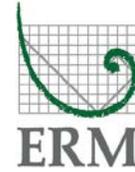


November 9, 2015

Mr. Sean Boyles
North Carolina Department of Environmental Quality
Division of Waste Management-Superfund Section
225 Green Street, Suite 714
Fayetteville, North Carolina 28301
sean.boyles@ncdenr.gov

ERM NC, Inc.
1130 Situs Court.
Suite 250
Raleigh, NC 27606
(919) 233-4501
(919) 233-4505 (fax)



Subject: Property Boundary Well Installation and Modified
Groundwater Monitoring Program Work Plan
Former Abbott Labs Facility, Solvent Release Incident
Laurinburg, Scotland County, North Carolina
NCDENR DWM Site #NONCD-000-0040

Dear Mr. Boyles:

On behalf of Abbott Laboratories (Abbott), ERM NC, Inc. (ERM) is pleased to submit the Property Boundary Well Installation and Modified Groundwater Monitoring Program Work Plan for the Former Abbott Facility in Laurinburg, North Carolina. This work plan describes the installation of one type II monitoring well at the southern property boundary and the amendment of the sampling methodology at select monitoring wells through the use of passive diffusion bags (PDBs).

Property Boundary Well Installation

One type II, flush mounted groundwater monitoring well is proposed near the southern site property boundary and is shown as MW-106C on [Figure 1](#). The proposed location is between the locations of two direct push technology (DPT) groundwater samples (RI(A1)-GW06 & RI(A1)-GW07) collected in April 2015. Groundwater samples collected at these locations detected volatile organic compounds (VOCs) slightly above the NCAC 2L groundwater standards. The monitoring well will be drilled to a total depth of 60 feet below ground surface (bgs) and screened between 50 and 60 feet to capture groundwater from the same depth interval as the previously collected DPT groundwater samples. The monitoring well construction diagram is provided as [Appendix A](#). The well installation event is expected to take one day in the field. NC One Call will be notified prior to drilling and a private utility locator will be used to clear the boring location prior to drilling. The purpose of the proposed monitoring well is to be able to monitor over time the zone and location of the highest VOC concentrations in groundwater at the property boundary. The analytical results will determine if groundwater is migrating off-site at concentrations exceeding the NCAC 2L

groundwater standards and will dictate the remedial approach regarding the newly revised risk-based remediation rules.

Groundwater Monitoring Program Modifications

For the December 2015 groundwater monitoring event, ERM will follow the sampling plan that was conducted during the November 2014 sampling event. As a modification to the sampling methodology, ERM proposes to use PDBs to sample 9 of the 25 monitoring wells to be sampled during the upcoming event. The 9 wells proposed for sampling using PDBs were chosen because they are scheduled for VOC sampling only, and are indicated with gray shaded Well No. in Tables 1-1 and 1-2. The newly installed property boundary well (MW-106C) will be sampled by the low-flow purging and sampling methodology due to the lack of historical groundwater data. The remaining 15 monitoring wells require additional groundwater volume for total organic carbon and total chloride analyses and the PDB does not provide sufficient volume. As a result of the PDB groundwater sampling method, water quality parameters including pH, conductivity, temperature, dissolved oxygen, oxidation-reduction potential, and turbidity will not be measured at the monitoring wells to be sampled using PDBs. The PDBs at the 9 specified monitoring wells will be placed in the wells during the property boundary well installation. The PDBs will be allowed to equilibrate for a minimum of 14 days as recommended in the Region 4 United States Environmental Protection Agency Science and Ecosystem Support Division, Groundwater Sampling Operating Procedure dated March 6, 2013. Upon completion of the December event, PDBs will be placed in 13 wells (i.e., those wells which are scheduled only for VOCs sampling) in preparation for the following April 2016 sampling event. The newly installed property boundary well (MW-106C) will again be sampled by the low-flow purging and sampling methodology due to the lack of historical groundwater data. The sampling analysis plans for the December 2015 and April 2016 sampling events are provided as [Tables 1-1](#) and [1-2](#). This modification in sampling method will reduce future sampling costs while still providing the necessary groundwater VOC data. The elimination of water quality parameter measurements at select wells is not expected to pose a significant data gap due to the many years of water quality parameter measurements at each monitoring well.

Mr. Sean Boyles
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November 9, 2015

If you have any questions or comments regarding this project, please contact Greg at (919) 233-4501 or Rick at (704) 541-8345. We look forward to your prompt approval.

Sincerely,



Gregory Kanellis, E.I.
Project Manager



Rick Tarravechia, P.G., RSM
Principal



Cc: Curtis Michols - Abbott
Project file

Attachments:

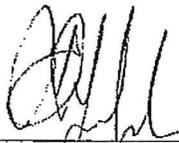
- Figure 1 - Proposed Well Location Map
- Table 1-1 - December 2015 Sampling and Analysis Plan
- Table 1-2 - April 2016 Sampling and Analysis Plan
- Appendix A - Proposed Monitoring Well Construction Diagram

Professional Certification Page

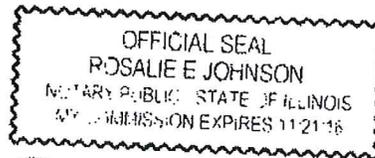
Work Plan for Property Boundary Well Installation and Modified
Groundwater Monitoring Program
Former Abbott Facility
Solvent Release Remediation
Laurinburg, Scotland County, North Carolina

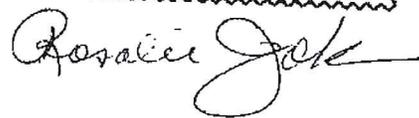
NCDENR Site I.D. #NOCD 000 0040
November 2015

"I certify that, to the best of my knowledge, after thorough investigation, the information contained in or accompanying this certification is true, accurate, and complete."



Mr. Curtis R. Nichols
Senior Principal Specialist
Abbott Laboratories

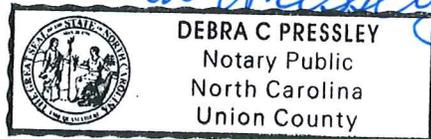


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Mr. Rick Tarravechia, P.G., RSM
Principal in Charge
ERM NC, Inc.

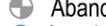
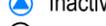
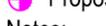
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Notary Public
North Carolina
Union County

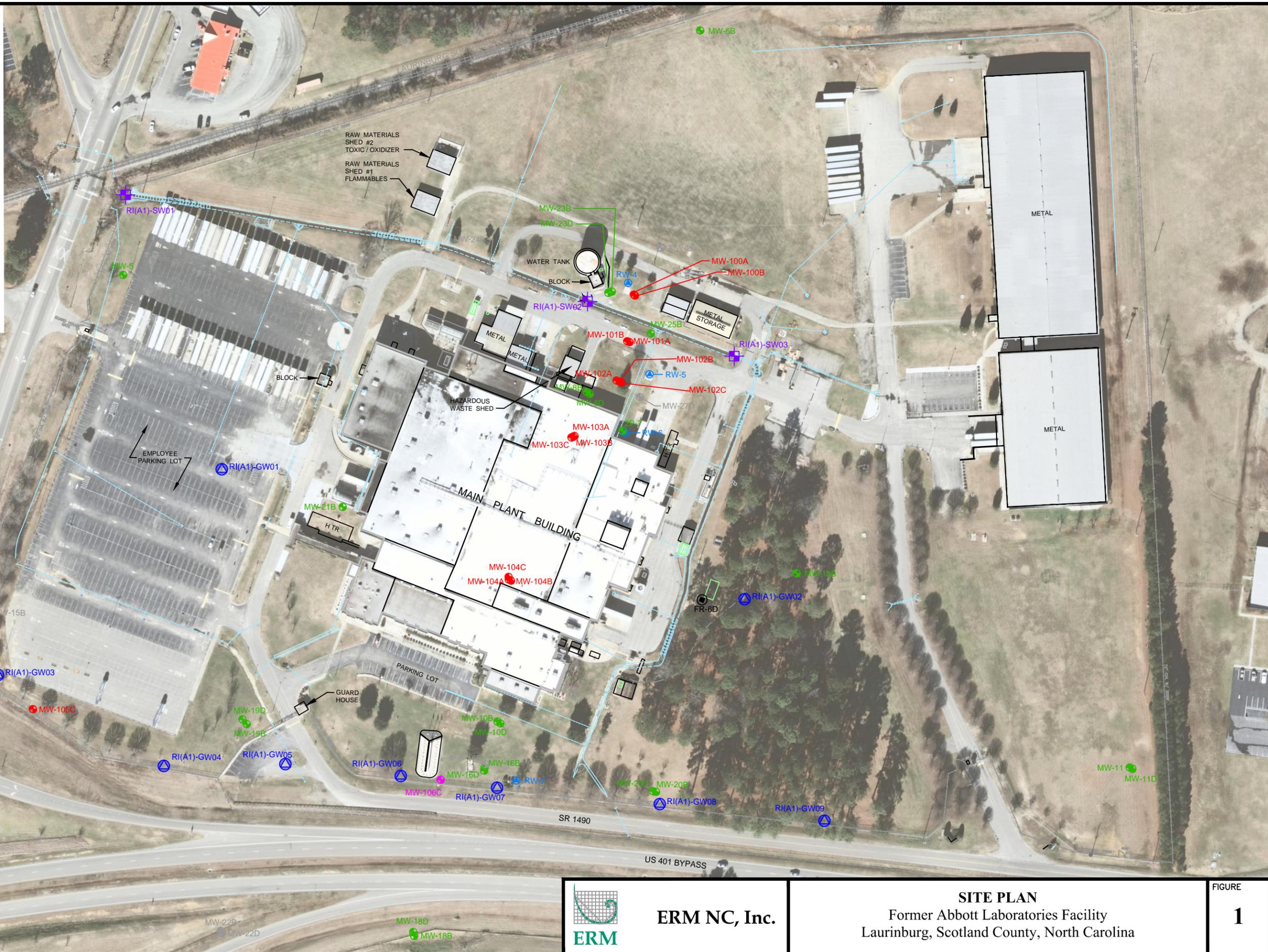
Figures

Explanation

-  Railroad Tracks
-  NCDOT Fence Line
-  Site Fence Line
-  Groundwater Remediation Line
-  Drainage Line
-  Bioremediation Monitor Well (Post 2002)
-  Recovery System Monitor Well (Pre 2002)
-  Abandoned Monitor Well
-  Inactive Groundwater Recovery Well
-  Fuel Oil Release Monitor Well
-  RI DPT Groundwater Sample Location
-  RI Surface Water Sample Location
-  Proposed Monitor Well

Notes:

1. Wells labeled with "A" suffix monitor shallow groundwater at depths <30 feet below ground surface (bgs). Progressively deeper monitor intervals are shown as "B", "C" and "D" labeled wells.



2015_Abbott_Labs_RI_Add.dwg
2015-11-02
ABF

Sources: Base Map provided by AECOM, originally by Excel Civil & Environmental Associates, PLLC.
Aerial photography provided by NCOneMap.



ERM NC, Inc.

SITE PLAN
Former Abbott Laboratories Facility
Laurinburg, Scotland County, North Carolina

Tables

Table 1-1: Summary of Groundwater Monitoring Program: December 2015

Well No.	Fixed-Base Laboratory Analyses ¹				Field Measurements	
	VOCs (Method 8260B)	VOCs + TICs (Method 8260B)	Total Organic Carbon (SM-5310B)	Total Chloride (EPA 300/9056A)	Water Quality Indicators ²	Water Level
Number of Samples	25	8	13	14	16	28
MW-100A	X	X	X	X	X	X
MW-100B	X	X	X	X	X	X
MW-101A	X	X	X	X	X	X
MW-101B	X	X	X	X	X	X
MW-102A	X	X	X	X	X	X
MW-102B	X	X	X	X	X	X
MW-102C	X	X	X	X	X	X
MW-103A	X		X	X	X	X
MW-103B	X		X	X	X	X
MW-103C	X		X	X	X	X
MW-104A	X		X		X	X
MW-104B	X		X	X	X	X
MW-104C	X		X	X	X	X
MW-105C	X					X
MW-106C (proposed)	X	X			X	X
MW-6B						X
MW-10B	X			X	X	X
MW-10D	X			X	X	X
MW-13B						X
MW-16B	X					X
MW-16D	X					X
MW-18B	X					X
MW-18D	X					X
MW-19B	X					X
MW-19D	X					X
MW-20B	X					X
MW-20D	X					X
MW-21B						X

Notes:

¹ Fixed-base laboratories include Accutest Laboratories and AbbVie EHS Laboratory (formerly Abbott EHS Laboratory)

² Water quality indicators include pH, temperature, dissolved oxygen, oxidation-reduction potential, turbidity, and specific conductance

VOCs = volatile organic compounds

MW-105C Shaded cells indicate wells proposed to be sampled via passive diffusion bags

Table 1-2: Summary of Groundwater Monitoring Program: April 2016

Well No.	Fixed-Base Laboratory Analyses ¹					Field Measurements	
	VOCs (Method 8260B)	VOCs + TICs (Method 8260B)	Total Organic Carbon (SM-5310B)	Alkalinity (SM-2320B)	Methane/ Ethane/ Ethene (RSK-175)	Water Quality Indicators ²	Water Level
Number of Samples	21	7	7	6	4	10	28
MW-100A	X		X			X	X
MW-100B	X		X	X	X	X	X
MW-101A	X		X			X	X
MW-101B	X		X	X	X	X	X
MW-102A	X		X			X	X
MW-102B	X		X	X	X	X	X
MW-102C	X		X	X		X	X
MW-103A	X						X
MW-103B	X			X	X	X	X
MW-103C	X			X		X	X
MW-104A	X						X
MW-104B	X	X					X
MW-104C	X	X					X
MW-105C	X						X
MW-106C (proposed)	X	X				X	X
MW-6B							X
MW-10B	X						X
MW-10D	X						X
MW-13B							X
MW-16B	X	X					X
MW-16D	X	X					X
MW-18B							X
MW-18D	X	X					X
MW-19B							X
MW-19D	X	X					X
MW-20B							X
MW-20D							X
MW-21B							X

Notes:

¹ Fixed-base laboratories include Accutest Laboratories and AbbVie EHS Laboratory (formerly Abbott EHS Laboratory)

² Water quality indicators include pH, temperature, dissolved oxygen, oxidation-reduction potential, turbidity, and specific conductance

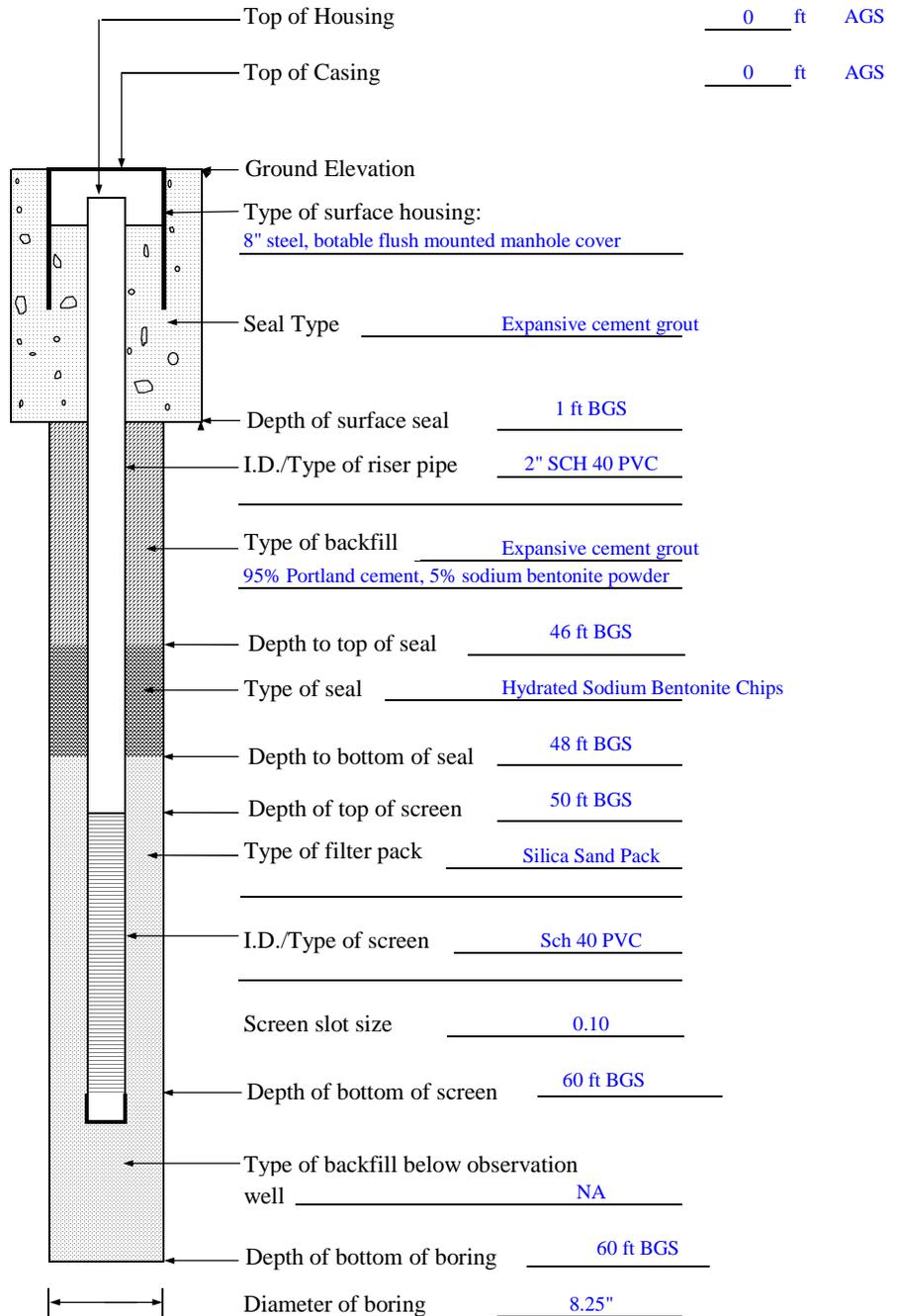
VOCs = volatile organic compounds

MW-105C Shaded cells indicate wells proposed to be sampled via passive diffusion bags

Appendix A
Proposed Monitoring Well Construction Diagram

PROPOSED MONITORING WELL DIAGRAM

Site: Former Abbott Laboratories Facility
Address: Laurinburg, Scotland County, North Carolina
Well ID: MW-106C (proposed)
Install Method: To Be Determined
Installed By: To Be Determined **Date:** To Be Determined
Notes: The following presents a generalized schematic of the proposed Type II monitoring well



Notes:
 Diagram not to scale
 BGS - below ground surface
 AGS - below ground surface