a phased manner as described above.
- Upon receipt of laboratory results, ECS will prepare a summary report describing our assessment activities in accordance with the approved ISSP, the results obtained, and our conclusions and recommendations regarding remediation of the site.


### **CLOSURE**

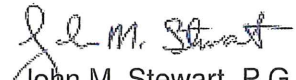
This letter is the agreement for our services. Attached to this letter, and an integral part of our proposal, are our "General Conditions of Service" and our Proposal Acceptance Sheet. Your acceptance of this proposal may be indicated by signing and returning one of the enclosed copies to us.

We sincerely appreciate our continuing relationship with the Southwestern Community College, and we are excited to have the opportunity to assist you with this project.

Respectfully submitted,

**ECS CAROLINAS, LLP**

  
James C. Bevers, EI  
Environmental Project Manager

  
John M. Stewart, P.G.  
Principal Geologist

Enclosures: Proposed Sample Locations Figures



### Sediment Sampling

Sample	Sample Type	Lead Concentration (mg/kg)	IHSB Industrial PSRG (mg/kg)	IHSB Protection of Groundwater PSRG (mg/kg)
S-1	Grab	365	800	270
S-2	Grab	153		
S-3	Grab	215		
S-4	Grab	49.3		
S-5	Grab	639		
S-6	Grab	577		
S-7	Grab	307		
S-8	Grab	902		
S-9	Grab	68.0		

### Surface Water Sampling

Sample	Sample Type	Lead Concentration (ug/L)	NC2BSWS* (ug/L)
SW-1	Grab	286	25
SW-2	Grab	21.4	
SW-3	Grab	71.8	
SW-4	Grab	66.5	
SW-5	Grab	539	
SW-6	Grab	<10.0	

### Soil Sampling

Sample	Sample Type	Lead Concentration (mg/kg)	IHSB Industrial PSRG (mg/kg)	IHSB Protection of Groundwater PSRG (mg/kg)
A 0"-6"	Composite	340	800	270
A 2'-3'	Composite	257		
A 4'-5'	Composite	186		
B 0"-6"	Composite	22,400		
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J 2'-3'	Composite	557		
J 4'-5'	Composite	NS		
K 0"-6"	Composite	58,200		
K 2'-3'	Composite	3,990		
K 4'-5'	Composite	3,230		
M 0"-6"	Grab	23,000		
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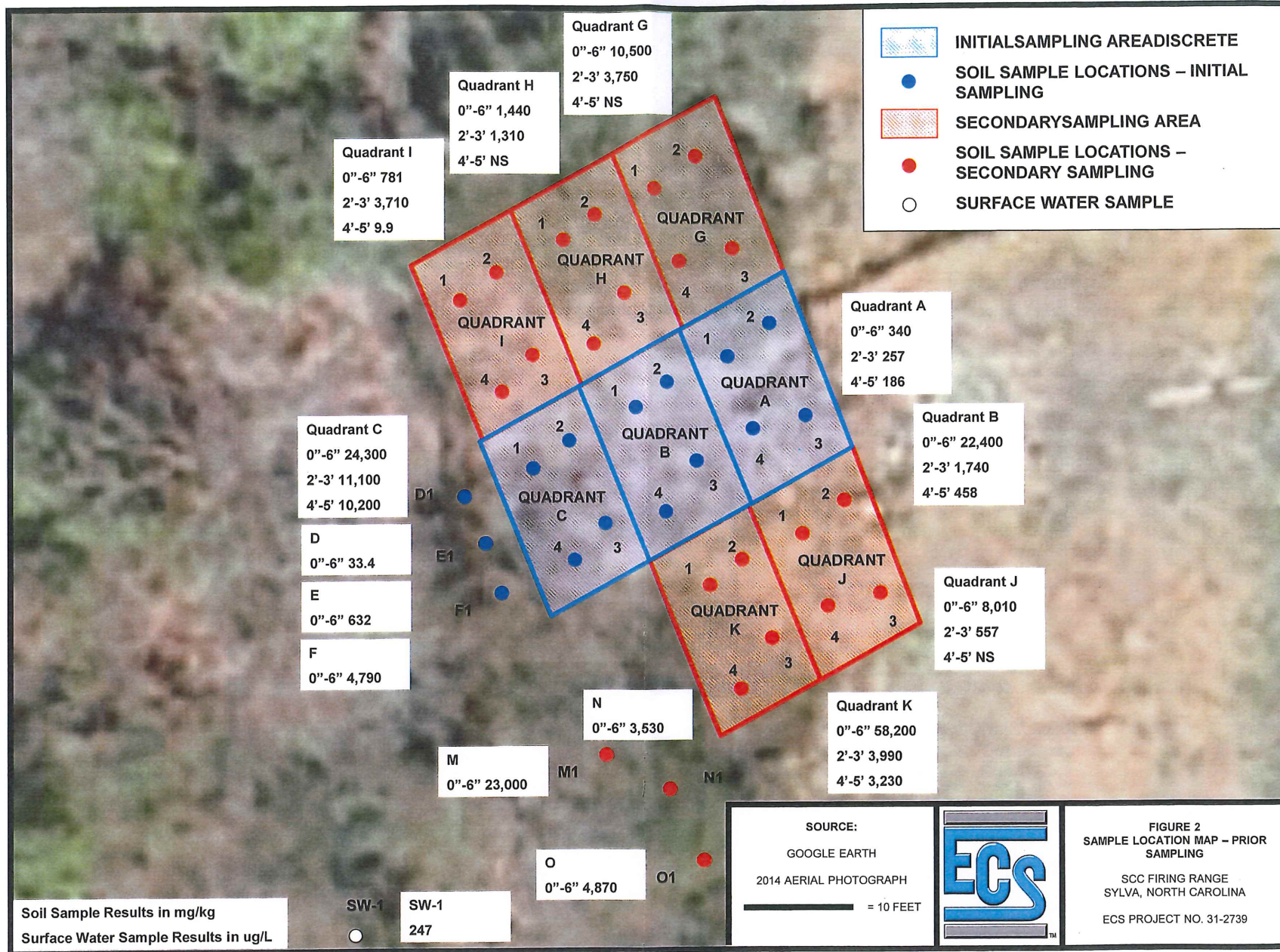
\*IHSB = Inactive Hazardous Sites Branch

\*PSRG = Preliminary Soil Remediation Goal

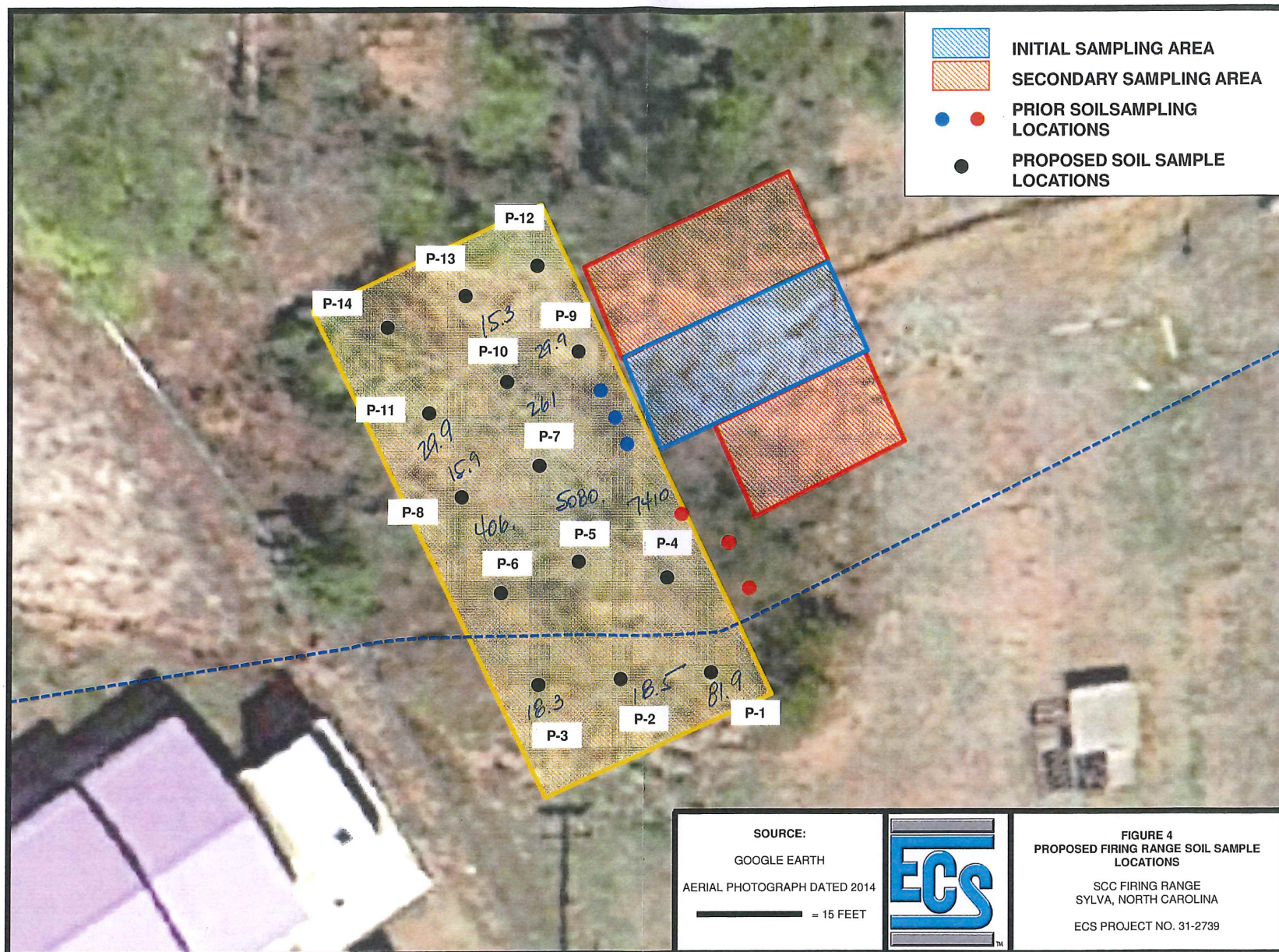
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\*North Carolina 2B Surface Water Standard









-  INITIAL SAMPLING AREA
-  SECONDARY SAMPLING AREA
-  PROPOSED SEDIMENT SAMPLE LOCATIONS
-  PROPOSED SURFACE WATER SAMPLE LOCATIONS
-  APPROXIMATE STREAM LOCATION

