CON: 12-15
Doc # 14899

Seneca Environmental Services
Des Moines • Bettendorf

WORK PLAN FOR

ENVIRONMENTAL INVESTIGATION

NEW CENTURY FARM SERVICE
253 HWY S-52
NEWTON, IOWA

PREPARED FOR:

DWAYNE JACOBS
NEW CENTURY FS, INC
BOX 781
GRINNELL, IOWA 50112

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INTRODUCTION

Seneca Companies has prepared the following work plan to complete additional investigation at the New Century Farm Service Site, Newton, IA. A farm located south of the New Century FS site has a drinking water well impacted with MTBE that may have originated at the New Century FS site. The Iowa Department of Natural Resources (IDNR) on October 17, 2002 issued a letter requiring that the New Century FS submit a site assessment report.

The IDNR completed a report on October 25, 2002, identifying the presence of methyl-tertiary butyl ether (MtBE) in a water well located at the Russell farm. Through GeoProbe investigation, the IDNR has identified the New Century FS facility to be a possible source of the contaminants in the water well. Mr. Daniel Cook of the IDNR stated that the IDNR would like to pursue the identification of the source soil impact and to devise a strategy to remediate the soils through excavation or other means. The intent of this work would be to eliminate the source of the MtBE to reduce the long-term migration of groundwater impact through removal of the source material that leaches from the soil into the groundwater. At this time, the New Century FS plans to connect the Russell Farm to rural water, and limit the well to outdoor activities such as watering the lawn.

OBJECTIVE

The main objective of the field investigation is to identify the zones of MtBE impact to soil at the suspected source areas including the gasoline USTs and ASTs. The field investigation will identify the contaminant distribution vertically in the source areas, and establish or confirm groundwater transport conditions including flow direction, hydraulic conductivity, and groundwater gradient. The data collected will be used to establish a plan of action to reduce MtBE transport from the source area.

Since MtBE shows preference to the liquid phase, we do not believe that considerable contaminant mass will be observed in the soil. Therefore, a portion of the focus will be on distribution of the contamination mass in the groundwater.

The most likely source area is below the unleaded AST tank #5 located at the AST farm. There are six ASTs in this area that were put into service in 1972 or 1973. The tanks are: #1 12,000 gal RHO/#1Fuel Oil, #2 - 15,000 gallon Thermolene/#2 Fuel Oil (dyed), #3 - 17,000 gallon Dieselex 2E, #4 - 17,000 gallon Dieselex 2E, #5 - 17,000 gallon unleaded with alcohol, and #6- 12,000 gallon Dieselex low sulfur. A leak of approximately 300 gallons was reported in 1993 from the bottom of the AST #5. The release was on frozen ground, and most of the product was recovered. The bottom of the tank was replaced.

The possibility of soil removal will be reviewed, however, soil removal has some limitations. The tanks are still in place, reducing the area that can be excavated. MtBE shows liquid preference, and may not still be present in the soil. Also, the estimated depth of MtBE impact, approximately 20' below grade, exceeds general excavation abilities. Alternate methods of contamination removal will be presented in the report based on field results.

SAMPLE COLLECTION

Seneca Environmental plans to install soil borings and monitoring wells in areas to identify the source of contamination and the extent that it has migrated. The following soil borings/ monitoring wells are proposed:
One soil boring at the former 3,000 gasoline UST location, to be converted to a monitoring well only if field screening indicates elevated VOC levels.
One soil boring at the south end of the 1,000 gasoline and 1,000 diesel ASTs, to be converted to a monitoring well only if field screening indicates elevated VOC levels.
One soil boring at the location of FS5, southeast of the AST farm, converted to a monitoring well with multiple screened levels.
One soil boring west, east, and north of AST field (three total), converted to a monitoring well with multiple screened levels.
One soil boring hand augured in the AST farm near the AST #5, 20' maximum depth or auger failure.

Monitoring wells will be constructed using a truck mounted hydraulic drilling unit. An 8.25" OD or 6.25" OD hollow stem auger with a 5' core barrel will be used for drilling. Soil samples will be collected using a continuous sampler that will be decontaminated between samples. Continuous field screening will be completed in 1' increments to the bottom of the boring, at least 5' into the water table and showing PID readings of <10 ppm TPH. A 3" hand auger will be used in areas inaccessible to the drilling rig. Due to the small auger size, the hand auger allows access to tight areas and very accurate descriptions of the site geology. Soil samples for MtBE analysis will be collected at the water table and at the highest PID reading. Soil samples will be taken using clean latex gloves. Samples will then be placed in 4 oz jars, placed on ice, and shipped to a certified laboratory within 72 hours of collection for analysis.

According to the IDNR, the depth to groundwater at the site is approximately 12' below grade. Monitoring wells will be constructed with PVC casing and screens either 2" diameter for single wells or 1" diameter for multiple screened levels within the same well. The 2" diameter wells will be screened from approximately 10' to 20' below grade to sample the uppermost aquifer. The wells with multiple screened levels will consist of three 1" casings, screened. To sample the uppermost aquifer, one screened interval will cover 10' to 20' below grade. The second screened interval will cover the area of previously identified contamination or high PID readings, estimated to be 25' to 30' below grade. The third screened interval will be at the bottom of the well, below the contaminated area, from approximately 35' to 40' below grade. A borehole will be drilled to approximately 40'. The lower well with screen from 35' to 40' will be installed and sand pack will be completed to just above the screened interval. Bentonite will be placed from 30' to approximately 34.5'. The second well with screen from 25' to 30' will then be installed and sand pack will be completed to just above the screened interval. Bentonite will be placed from 20' to approximately 24.5'. The uppermost well with screen from 10' to 20' will then be installed and sand pack will be completed to just above the screened interval. Bentonite will be placed from the surface to approximately 9.5'.

All monitoring wells will be purged of three casing volumes of water, or until the water is observed to be free of sediment or until dry. When it has been determined that the well had been adequately purged and developed, groundwater will be allowed to return to its static level. Upon recovery, samples will be taken by utilizing a clean, clear, disposable PVC bailer. The sample will be visually observed for the presence of product, product sheen, or emulsion and observed for petroleum vapors. The sample will then be poured into a laboratory cleaned 40 mL vial, iced, and shipped to a certified laboratory for analysis. This method minimizes the risk of cross contamination and allows for the collection of groundwater which is representative of the surrounding formation. Sampling will be performed using clean latex gloves. Water levels will be taken using an Alconox cleaned water probe.

Groundwater measurements will be collected using an interface probe capable of measuring to 0.01' resolution. Monitoring wells will be surveyed to a local or USGS benchmark if identified within ½ mile of the site. If a benchmark is not available, the wells will be surveyed to an arbitrary on site location. Depth to groundwater measurements will be calculated by subtracting the depth to water measured from the top of casing elevation. Monitoring wells will be developed using a disposable bailer or Waterra foot valve pump and tubing. Hydraulic conductivity tests will be performed at a well near sample FS-5, in an upgradient well, and downgradient well. The Russell farm well and any other identified water wells in the general downgradient location will be sampled.

SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

Boring/Well Number:	Facility:	Facility Street Address:
2" well example	SITE	ADDRESS
Boring Depth (ft) X Diameter (in):		Drilling Method:
Well contractor Name: Registration Number:		Logged By:
Ground Surface Elevation (ASL):		Top of Casing Elevation (ASL):
Date: Start Time:	Date: End Time:	UST Number: / LUST Number:

Depth (feet)	Well Construction Details Well casing-2" Dia. Sched 40 PVC	Blow Count	Sample No.	Sample Type	PID/FID Reading	USCS Class.	Soil Classification
0		N/A					Overlay Material -Concrete
1							
2							
3	Bentonite						
4							
5	Riser						
6							
7							
8							
9							
10							
11							
12	v						
13							
14							
15	Sand						
16							
17							
18							
19							
20	Casing						
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

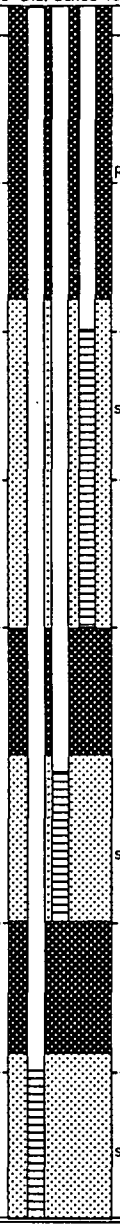
* SS (Split Spoon) HSA (Hollow Stem Auger)

Observations	Date:					
Water Levels (ASL)	Level:					
Static Water Level v	Time:					

SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

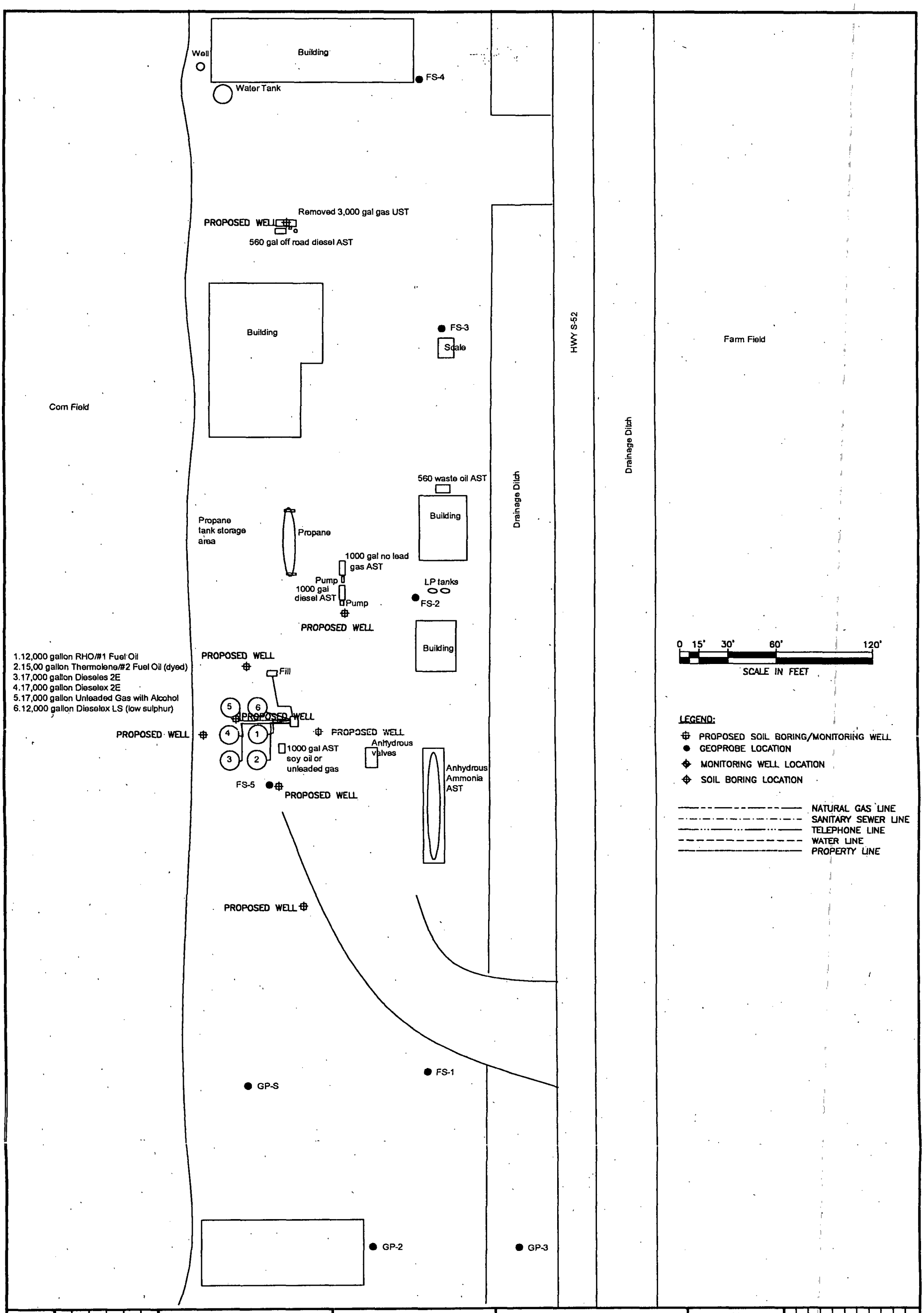
Boring/Well Number:	Facility:	Facility Street Address:
1" well example	SITE	ADDRESS
Boring Depth (ft) X Diameter (in):		Drilling Method:
Well contractor Name:		Logged By:
Registration Number:		
Ground Surface Elevation (ASL):		Top of Casing Elevation (ASL):
Date:	Date:	UST	LUST
Start Time:	End Time:	Number:	Number:

Depth (feet)	Well Construction Details Well casing-1" Dia. Sched 40 PVC	Blow Count	Sample No.	Sample Type	PID/FID Reading	USCS Class.	Soil Classification
0		N/A					Overlay Material -Concrete
1							
2							
3	Bentonite						
4							
5	Riser						
6							
7							
8							
9							
10							
11							
12	v						
13	screen						
14							
15	Sand						
16							
17							
18							
19							
20							
21							
22							
23	Bentonite						
24							
25							
26							
27							
28	Sand						
29	screen						
30							
31							
32							
33	Bentonite						
34							
35							
36							
37							
38	screen						
39							
40							



* SS (Split Spoon) HSA (Hollow Stem Auger)

Observations	Date:					
Water Levels (ASL)	Level:					
Static Water Level v	Time:					



SHEET NO. 1 OF 1

PROJECT NO. 8236500

FILENAME 8236500

SCALE: 1"=60'

DRAWN BY: JR

CHECKED BY: Roy Widder

DATE: 7/2/03

JOB DESCRIPTION
New Century Farm Service
253 Hwy S-52
Newton, IA

SHEET TITLE
SCALED SITE PLAN

SENECA
ENVIRONMENTAL SERVICES

REVISION
BY