

From: Henderson, Dave <Dave.Henderson@aecom.com>
Sent: Wednesday, May 2, 2018 1:20 PM
To: Beggs, Tauren R - DNR
Cc: GravelPit (GravelPit@manitowoc.org)
Subject: Newton Pit - Northern Source Area info
Attachments: Northern Source Area Summary memo complete.pdf

Tauren,

As discussed – attached is a summary memo of the work conducted in the Northern Source Area. Jeff put this together for the City to summarize the work and confirm our understanding of the area.

The figures associated with the memo will provide a time sequence showing where we sampled and how it's changed over time.

It may be helpful for our meeting tomorrow.

Thanks
dsh

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Project Name:
Newton Gravel Pit

Project Ref: 60135471

From: Jeff Maletzke, AECOM

Date:
September 20, 2017

To:
Ms. Kathleen M. McDaniel
Manitowoc City Attorney

CC: Mr. Dan Koski, City of Manitowoc

Memo

Subject: Former Town of Newton Gravel Pit, BRRTS No.: 02-36-000268
DRAFT – North Source Area Summary

Extensive site characterization has been completed at the Former Town of Newton Gravel Pit associated with delineating the Western Source Area and addressing impacts to soil and groundwater. Considerable historical work has also been completed to investigate a possible second disposal area in the northern portion of the former gravel pit. This memo provides a summary of the efforts completed early on in the site's investigation history in conjunction with this potential Northern Source Area, including backhoe excavations, an electromagnetic (EM) survey, soil borings, and hydropunch groundwater sampling points. The approximate locations of these data points have been superimposed on historical air photos from 1967, 1973, 1990, and 2015 (Attachment A) to aid with corroborating the physical data with witness interviews.

Initial Investigation

At a meeting with the WDNR on February 3, 1993, the City indicated that questioning of former site workers (i.e., truck drivers, etc.) revealed the possibility of a disposal area in the northern portion of the gravel pit. Based on this information, eight backhoe test pit excavations were completed within the suspected footprint of the northern disposal area on March 3, 1993. The eight excavations (approximate locations shown on figures in Attachment A) ranged between 4 and 12 feet deep within lean clay fill with some gravel and cobbles. As indicated in Test Pit Logs (Attachment B), crushed blacktop as well as angle iron, tree branches, and scrap lumber were encountered in several excavations. Although the backhoe excavations in the suspected northern disposal area did not indicate past disposal practices consistent with the Western Source Area, the City indicated that the likelihood of past waste disposal in the northern portion of the gravel pit was strong.

A soil boring (B-15) was attempted in April 1993. The boring encountered difficult drilling conditions with concrete, wood, and asphalt debris to approximately 14 feet below ground surface (feet bgs). The boring location was offset and met with the same results. Therefore, only one soil sample was collected from B-15 from 12 to 14 feet bgs. The only compound detected was naphthalene at 0.044 mg/kg. The boring log for B-15 is included in Attachment C.

A surface water sample was collected from Silver Creek directly downgradient of the suspected northern source area in April 1993. No contaminants were detected in the sample.

Electromagnetic Survey

On July 13, 1994, an electromagnetic (EM) survey was conducted at the Northern Source Area to determine the limits of debris previously encountered during the initial investigation described above and to help locate borings along the perimeter of the fill area outside the limits of waste. The EM technique measures composite electrical conductivity to approximately 20 feet bgs. Conductivity values in the surveyed area ranged from a high of 37.8 mmhos/min to a low of 18.78 mmhos/min. Background (undisturbed) portions of the surveyed area have conductivity values in the approximate range of 7 to 13 mmhos/min. The results suggested a filled area approximately 250 feet long by 100 feet wide as shown on the Northern Source Area Mag Survey figure in Attachment A.

Additional Investigation

Four additional soil borings (B-16 through B-19) were completed in July 1994 around the perimeter of the suspected northern disposal area (based on the EM survey). The boring logs are included in Attachment C. These borings were located to provide vertical characterization of the extent of contaminants in soil and groundwater. The borings were continuously sampled with a split-spoon to the water table and the soils were logged. At each sample interval, soil was collected, PID headspace readings measured, and the sample with the highest PID headspace reading was selected and submitted for laboratory chemical analysis. At the water table in each boring, a grab sample of groundwater was collected and submitted for VOC analysis. After the groundwater samples were collected, the borings were abandoned. A copy of Table 2 from the Site Investigation and Remedial Actions Options Report (Rust E&I, June 1996) is included in Attachment D. The table summarizes the soil and groundwater sample depths as well as the total depth of each of the borings.

Vertical groundwater profiling utilizing a Hydropunch was completed at HP-11 to a total depth of 125 feet bgs. A groundwater sample from the top of the water table was not collected because the Hydropunch did not open after being driven to the specified depth (approximately 30 feet bgs). However, groundwater samples were collected from nearby borings B-16 and B-19, therefore, a second attempt to collect a water table sample at HP-11 was not attempted. Groundwater samples were collected between 62 and 66 feet bgs and 92 and 96 feet bgs. A soil sample was collected between 123 and 125 feet bgs. The log for HP-11 is included in Attachment C.

Soil and groundwater results are shown in the copies of tables from the 1996 Site Investigation and Remedial Actions Options Report included in Attachment C. In general, the concentrations of SVOCs, VOCs, and inorganic constituents were low in soil samples. The soil sample from 10 to 12 feet bgs at B-16 contained a number of SVOCs at mg/kg levels and traces of VOCs. The soil sample at B-16 also had higher levels of arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver relative to the other samples in the northern disposal area.

For groundwater samples, the PAL for benzene was exceeded in three of six sample locations (B-16, B-17, and HP-11), however, the ES was not exceeded. The PAL for trichloroethylene was exceeded at four of six groundwater sample locations (B-16 through B-19). Two of the locations (B-16 and B-19) exceeded the ES. Total chlorinated and non-chlorinated VOC concentrations (July 1994 data) have been transferred to a copy of the 2015 aerial photo included in Attachment A. The highest concentrations were detected at B-16, with total chlorinated and non-chlorinated VOC concentrations of 29 ug/l and 16 ug/l, respectively. For perspective, total chlorinated VOC concentrations in the Western Source Area ranged between approximately 1,814 and 161,000 ug/l. Similarly, non-chlorinated VOC concentrations in the Western Source Area ranged between approximately 75 and 236,000 ug/l.






Summary and Conclusions

- Witness interviews consistently indicate the presence of a past northern disposal area.
- Field reconnaissance, review of historical aerial photos, and site investigation activities completed in 1993 and 1994 corroborate the location of Northern Source Area in the vicinity of the new police building parking area.
- EM survey data suggest the Northern Source Area encompasses a filled area approximately 250 feet long by 100 feet wide.

- Excavations extended to 12 feet bgs in the Northern Source Area encountered debris but did not reveal past disposal practices consistent with the Western Source Area.
- Witness interviews suggest that the depth of disposal may have been as deep as 25 to 30 feet bgs. As shown on the 1973 aerial photo in Attachment A, the elevation difference between the ground surface in the vicinity of the Northern Source Area and Silver Creek is approximately 26 feet. Thus, a reported disposal depth in the range of 25 to 30 feet likely coincided with the water table.
- A boring completed within the Northern Source Area (B-15) met with refusal at approximately 14 feet bgs after encountering construction debris. Borings completed around the perimeter of the Northern Source Area (B-16 through B-19) were extended to depths ranging between 24 and 32 feet bgs providing for characterization of both soil and groundwater at depths coincident with the reported disposal depth.
- A Hydropunch sampler at HP-11 provided deeper groundwater characterization at depths of 62 to 66 feet bgs and 92 to 96 feet bgs, and soil results at a depth of 123 to 125 ft bgs.
- Historical groundwater sampling at WP-05 and WP-08 provided additional downgradient water quality data. Contaminants of concern were not detected at either of these locations.
- Historical soil sample data indicate that contaminant levels in the Northern Source Area are generally low, especially in comparison to the Western Source Area.
- Historical groundwater sample data indicate groundwater impacts are minor and appear confined to the Northern Source Area.

Attachment A
Figures

LEGEND:

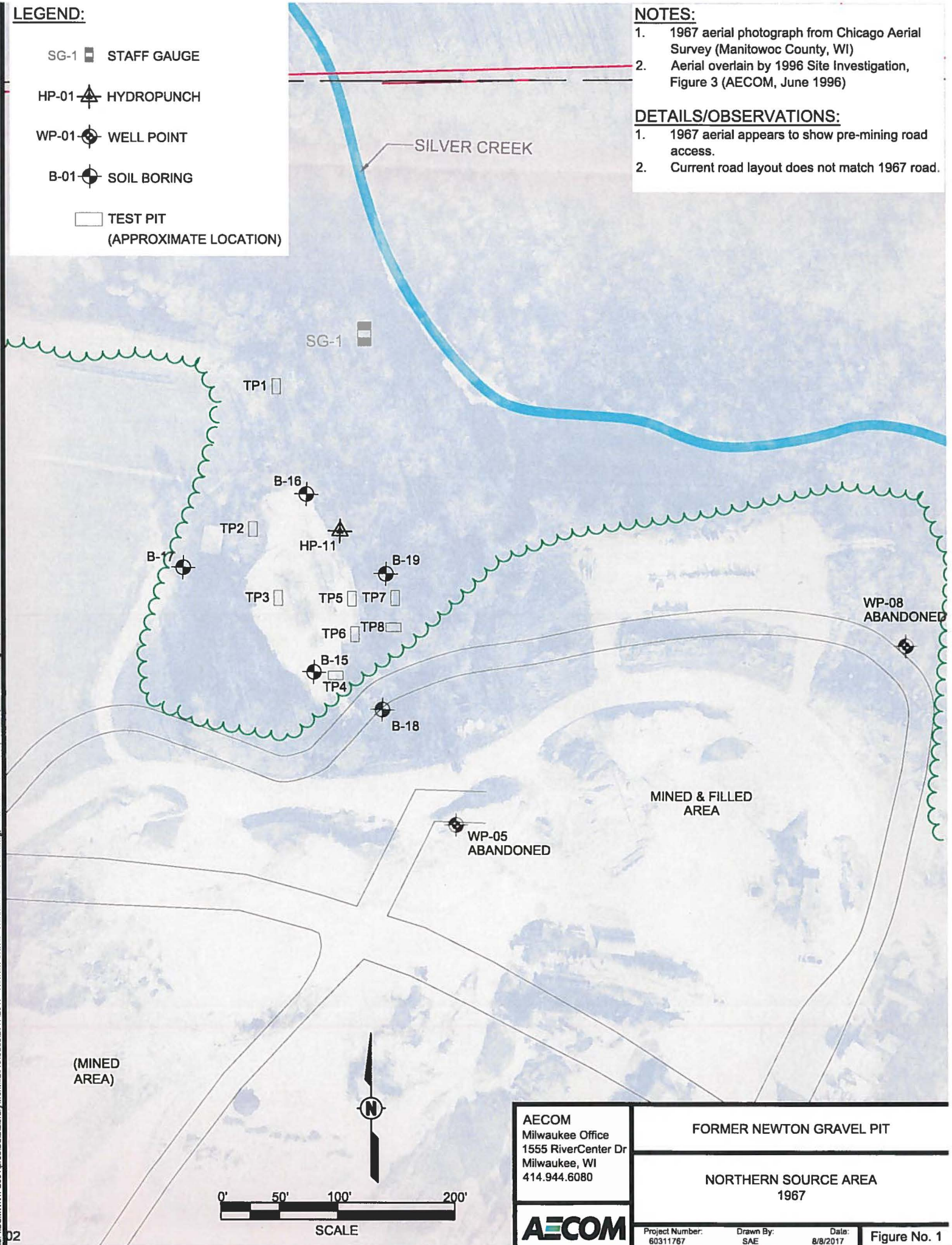
- SG-1  STAFF GAUGE
- HP-01  HYDROPUNCH
- WP-01  WELL POINT
- B-01  SOIL BORING
-  TEST PIT
(APPROXIMATE LOCATION)

NOTES:

1. 1967 aerial photograph from Chicago Aerial Survey (Manitowoc County, WI)
2. Aerial overlain by 1996 Site Investigation, Figure 3 (AECOM, June 1996)

DETAILS/OBSERVATIONS:

1. 1967 aerial appears to show pre-mining road access.
2. Current road layout does not match 1967 road.



File: \\USM\MK\F5001\prod\DetailLibrary\work\102518\CAD\02017\0017 - Newton Gravel - Northern Source Area.dwg; USER: ENGELHARDT, SARAH; PLOTTED: August 8, 2017 - 10:47 AM

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Milwaukee, WI
414.944.6080

FORMER NEWTON GRAVEL PIT

NORTHERN SOURCE AREA
1967








Project Number:
60311767

Drawn By:
SAE

Date:
8/8/2017

Figure No. 1

LEGEND:

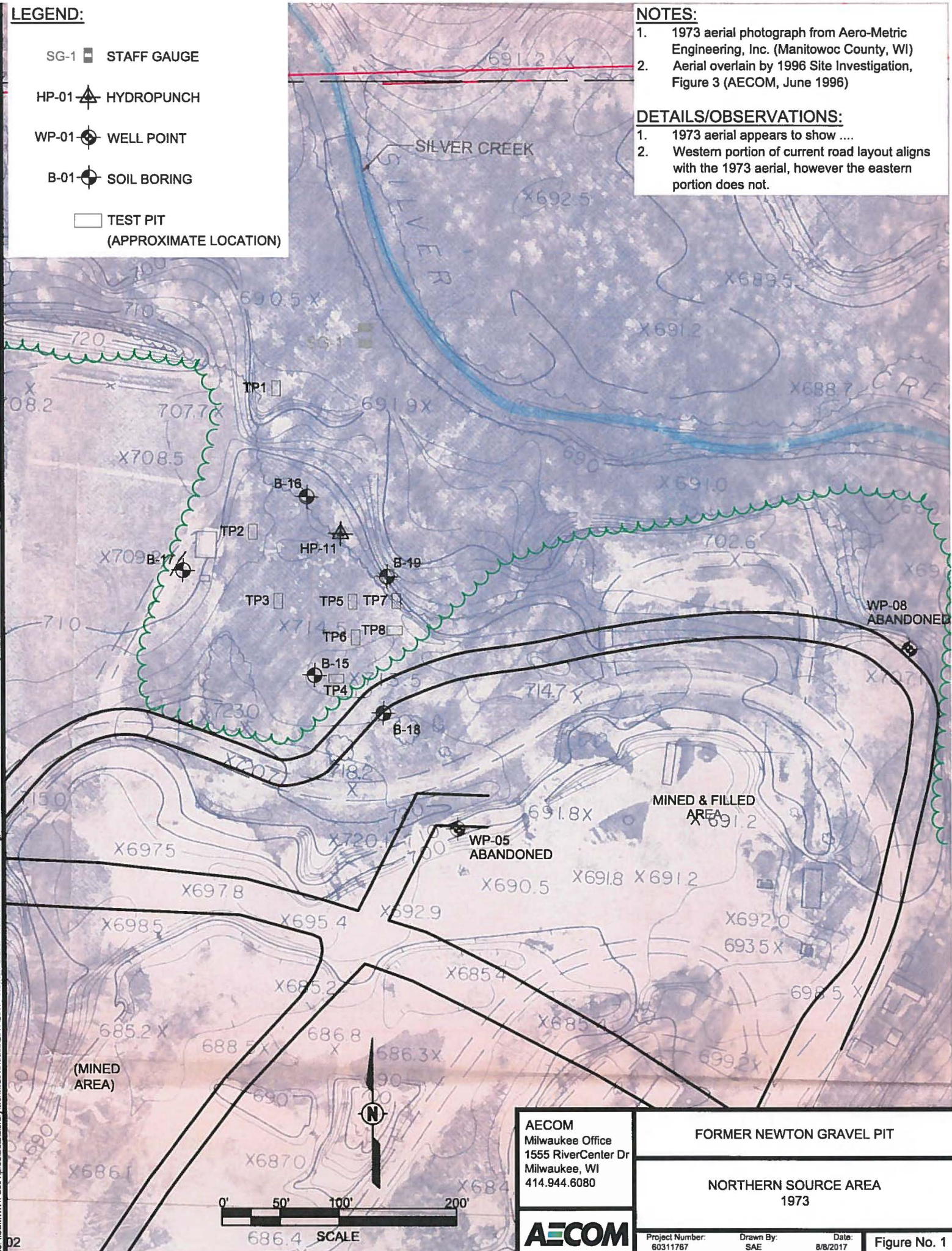
- SG-1  STAFF GAUGE
- HP-01  HYDROPUNCH
- WP-01  WELL POINT
- B-01  SOIL BORING
-  TEST PIT
(APPROXIMATE LOCATION)

NOTES:

1. 1973 aerial photograph from Aero-Metric Engineering, Inc. (Manitowoc County, WI)
2. Aerial overlain by 1996 Site Investigation, Figure 3 (AECOM, June 1996)

DETAILS/OBSERVATIONS:

1. 1973 aerial appears to show
2. Western portion of current road layout aligns with the 1973 aerial, however the eastern portion does not.



File: \\USMWWK1\F5001\proj\Drawings\25181C\add\201702017 - Northern Source Area.dwg USER: ENGELHARDT, SARAH; PLOTTED: August 8, 2017 - 10:47 AM

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FORMER NEWTON GRAVEL PIT

NORTHERN SOURCE AREA
 1973



LEGEND:

SG-1  STAFF GAUGE

HP-01  HYDROPUNCH

WP-01  WELL POINT

B-01  SOIL BORING

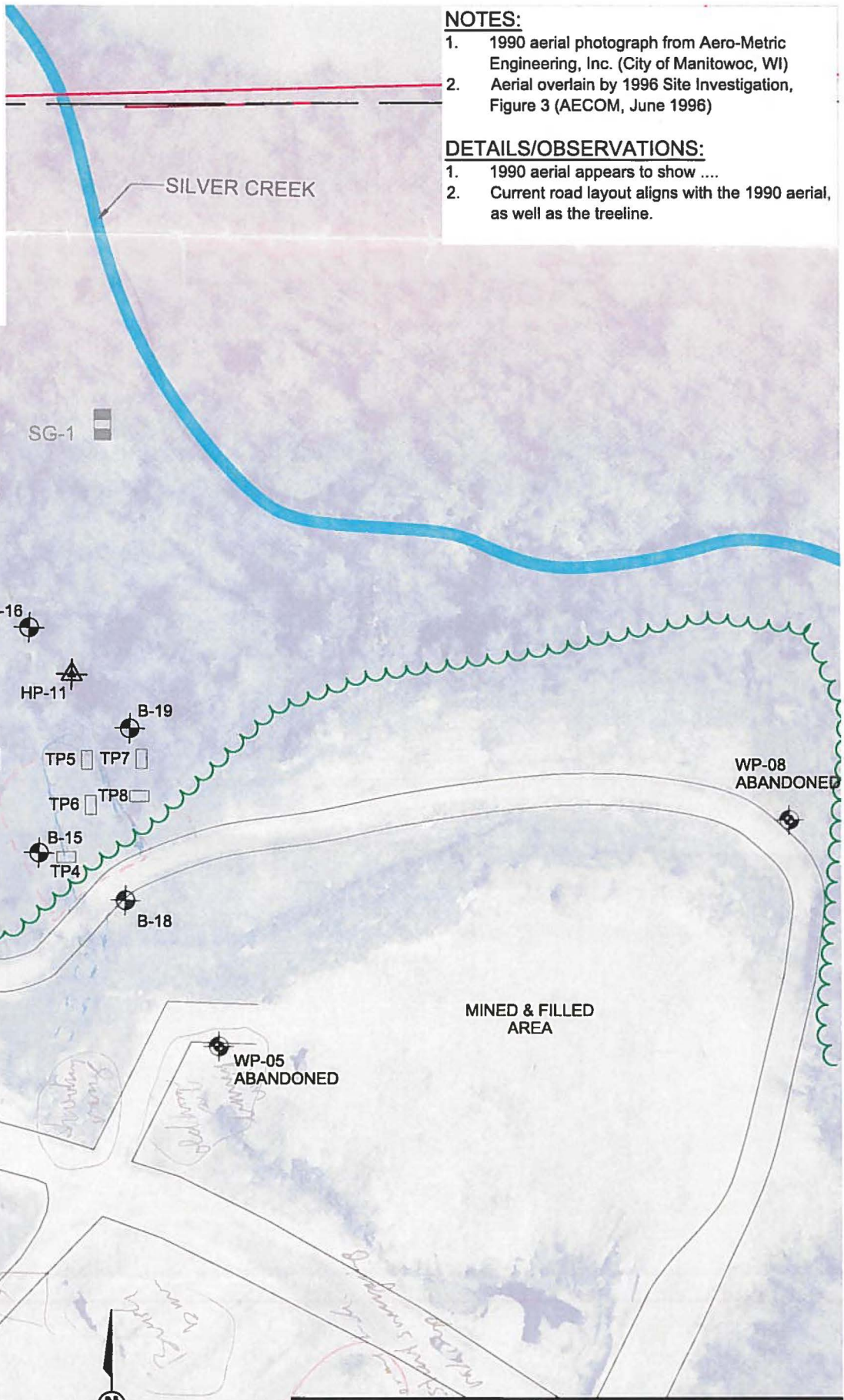
 TEST PIT
(APPROXIMATE LOCATION)

NOTES:

1. 1990 aerial photograph from Aero-Metric Engineering, Inc. (City of Manitowoc, WI)
2. Aerial overlain by 1996 Site Investigation, Figure 3 (AECOM, June 1996)

DETAILS/OBSERVATIONS:

1. 1990 aerial appears to show
2. Current road layout aligns with the 1990 aerial, as well as the treeline.



(MINED AREA)

MINED & FILLED AREA

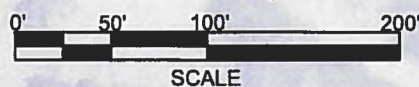
WP-05 ABANDONED

WP-08 ABANDONED

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FORMER NEWTON GRAVEL PIT

NORTHERN SOURCE AREA
1990



SCALE








Project Number:
60311767

Drawn By:
SAE

Date:
8/8/2017

Figure No. 1

LEGEND:

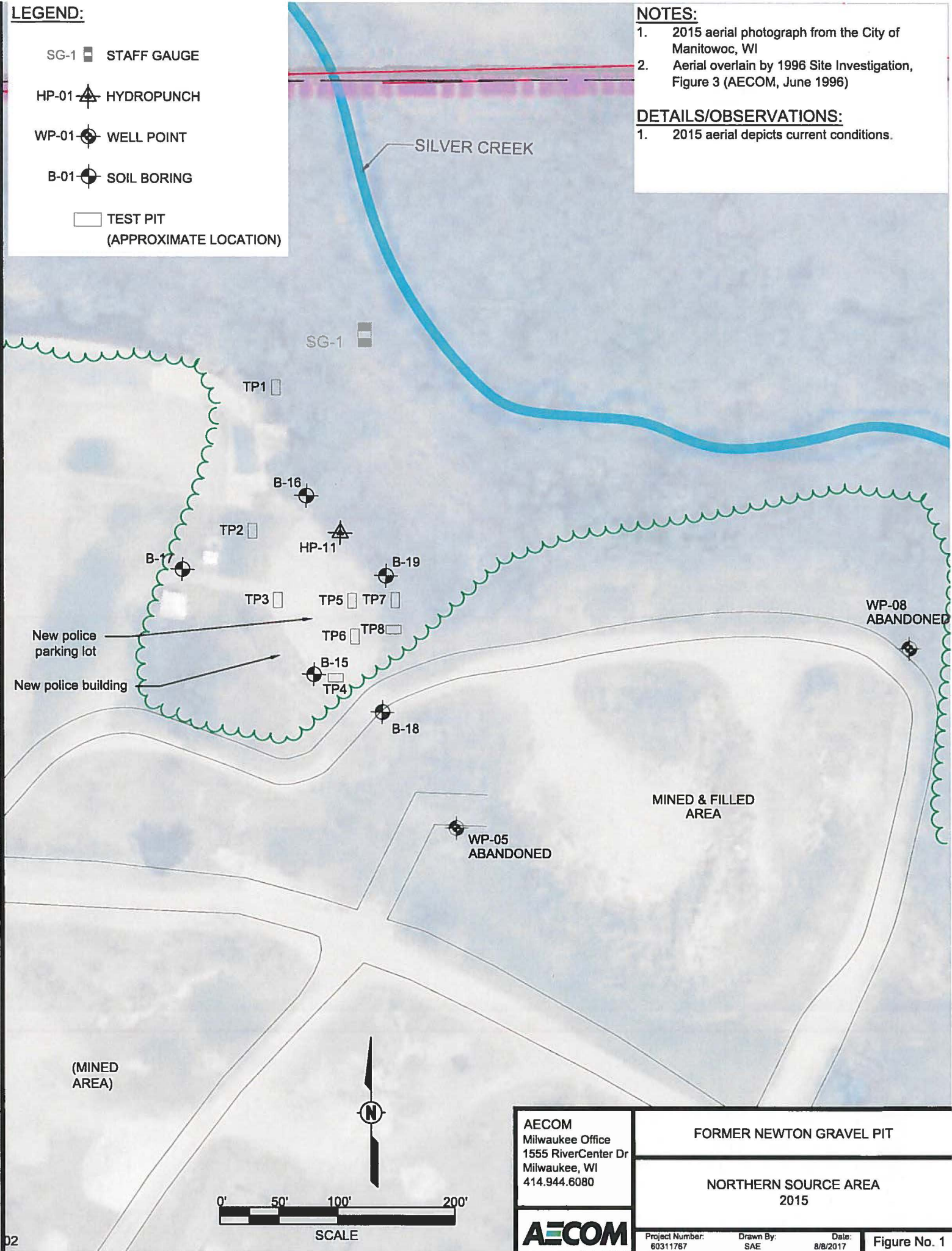
- SG-1  STAFF GAUGE
- HP-01  HYDROPUNCH
- WP-01  WELL POINT
- B-01  SOIL BORING
-  TEST PIT
(APPROXIMATE LOCATION)

NOTES:

1. 2015 aerial photograph from the City of Manitowoc, WI
2. Aerial overlain by 1996 Site Investigation, Figure 3 (AECOM, June 1996)

DETAILS/OBSERVATIONS:

1. 2015 aerial depicts current conditions.




File: \\USM\MK\F5001\road\Drawn\library\wca\12518\Caad\2017\2017 - Newton Gravel - Northern Source Area.dwg; USER: ENGELHARDT, SARAH; PLOTTED: August 8, 2017 - 10:40 AM

AECOM Milwaukee Office 1555 RiverCenter Dr Milwaukee, WI 414.944.6080	FORMER NEWTON GRAVEL PIT
	NORTHERN SOURCE AREA 2015
AECOM Project Number: 60311767 Drawn By: SAE Date: 8/8/2017	Figure No. 1

LEGEND:

SG-1  STAFF GAUGE

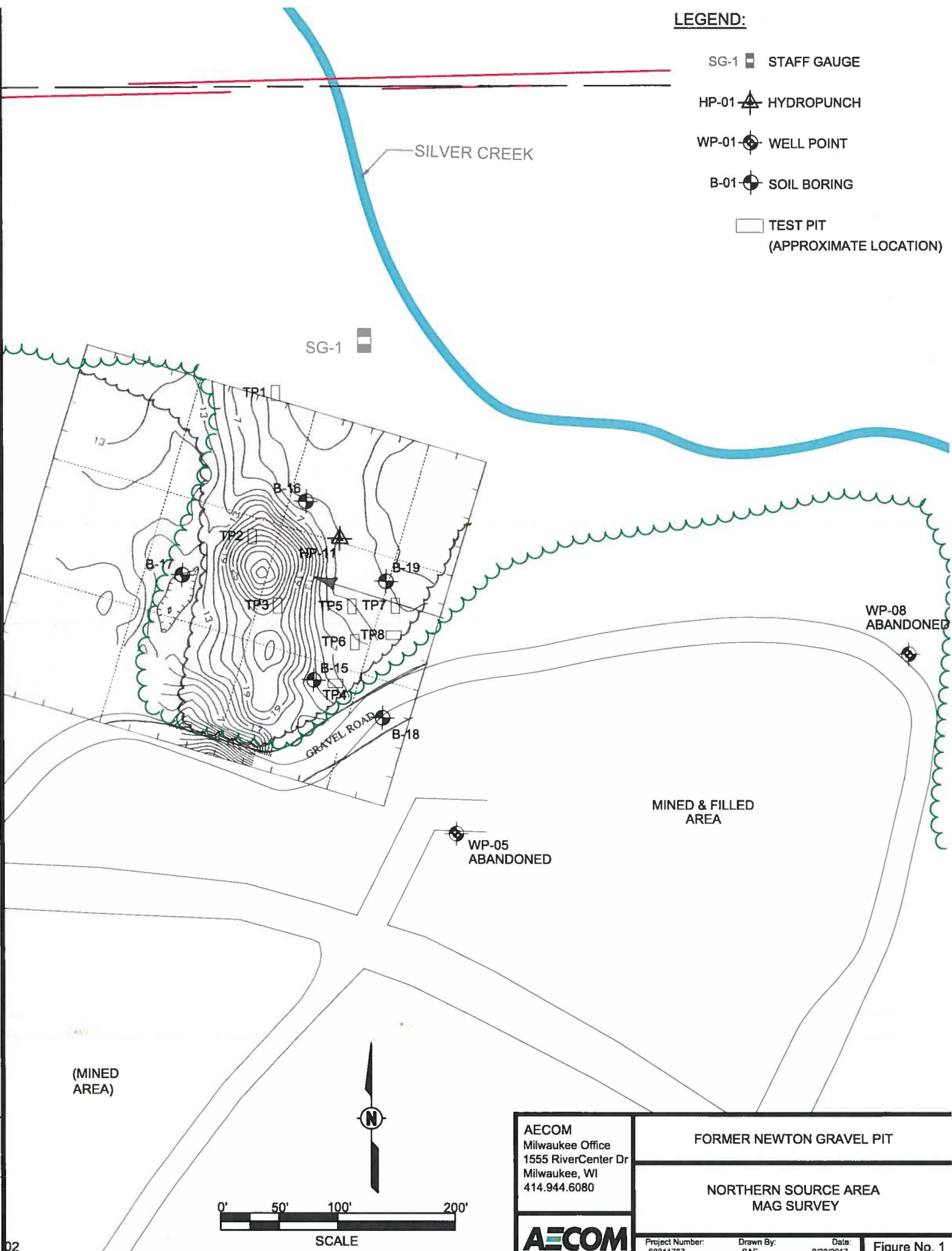
HP-01  HYDROPUNCH

WP-01  WELL POINT

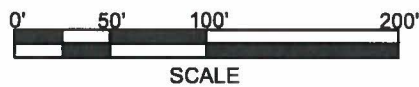
B-01  SOIL BORING

 TEST PIT
(APPROXIMATE LOCATION)

File: \\USM\WKF\F5001\p001\Drawn\Library\work\251\B\Cad\2017\2017 - Newton Gravel - Northern Source Area.dwg; USER: ENGELHARDT, SARAH; PLOTTED: September 20, 2017 - 2:40 PM



(MINED AREA)



SCALE

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FORMER NEWTON GRAVEL PIT

NORTHERN SOURCE AREA
MAG SURVEY

Project Number:
60311767

Drawn By:
SAE

Date:
9/20/2017

Figure No. 1

LEGEND:

- SG-1 STAFF GAUGE
- HP-01 HYDROPUNCH
- WP-01 WELL POINT
- B-01 SOIL BORING
- TEST PIT
(APPROXIMATE LOCATION)

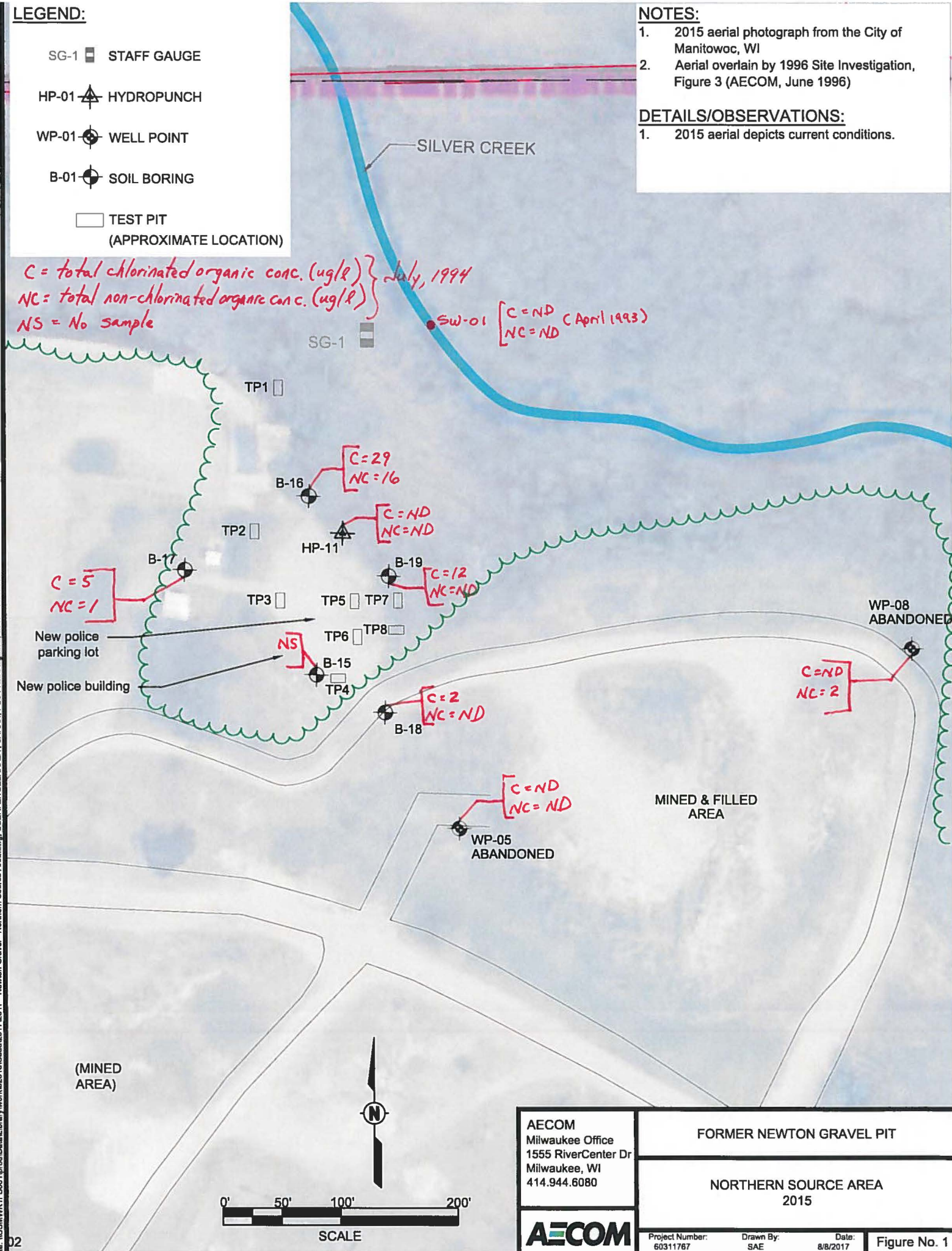
NOTES:

1. 2015 aerial photograph from the City of Manitowoc, WI
2. Aerial overlain by 1996 Site Investigation, Figure 3 (AECOM, June 1996)

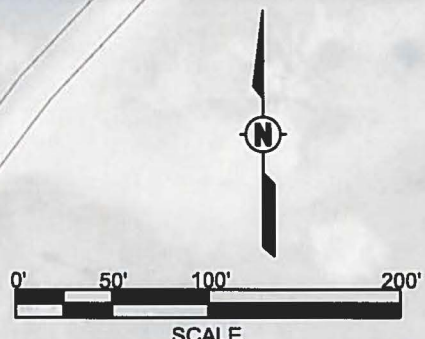
DETAILS/OBSERVATIONS:

1. 2015 aerial depicts current conditions.

C = total chlorinated organic conc. (ug/l) } July, 1994
NC = total non-chlorinated organic conc. (ug/l)
NS = No sample



File: \\USM\WK1\F5001\proj\Drawn\Library\work\02518\Cadd\2017\2017 - Newton Gravel - Northern Source Area.dwg; USER: ENGELHARDT, SARAH; PLOTTED: August 8, 2017 - 10:40 AM



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FORMER NEWTON GRAVEL PIT

NORTHERN SOURCE AREA
 2015

Attachment B
Test Pit Logs

PROJECT: Manitowoc Gravel Pit

DATE STARTED: 3/3/93

PROJECT NO.: 70416

DATE COMPLETED: 3/3/93

TRENCH OR PIT NO.: TP-1

METHOD OF EXCAVATION: Backhoe 580K Case

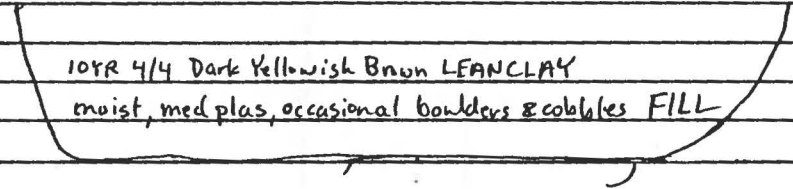
APPROXIMATE DIMENSIONS: 4 ft wide 4 ft deep 8 ft long

LOGGED BY: Tom Puchalski

DEPTH TO GROUNDWATER: NA

FIELD SKETCH OF TEST PIT OR TRENCH EXCAVATION

Depth
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19



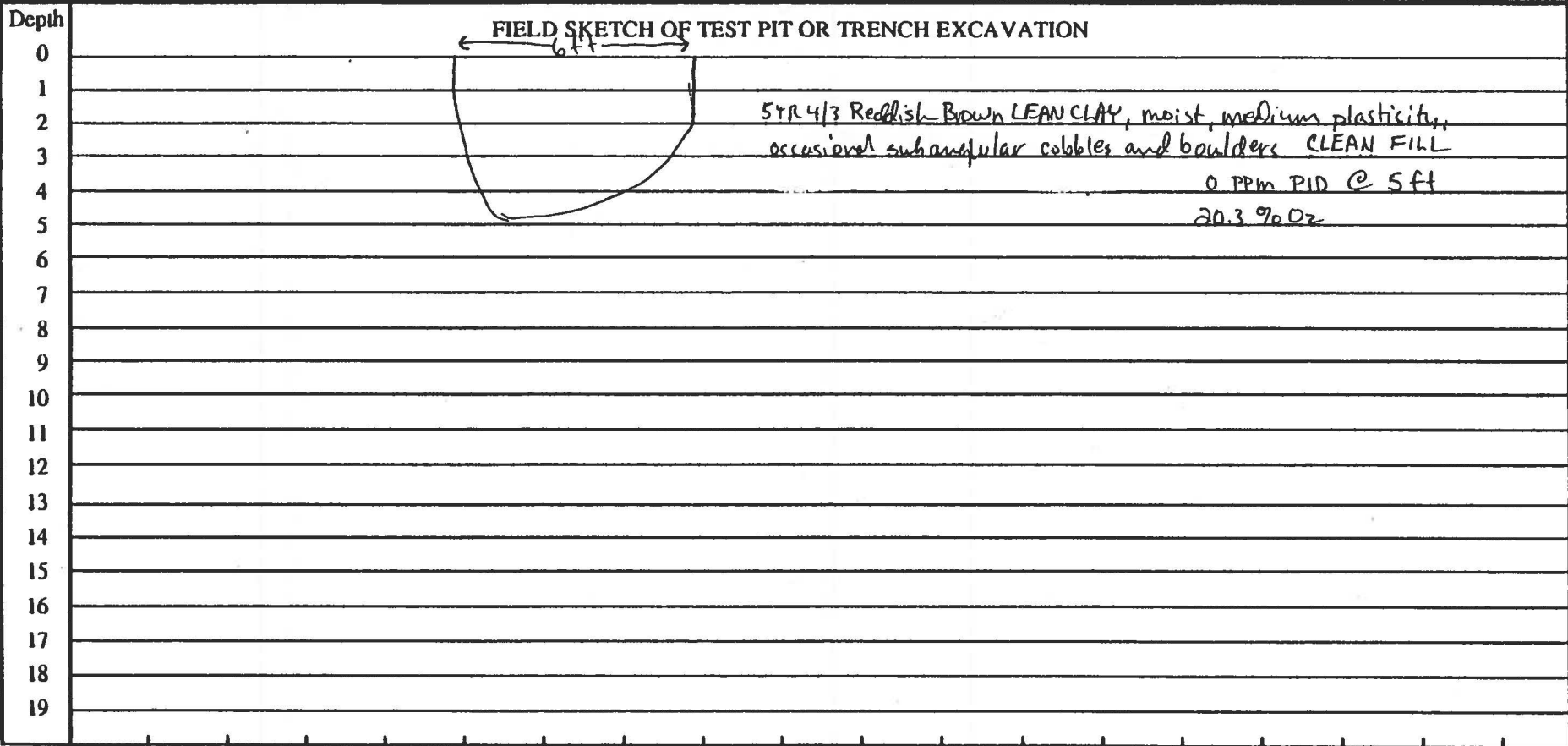
PID 0 PPM @ 4ft
20.5% O₂

NOTES:

List Sample Contents In Decreasing Relative % By Volume

PROJECT: Manitowoc Ground Pit
 PROJECT NO.: 70416
 TRENCH OR PIT NO.: TP-2
 APPROXIMATE DIMENSIONS: 6ft long 3ft wide 5ft deep
 DEPTH TO GROUNDWATER: N/A

DATE STARTED: 3/3/93
 DATE COMPLETED: 3/3/93
 METHOD OF EXCAVATION: 580K Case Backhoe
 LOGGED BY: Tom Puchalski



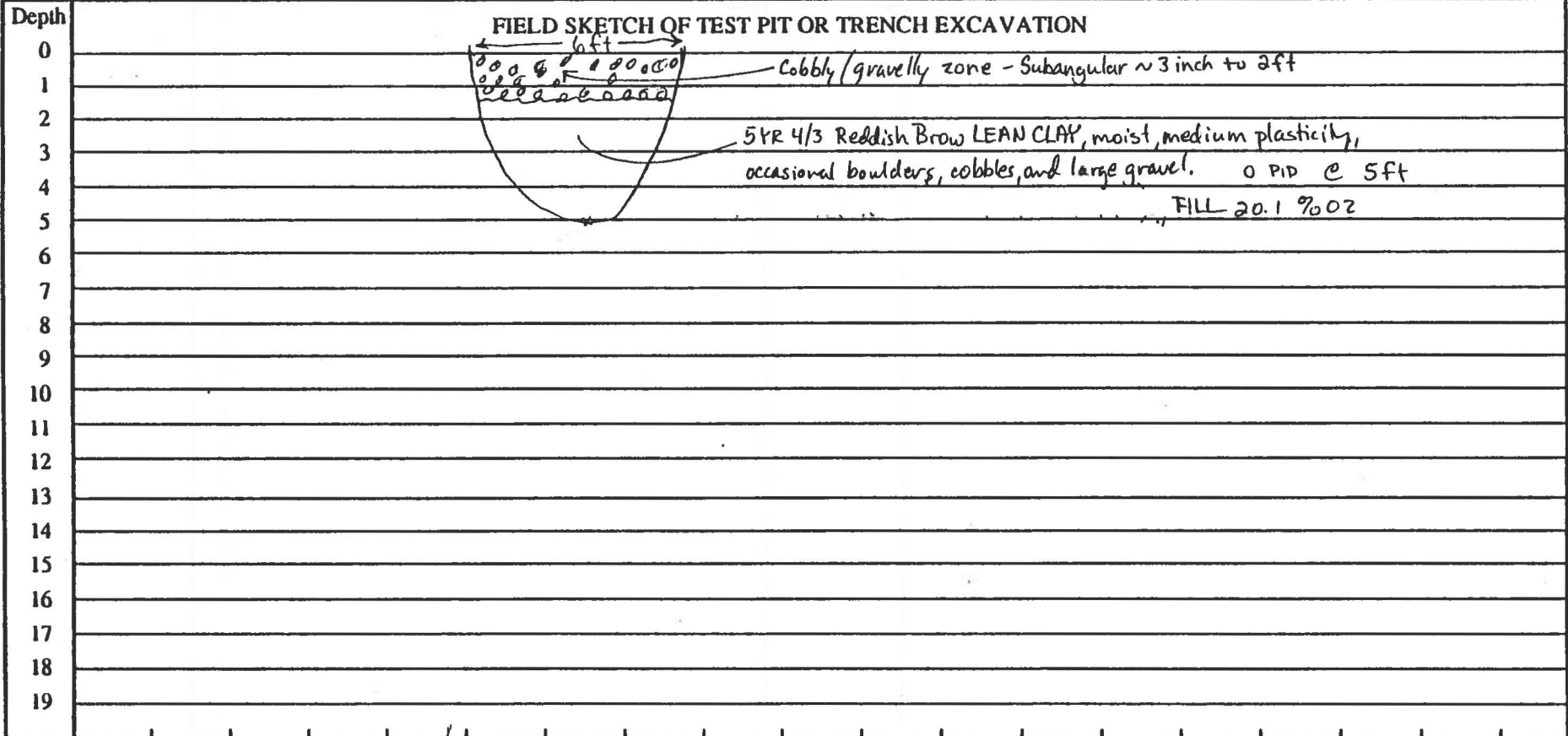
NOTES: _____

List Sample Contents In Decreasing Relative % By Volume

Test Pit

PROJECT: Manitowoc
 PROJECT NO.: 70416
 TRENCH OR PIT NO.: TP3
 APPROXIMATE DIMENSIONS: 6 ft long
 DEPTH TO GROUNDWATER: NA

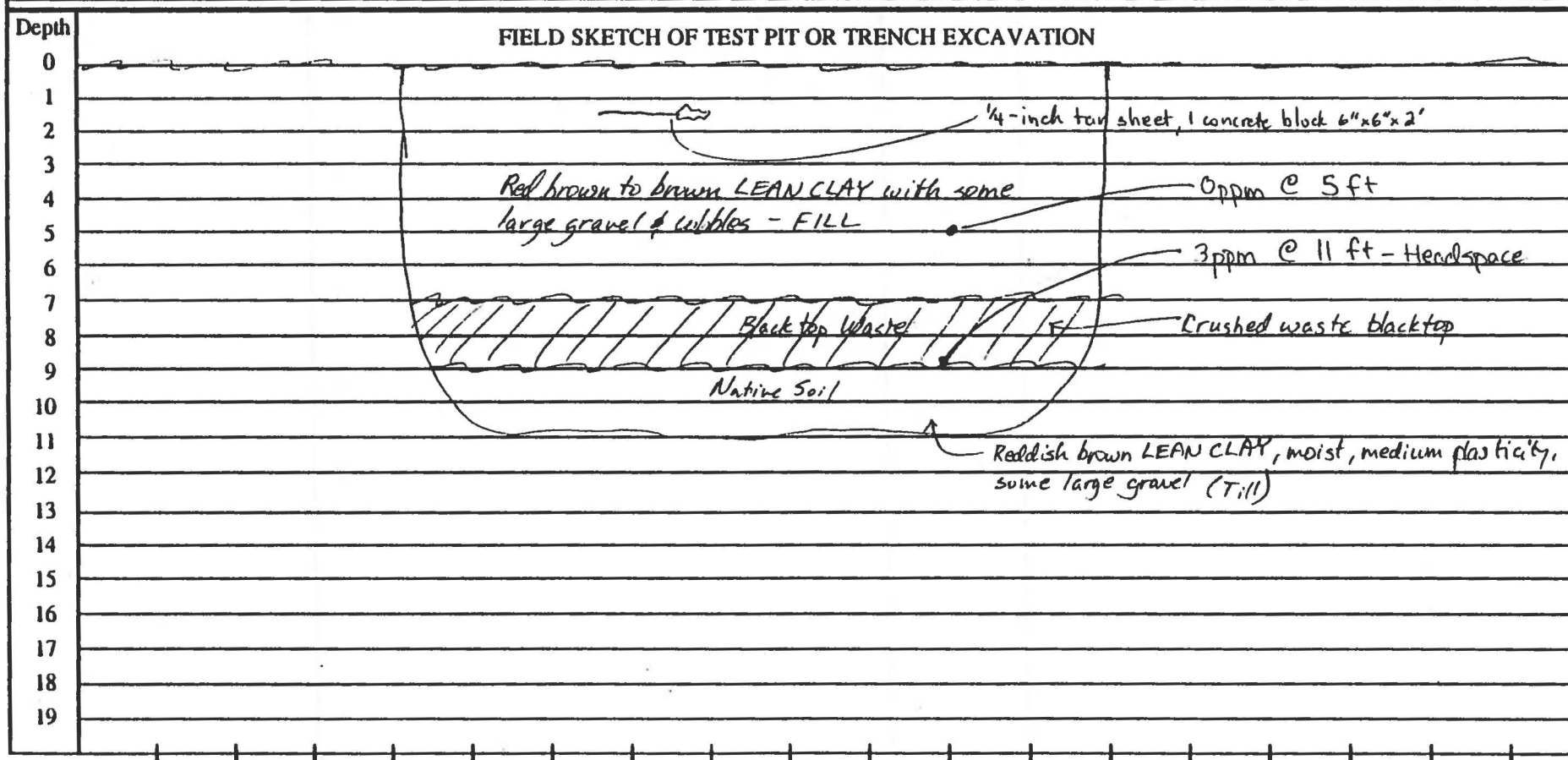
DATE STARTED: 3/3/93
 DATE COMPLETED: 3/3/93
 METHOD OF EXCAVATION: Case 580K backhoe
 LOGGED BY: TEP



NOTES: _____

List Sample Contents In Decreasing Relative % By Volume

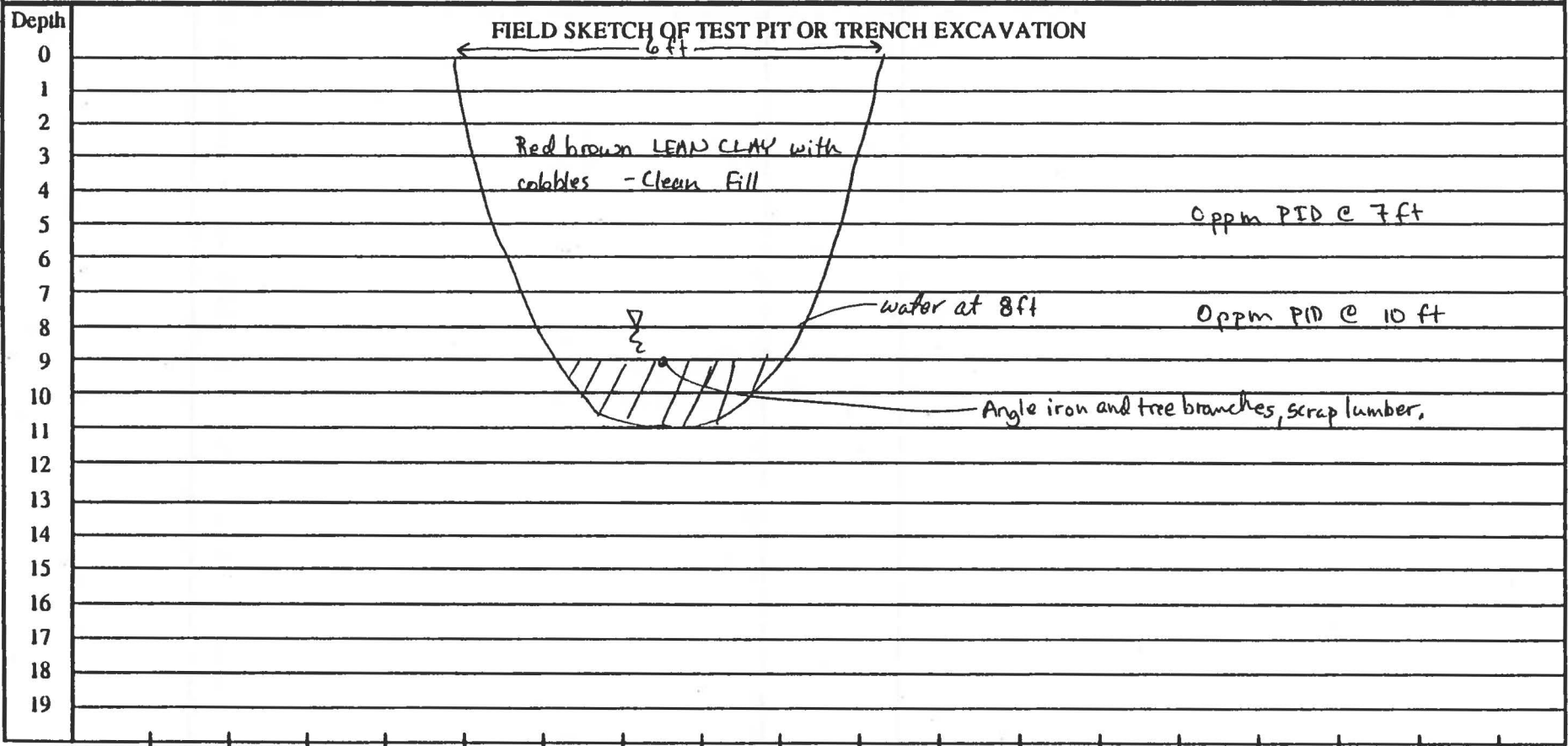
PROJECT: Manitowoc Gravel Pit DATE STARTED: 3/3/93
 PROJECT NO.: 70416 DATE COMPLETED: 3/3/93
 TRENCH OR PIT NO.: TP4 METHOD OF EXCAVATION: Case model 580K excavator
 APPROXIMATE DIMENSIONS: 9 ft long x 3 ft wide x 11 ft deep LOGGED BY: TOM PUCHALSKI
 DEPTH TO GROUNDWATER: Unknown - No free water in pit Photo # 4, 5



NOTES: _____

PROJECT: Manitowoc Gravel Pit
 PROJECT NO.: 70416
 TRENCH OR PIT NO.: TP-5
 APPROXIMATE DIMENSIONS: 6' long, 11 ft deep, 3' wide
 DEPTH TO GROUNDWATER: 8 ft

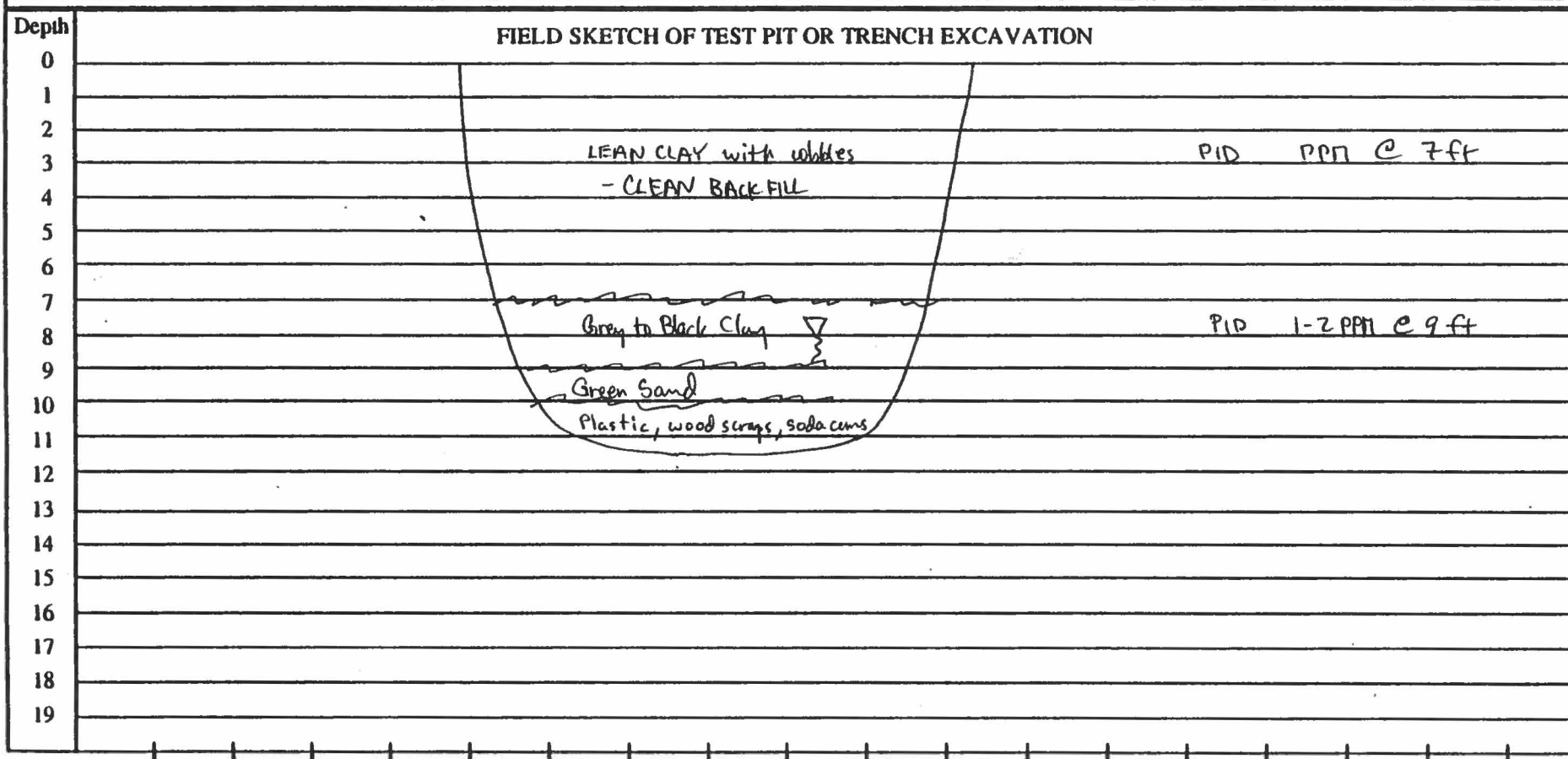
DATE STARTED: 3/3/93
 DATE COMPLETED: 3/3/93
 METHOD OF EXCAVATION: Case 580K Extendahoe
 LOGGED BY: Tom Puchalski



NOTES: H₂S and odor in air

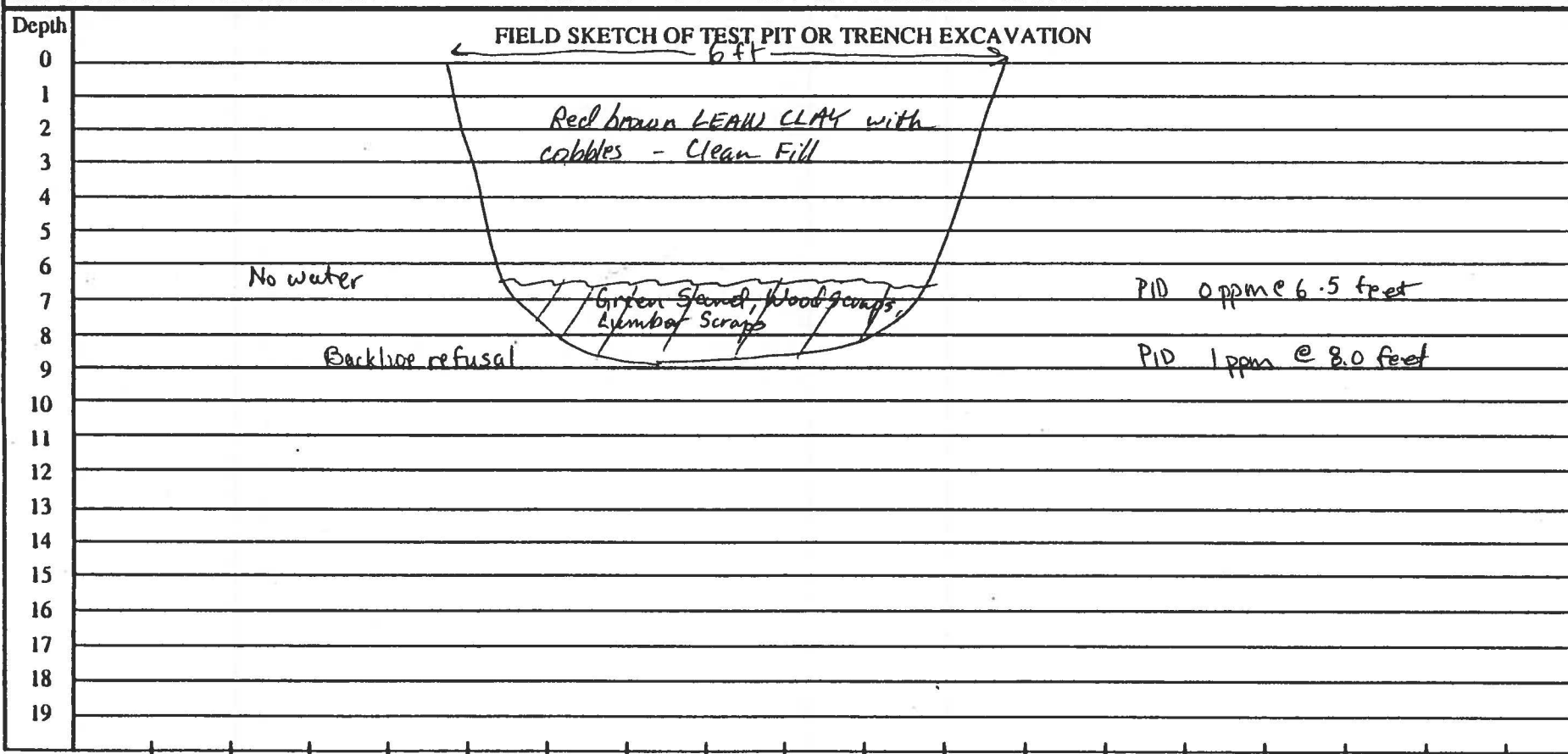
List Sample Contents In Decreasing Relative % By Volume

PROJECT: <u>Manitowoc Gravel Pit</u>	DATE STARTED: <u>3/3/93</u>
PROJECT NO.: <u>7041b</u>	DATE COMPLETED: <u>3/3/93</u>
TRENCH OR PIT NO.: <u>TP-6</u>	METHOD OF EXCAVATION: <u>580K backhoe - Case</u>
APPROXIMATE DIMENSIONS: <u>6 ft long, 11.5 ft deep, 3 ft wide</u>	LOGGED BY: <u>TTEP</u>
DEPTH TO GROUNDWATER: <u>8 ft</u>	



NOTES: Waste: Sand & clay 70%, wood scraps, branches 20%, plastic, metal or wire, fabric 10%
Can not dig deeper due to groundwater and backhoe pads slipping at the ground surface

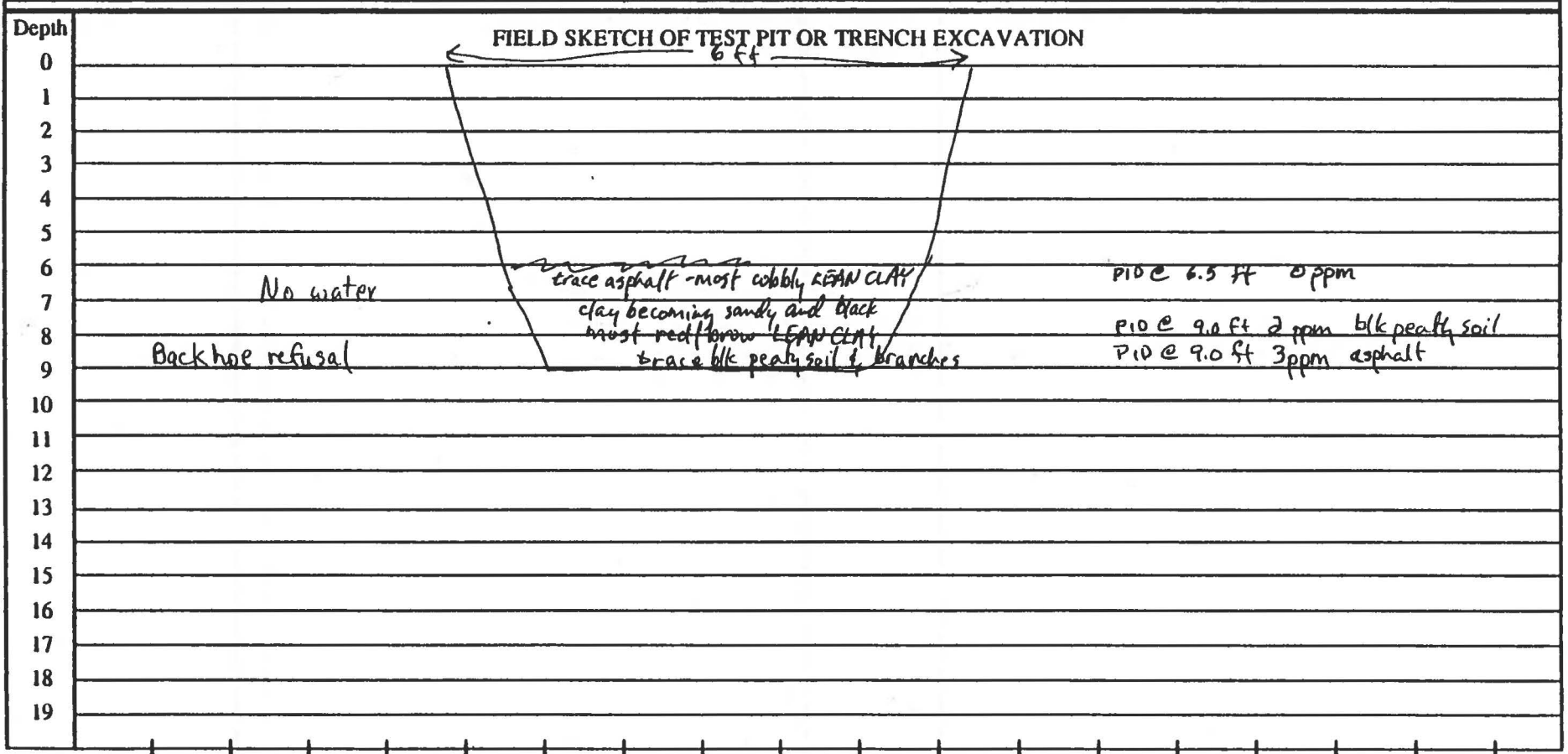
PROJECT: Manitowoc Gravel Pit DATE STARTED: 3/3/93
 PROJECT NO.: 70416 DATE COMPLETED: 3/3/93
 TRENCH OR PIT NO.: TP-7 METHOD OF EXCAVATION: Case 580K backhoe
 APPROXIMATE DIMENSIONS: 3' wide 9' deep x 6 ft long LOGGED BY: TEP
 DEPTH TO GROUNDWATER: NA



NOTES: Waste: Wood branches & lumber scraps 95%, 5% green sand

List Sample Contents In Decreasing Relative % By Volume

PROJECT: Manitowoc Gravel Pit DATE STARTED: 3/3/93
 PROJECT NO.: 70416 DATE COMPLETED: 3/3/93
 TRENCH OR PIT NO.: TP-8 METHOD OF EXCAVATION: Case 580K Backhoe
 APPROXIMATE DIMENSIONS: 6 x 3 x 9 LOGGED BY: TEP
 DEPTH TO GROUNDWATER: NA



NOTES: _____

Attachment C
Soil Boring Logs

Facility/Project Name: Town of Newton Gravel Pit License/Permit/Monitoring Number: _____ Boring Number: B-15

Drilled By (Firm name and name of crew chief):
Wisconsin Test Drilling
Bill Zabow
Date Drilling Started: 04/27/93 Date Drilling Completed: 04/27/93 Drilling Method: 4 1/2 HSA
MM DD YY MM DD YY 3" Split Spoon

DNR Facility Well No.: _____ WI Unique Well No.: _____ Common Well Name: _____ Final Static Water Level: _____ Feet MSL
Surface Elevation: _____ Feet MSL Borehole Diameter: 8 inches

Boring Location: State Plane _____ N, _____ E S/C/N Lat _____ Local Grid Location (If applicable) _____ N _____ E
_____ S _____ W
1/4 of _____ 1/4 of Section _____, T _____ N, R _____ E/W Long _____ Feet _____ Feet _____

County: Menitowoc DNR County Code: _____ Civil Town/City/ or Village: Newton

Sample Number	Length Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					ROD/ Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	
①	12"	11 11	1	Very Soft, 10 YR 5/4 yellowish brown, LEAN CLAY WITH GRAVEL, moist, medium plasticity, cohesive, roots, top soil/fill	CL			0.8	2					0-2 8:15
②	18"	22 23	2	Soft, 5 YR 4/4 reddish brown SANDY LEAN CLAY WITH GRAVEL and 10 YR 5/4, yellowish brown, SILTY SAND WITH GRAVEL, med. plasticity, moist, cohesive	SM CL			0.4	4					2-4 8:50
③	3"	33 36	4	Medium, 5 YR 4/4 reddish brown, SANDY LEAN CLAY, moist, high plasticity, cohesive, poor recovery	CL			1.0	6					4-6 9:00
④	12"	313 1415	6	Very Stiff, 5 YR 4/4 reddish brown, SANDY LEAN CLAY, moist, med plasticity, cohesive, with concrete and wood at bottom of spoon, fill	CL/ FILL			0.8	17					6-8 9:15
⑤	0"	93 123	8	No recovery, asphalt fragments, FILL	FILL			-	15					8-10 9:20
⑥	12"	110 1723	10	Medium Dense Very 5 YR 3/2, dark reddish brown, SILTY SAND w/ asphalt moist, to wet, cohesive, perched water table	SM			0.2	27					10-12 9:35

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: Russell A. Henning Firm: QUEST

This form is authorized by Chapters 144.147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than \$10 nor more than \$5,000 for each violation. Fined not less than \$10 or more than \$100 or imprisoned not less than 30 days, or for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

- Route To:
- Solid Waste
 - Emergency Response
 - Wastewater
 - Haz. Waste
 - Underground Tanks
 - Water Resources
 - Other _____

City/Project Name Town of Newton Gravel Pit License/Permit/Monitoring Number _____ Boring Number B-15 A

Log Drilled By (Firm name and name of crew chief) Wisconsin Test Drilling
Bill Zabow Date Drilling Started 04/27/93 Date Drilling Completed 04/27/93 Drilling Method 4 1/4" IHA
3" Split spoon

NE Facility Well No. _____ WEL Unique Well No. _____ Common Well Name _____ Final Static Water Level _____ Feet MSL Surface Elevation _____ Feet MSL Borehole Diameter 8.0 inches

Grid Location
Use Plane _____ N, _____ E S/C/N | Lat _____ Local Grid Location (If applicable) N E
1/4 of _____ 1/4 of Section _____, T _____ N, R _____ E/W | Long _____ Feet S _____ Feet W

County Manitowoc DNR County Code _____ Civil Town/City/ or Village Newton

Sample Number	Length Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					ROD/ Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	
			0-14 ft	Refer to B-15 borehole log for description of interval from 0-14 ft.										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Russell J. Henry Firm RUST

This form is authorized by Chapters 144.147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than \$10 nor more than \$5,000 for each violation. Fined not less than \$10 or more than \$100 or imprisoned not less than 30 days, or more than 6 months for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

Facility/Project Name: Newton Gravel Pit License/Permit/Monitoring Number: _____ Boring Number: B-16

Boring Drilled By (Firm name and name of crew chief): Bill Zamow WTD, INC Date Drilling Started: 07/21/94 Date Drilling Completed: 07/22/94 Drilling Method: 3 1/4 HS 4

DNR Facility Well No./WI Unique Well No.: _____ Common Well Name: _____ Final Static Water Level: _____ Surface Elevation: 718.9 Feet MSL Borehole Diameter: 7 inches

Boring Location: State Plane 759671.92 N, 2599656.22 B(S/C/N) Lat: _____ Local Grid Location (If applicable): _____
SW 1/4 of NW 1/4 of Section 2, T 18 N, R 23 E(W) Long: _____ Feet N E
 S W

County: Manitowish DNR County Code: 36 Civil Town/City/ or Village: Town of Newton

Sample Number	Length Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	
51	10	0-8 11 18	1	Very stiff, dark brown (10YR 3/5) ORGANIC SOIL, moist, plastic, cohesive, trace gravel, roots + rootlets TOPSOIL	OL				20					1803
52	19	12 18 21 25	2 3	Hard, brown (10YR 4/3) LEAN CLAY, dry, plastic, cohesive, some gravel, gravel increases with depth FILL	CL				39					1808
53	6	59 74	4 5	Hard, brown (10YR 4/3) LEAN CLAY, dry, plastic, cohesive, some gravel FILL	CL				750					1813
54	0	50 70	6 7						750					1821 NO Recover Cuttings are CLAY & GIC
55	0	50 70	8 9						750					1826 NO Recover
56	12	48 50 42 38	10 11 12	Hard, black (10YR 2/1) LEAN CLAY, moist, plastic, cohesive, some gravel wood and debris FILL	CL				92					1839

I hereby certify that the information on this form is true and correct to the best of my knowledge.
 Signature: Melissa Melchior Firm: RUST E&I

This form is authorized by Chapters 144.147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than \$10 nor more than \$5,000 for each violation. Fined not less than \$10 or more than \$100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

Sample		Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties				
Number	Length Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200
SS7	6	25 29.4	13	Hard, very dark Gray (10YR2.5/1) LEAN CLAY, moist, plastic, Cohesive, trace gravel FILL	CL			08	75				
SS8	17	51 53 36 30	14 15	Very dense, brown (10YR 5/3), WELL GRADED SAND, dry, nonplastic, noncohesive, some gravel outwash	SW				89				
SS9	0	24 22 28 27	16 17	very dense					50				
SS10	12	14 20 23 29	18 19	Dense, pale brown (10YR 6/3) WELL GRADED SAND, dry, nonplastic, noncohesive, some gravel outwash	SW				43				
SS11	6	30 27.2	20 21	Very dense, dark yellowish brown, (10YR 4/6) WELL GRADED SAND, moist, nonplastic, noncohesive, trace gravel outwash	SW				75				
SS12	3	21 27 23 27	22 23	very dense, pale brown (10YR 6/3) WELL GRADED SAND, moist, nonplastic, noncohesive, some gravel outwash	SW				50				
SS13	0	50	24										
SS14	14	17 11 21 20	26 27	Dense, pale brown (10YR 6/3) WELL GRADED SAND, moist, nonplastic, noncohesive, trace gravel outwash	SW				32				
SS15	0	50	28										
SS14	13	11 13 19 26	30 31	Dense, Pale brown (10YR 6/3) well graded SAND, wet, nonplastic, noncohesive, Some gravel, outwash	SW				36				

End of boring at 32'

Route To:

- Solid Waste
- Emergency Response
- Wastewater
- Haz. Waste
- Underground Tanks
- Water Resources
- Other

Form 4400-122

1-71

Facility/Project Name <u>Newton Gravel Pit</u>		License/Permit/Monitoring Number		Boring Number <u>B-17</u>
Boring Drilled By (Firm name and name of crew chief) <u>Bill Zamow WTD, INC</u>		Date Drilling Started <u>07/21/94</u> MM DD YY	Date Drilling Completed <u>07/21/94</u> MM DD YY	Drilling Method <u>4 1/4 HSA</u>
DNR Facility Well No.	WI Unique Well No.	Common Well Name <u>NA</u>	Final Static Water Level <u>NA</u> Feet MSL	Surface Elevation <u>710.6</u> Feet MSL
Boring Location State Plane <u>759606.16</u> N, <u>2599552.48</u> E S/C/N Lat _____		Local Grid Location (If applicable) <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W		
SW 1/4 of NW 1/4 of Section <u>2</u> , T <u>18</u> N, R <u>23</u> E/W Long _____		Feet _____		
County <u>Manitowish</u>	DNR County Code <u>36</u>	Civil Town/City/ or Village <u>Town of Newton</u>		

Sample Number	Length Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					ROD/ Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	
<u>SS1</u>	<u>21</u>	<u>10</u> <u>10</u> <u>15</u> <u>18</u>	<u>1</u> <u>1</u> <u>1</u> <u>1</u>	<u>Very stiff, yellowish brown, (10YR 5/4), LEAN CLAY dry, low plastic, cohesive, top 0.2' is top soil, trace gravel, fill</u>	<u>CL</u>			<u>0.2</u>	<u>25</u>					<u>7:16</u>
<u>SS2</u>	<u>22</u>	<u>9</u> <u>11</u> <u>21</u> <u>25</u>	<u>2</u> <u>3</u> <u>3</u> <u>3</u>	<u>Hard pale brown, (10YR 4/3) LEAN CLAY, dry, low plastic, cohesive, large amount of silt (25%) trace sand, black plastic metal FILL</u>	<u>CL</u>			<u>0.0</u>	<u>32</u>					<u>7:26</u>
<u>SS3</u>	<u>21</u>	<u>8</u> <u>16</u> <u>41</u> <u>50</u> <u>1/0</u>	<u>4</u> <u>5</u> <u>5</u> <u>6</u> <u>6</u>	<u>Hard yellowish brown, (10YR 5/4), SILTY CLAY dry, low plastic, cohesive, small black pieces of metal, large piece of granite at 5.9' FILL</u>	<u>CL/ML</u>			<u>0.0</u>	<u>57</u>					<u>7:36</u>
<u>SS4</u>	<u>10</u>	<u>41</u> <u>54</u> <u>5</u> <u>10</u> <u>54</u> <u>3</u>	<u>6</u> <u>7</u> <u>7</u> <u>7</u> <u>7</u> <u>7</u>	<u>Hard pale brown (10YR 4/3) LEAN CLAY, moist, low plastic cohesive, trace sand & gravel FILL</u>	<u>CL</u>			<u>0.0</u>	<u>60</u>					<u>7:47</u>
<u>SS5</u>	<u>0</u>	<u>54</u> <u>2</u>	<u>9</u>											<u>7:50</u> <u>NO REC</u> <u>Few sec</u> <u>in 5m</u>
<u>SS6</u>	<u>0</u>	<u>25</u> <u>54</u> <u>3</u>	<u>10</u> <u>11</u>											<u>NO REC</u> <u>11.4g</u> <u>D 10mm</u> <u>Boide</u> <u>in 5m</u> <u>cuttings</u> <u>9.5m</u>

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: Melissa Melias Firm: RUST E & I

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Facility/Project Name: Newton Gravel Pit License/Permit/Monitoring Number: _____ Boring Number: B-18
 Boring Drilled By (Firm name and name of crew chief): Bill Zamow WTD INC Date Drilling Started: 07/21/94 Date Drilling Completed: 07/21/94 Drilling Method: 2 1/4 HSA
 DNR Facility Well No.: _____ WI Unique Well No.: _____ Common Well Name: NA Final Static Water Level: 715.0 Feet MSL Surface Elevation: 715.0 Feet MSL Borehole Diameter: 8 inches
 Boring Location: State Plane 759489.59 N, 2599726.16 E (B) (S) (C) (N) Lat: _____ Local Grid Location (if applicable): _____
SW 1/4 of NW 1/4 of Section 2, T 18 N, R 23 (E) (W) Long: _____ Feet N E S W
 County: Manitowoc DNR County Code: 36 Civil Town/City/ or Village: Town of Newton

Sample Number	Length Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					ROD/Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	
1	17	28 25 8	1	Hard, very dark grayish brown (10YR 3/2), LEAN CLAY, dry, plastic, cohesive, some gravel. TOP limit is top soil	CL				32					
2	8	27 45 49 47	2 3 4	Hard yellowish brown, (10YR 5/6), LEAN CLAY, dry, plastic, cohesive, some gravel. FILL	CL				94					124
3	3	16 21 28 31	5 6	Hard very dark grayish brown (10YR 2/3) LEAN CLAY, dry, plastic, cohesive, FILL	CL				49					124
4	20	9 20 31 43	7 8	Hard yellowish brown, (10YR 5/6) SILTY CLAY, dry, low plastic, cohesive, some sand FILL	CL ML				51					1256
5	21	27 30 22 22	9 10	AS ABOVE some wood FILL very dense, yellowish brown, (10YR 5/4) POORLY GRADED SAND, dry, nonplastic noncohesive, trace gravel at base	SP				52					1301
6	12	13 14 17 25	11 12	AS ABOVE dense brown (10YR 5/3) well graded sand with gravel dry, nonplastic, noncohesive	SW				33					1321

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 Signature: Melissa Medala Firm: RUST E&I

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Facility/Project Name <u>Newton Gravel Pit</u>		License/Permit/Monitoring Number	Boring Number <u>B-19</u>
Boring Drilled By (Firm name and name of crew chief) <u>Bill Zamow</u> <u>WTD, INC</u>		Date Drilling Started <u>07/22/94</u> MM DD YY	Date Drilling Completed <u>07/22/94</u> MM DD YY
DNR Facility Well No. WI Unique Well No.		Common Well Name <u>NA</u>	Final Static Water Level <u>NA</u> Feet MSL
Boring Location State Plane <u>759605.84</u> N. <u>2599698.06</u> E S/C/N		Surface Elevation <u>719.0</u> Feet MSL	Borehole Diameter <u>8</u> inches
SW 1/4 of NW 1/4 of Section <u>2</u> , T <u>18</u> N, R <u>23</u> E		Local Grid Locanon (If applicable) <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
County <u>Manitowoc</u>		DNR County Code <u>26</u>	Civil Town/City/ or Village <u>City of Manitowoc</u>

Sample Number	Length Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					ROD/ Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	
SS1	12	7 9 11 17	1	Very stiff brown (10YR 4/3) LEAN CLAY, dry, plastic, cohesive, trace gravel, FILL	CL				20					1214
SS2	15	12 22 20 38	2 3	Hard, brown (7.5YR 4/4) LEAN CLAY, moist, plastic, cohesive, trace gravel, some brick FILL	CL				44					1220
SS3	0	57 7.2	4 5											1225 No recu
SS4	0	20 57.2	6 7											1236 No Recu Cutting are gr
SS5	0	25 57.1	8 9											1240 No Recu
SS6	9	6 36 33 33	10 11 12	Hard, strong brown (7.5YR 4/6), LEAN CLAY with sand, dry, low plastic, cohesive, trace gravel FILL	CL				99					1247 No Recu

I hereby certify that the information on this form is true and correct to the best of my knowledge.
 Signature Melissa Melchior Firm RUST E+I

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Sample Number	Length Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	
557	12	10 50% 7.4	13	AS ABOVE Very dense, Pale brown (10YR 6/3) POORLY GRADED SAND, dry nonplastic, noncohesive, trace gravel	SP				>50					125
558	0	10 50	14						>50					125 NO RECO
559	1	12 44 59.2	16	Very dense sand as above at 12-14' and a dolomite boulder	SP				>50					130
5510	0	16 59.1	18						>50					133 NO RECO
5511	0	59.1	20						>50					133 NO RECO
5512	0	59.0	22						>50					133 NO RECO
5513	0	59.2	24						>50					135 NO RECO cut area
5514	0	59.4	26						>50					141 NO RECO
5515	0	59.0	28											142 NO RECO
5516	0	59.1	30											14 NO RECO

Attachment D
Tables from Past Reports

Facility Name			Facility ID Number				Date		Completed By (Name and Firm)												
Former Manitowoc Gravel Pit							7-7-94		Melissa Michaels RUST E&I												
Well Name	DNR Well ID Number	Well Location	N	S	E	W	Date Established	Well Casing		Elevations		Reference		Screen Length	Well Depth	Type of Well (✓)				Gradient U, S, D or N	
								Diam.	Type	Top of Well Casing	Ground Surface	MSL (✓)	Site datum (✓)			Other	Abandoned	Enf. Sids Apply			
WP-01		759246.78	X				7-7-94 7/13/94	2.0	S	693.68	691.1	✓		3	6.0	X				No	D
		2598818.77		X	X																
WP-02		758826.94 758826.94	X				7-6-94	2.0	S	700.31	698.3	✓		3	14.0	X				No	D
		2599274.65			X																
WP-04		758986.84	X				7-6-94	2.0	S	689.61	687.1	✓		3	7.0	X				No	D
		2599720.39			X																
WP-05		759393.17	X				7-6-94	2.0	S	695.68	694.7	✓		3	13.5	X				No	D
		2599856.52			X																
WP-06		758757.93	X				7-6-94	2.0	S	700.19	698.1	✓		3	19.3	X				No	D
		2599856.52			X																
WP-07		759103.36	X				7-5-94	2.0	S	696.70	693.8	✓		3	12.5	X				No	D
		2599990.86			X																
WP-08		759554.21	X				7-6-94	2.0	S	708.38	706.1	✓		3	26.0	X				No	D
		2600181.50			X																

Location Coordinates Are:

- Local Grid System (preferred)
 State Plane Coordinate
 Northern
 Central

Remarks:

PSS Use:

File Maint. Completed: _____

Other: _____

TABLE 2

**BOREHOLE SAMPLING SUMMARY
FORMER GRAVEL PIT
TOWN OF NEWTON, WISCONSIN**

Boring Number	Coordinates ¹		Ground Surface Elevation (ft MSL)	Total Depth (ft BGS)	Sample Interval (ft BGS)	Medium/Sample Type	Analytes	Completion Boring or Well Date
	Northing	Easting						
WT-02A	759054.16	2599273.35	734.1	58	54-56	Soil/Geotech ²	NA	WT-02A Installed 8/11/94
PZ-05B	758615.75	2599408.65	685.2	58	13-15 33-35 53-55	Soil/Geotech Soil/Geotech Soil/Geotech	NA NA NA	WT-05 Installed 8/17/94 PZ-05A installed 8/17/94 PZ-05B installed 8/16/94
B-16	759671.92	2599656.22	718.9	32	10-12 27-32	Soil/Chemical Water/Chemical	VOCs, Metals, SVOCs, PCBs VOCs	Abandoned 7/22/94
B-17	759606.16	2599552.48	710.6	24	0-2 19-24	Soil/Chemical Water/Chemical	VOCs, Metals, SVOCs, PCBs VOCs	Abandoned 7/21/94
B-18	759489.59	2599726.16	715.0	30	10-12 25-30	Soil/Chemical Water/Chemical	VOCs, Metals, SVOCs, PCBs VOCs	Abandoned 7/21/94
B-19	759605.84	2599698.06	719.0	34	12-14 29-34	Soil/Chemical Water/Chemical	VOCs, Metals, SVOCs, PCBs VOCs	Abandoned 7/22/94
B-20	758887.85	2599125.85	729.2	44	42-44 39-44	Soil/Chemical Water/Chemical	VOCs, Metals, SVOCs, PCBs VOCs	Abandoned 7/20/94

TABLE 3

**HYDROPUNCH® VERTICAL PROFILING SUMMARY
FORMER GRAVEL PIT
TOWN OF NEWTON, WISCONSIN**

Hydropunch® Number	Coordinates ¹		Ground Surface Elevation (ft MSL)	Groundwater Sample Intervals (ft BGS)	Depth to Bedrock (ft BGS)
	Northing	Easting			
HP-01	758813.33	2599398.30	693.4	11 to 14 41 to 44	97.0
HP-02	759021.18	2599390.18	687.8	4 to 8 36 to 40 66 to 70	89.5
HP-05	758916.74	2599745.73	686.7	2 to 6 36 to 40 67.5 to 71.5	88.5
HP-08	758606.71	2600118.00	685.2	0 to 4 36 to 40 68 to 70	78.5
HP-09	758824.38	2599853.64	697.3	15 to 19 45 to 49 79 to 82	102.5
HP-10	758587.69	2598847.10	689.07	4 to 8 33 to 37 63 to 67	>67
HP-11	759641.04	2599685.77	718.8	62 to 66 92 to 96 123 to 125 ²	>125

NOTES:

- 1 State Plane Coordinates
- 2 Soil Sample
- HP = Hydropunch®
- ft = feet
- MSL = Mean Sea Level
- BGS = Below Ground Surface

TABLE 9

**SUMMARY OF COMPOUNDS DETECTED IN SOIL
NORTHERN SOURCE AREA
FORMER GRAVEL PIT
TOWN OF NEWTON, WISCONSIN**

Parameter	NR 720 Residual Contaminant Level (RCL)	B-16 (10-12)	B-19 (12-14)	B-17 (0-2)	B-15 (12-14)	B-18 (10-12)
SEMI-VOLATILE ORGANIC COMPOUNDS (ug/kg)						
Benzo(a)anthracene	No RCL	6200	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	No RCL	43000	ND	ND	ND	ND
4-Chloroaniline	No RCL	J 21000	ND	ND	ND	ND
Chrysene	No RCL	6200	ND	ND	ND	ND
Fluoranthene	No RCL	11000	ND	ND	ND	ND
2-Methynaphthalene	No RCL	12000	ND	ND	ND	ND
Phenanthrene	No RCL	15000	ND	ND	ND	ND
Pyrene	No RCL	13000	ND	ND	ND	ND
VOLATILE ORGANIC COMPOUNDS (ug/kg)						
Naphthalene	No RCL	57	ND	ND	0.044	ND
Methylene Chloride	No RCL	13 B	13 B	9.3 B	ND	5.9 B
1,4-Dichlorobenzene	No RCL	55	ND	ND	ND	ND
Ethylbenzene	2900	11	ND	ND	ND	ND
Isopropylbenzene	No RCL	8.6	ND	ND	ND	ND
p-Isopropyltoluene	No RCL	140	ND	ND	ND	ND
n-Propylbenzene	No RCL	29	ND	ND	ND	ND
1,2,4-Trimethylbenzene	No RCL	290	ND	ND	ND	ND
1,3,5-Trimethylbenzene	No RCL	86	ND	ND	ND	ND

TABLE 9 (Continued)

**SUMMARY OF COMPOUNDS DETECTED IN SOIL
NORTHERN SOURCE AREA
FORMER GRAVEL PIT
TOWN OF NEWTON, WISCONSIN**

Parameter	NR 720 Residual Contaminant Level (RCL)	B-16 (10-12)	B-19 (12-14)	B-17 (0-2)	B-15 (12-14)	B-18 (10-12)
ylene	4100 (total)	35	ND	ND	ND	ND
p-Xylene	No RCL	56	ND	ND	ND	ND
Bs	No RCL	ND	ND	ND	ND	ND
ORGANIC CONSTITUENTS (mg/kg)						
enic	1.6	3.4	1.1	2.3	ND	0.65
ium	No RCL	540	27	50	ND	11
lmium	510	470	4.4	ND	ND	ND
omium	200 (hexavalent) 16000 (trivalent)	1500	25	14	ND	1.6
d	500	350	5.5	7.6	ND	ND
rcury	No RCL	7.1	0.80	ND	ND	ND
enium	No RCL	0.49	ND	ND	ND	ND
er	No RCL	28	ND	ND	ND	1.7
TES:						
- Not Detected						
Estimated						

TABLE 10
SUMMARY OF VOCs DETECTED IN
GROUNDWATER - NORTHERN SOURCE AREA
FORMER GRAVEL PIT
TOWN OF NEWTON, WISCONSIN

Units: ug/l		Benzene	1,1-Dichloroethane	cis-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl Chloride	o-Xylene	Chloroform	trans-1,2-Dichloroethene	Methylene Chloride	1,1,1-Trichloroethane	Bromodichloromethane	Dibromochloromethane	Napthalene	1,2,4-Trimethylbenzene	Toluene	Chlorobenzene	Ethylbenzene	m/p-Xylene	
PAL		1	85	7	0.5	0.5	0.02	124	0.6	20	15	40	36	43	8		68.6		140	124	
ES		5	850	70	5	5	0.2	620	6	100	150	200	179	215	40		343		700	620	
Sample Location	Sample Elevation																				
HP-11	656.8-652.8	ND	ND	ND	ND	ND	ND	ND	2.6*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HP-11	626.8-622.8	1.3*	ND	ND	ND	ND	ND	ND	1.2*	ND	1.2*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-16-GW	688.9-686.9	2.0	ND	ND	ND	14	ND	ND	ND	ND	14	ND	ND	ND	ND	1.6	1.0	ND	ND	ND	ND
B-17-GW	688.6-686.6	1.5	ND	ND	ND	4.6	ND	ND	ND	ND	10*	ND	ND	ND	ND	ND	ND	1.1	ND	ND	ND
B-18-GW	687.0-685.0	ND	ND	ND	ND	1.7	ND	ND	ND	ND	ND	9.7*	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-19-GW	687.0-685.0	ND	ND	ND	ND	16	ND	ND	ND	ND	13*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

NOTES:

- ¹ PAL - Preventative Action Limit per Chapter NR 140.10 of the Wisconsin Administrative Code.
- ² ES - Enforcement Standard per Chapter NR 140.10 of the Wisconsin Administrative Code.
- ³ WP = Temporary Well Point; HP = Hydropunch® Boring; WT = Water Table Well; PZ = Piezometer
- ⁴ Elevation of water table or elevation interval over which sample was collected.
- ⁵ Groundwater sample was collected from open borehole.
- ⁶ Compound detected in associated trip blank indicated by "**"
- ⁷ Shaded areas show exceedances of PAL.