Paragon Electric Company, Inc.

Summary of Additional Subsurface Exploration and Remedial Design Efforts

Two Rivers, Wisconsin

Dec 1994

December 22, 1994

Ms Annette Weissbach
Wisconsin Department of Natural Resources
1125 N. Military Avenue
P.O. Box 10448
Green Bay, Wisconsin 54307-0448

Re: Summary of Additional Subsurface Exploration and Remedial Design Efforts, Paragon Electric Company, Inc., Two Rivers, WI -- STS Project No. 18367XF

Dear Ms Weissbach:

On behalf of Paragon Electric Company, Inc. (Paragon), STS Consultants, Ltd., (STS) has prepared this letter summarizing additional subsurface exploration and remedial design efforts that were recently completed for the above referenced site.

Results of Additional Subsurface Exploration

STS completed a Geoprobe exploration at the site in July 1994 to further delineate the extent of soil and groundwater impacted by the previous trichloroethene (TCE) release. Upon completion of the Geoprobe exploration, STS installed a temporary well, identified as TW-1, to further evaluate aquifer characteristics. STS Drawing 18367XF-201 depicts the Geoprobe and temporary well locations.

A total of seven Geoprobe borings were conducted during the exploration. Each boring was extended to a depth of 30 feet. Soil and groundwater was sampled at 5-foot intervals and analyzed on site for TCE with a field gas chromatograph. Approximately ten percent of the samples were sent to Enviroscan Corp.'s laboratory for certified confirmational analysis. Soil samples were also analyzed for grain size analysis. A copy of Enviroscan Corp.'s analytical report is enclosed for your review. The results of the grain size analyses and TCE analyses are plotted on STS Drawings 18367XF-202 through 204. The extent of TCE impacts to soil and groundwater are shown on STS Drawings 18367XF-205 and 206.

After establishing the extent of TCE impacts, field permeability data was collected from temporary well TW-1. The data was used to estimate a groundwater capture zone at pumping rates of one and four gallons per minute. STS Drawings 18367XF-207 and 208 illustrate the capture zones.

STS Consultants Ltd.
Consulting Engineers

1035 Kepler Drive
Green Bay, Wisconsin 54311
414.468.1978/Fax 414.468.3312

Based on the subsurface exploration results, STS concludes that the TCE plume is migrating southeast as shown on STS Drawing 18367XF-201. Previous findings had suggested that groundwater flow was due south. The most impacted groundwater is present at an elevation ranging from 565 to 575 Mean Sea Level (MSL) (approximately 18 to 28 feet below the ground surface). The plume definition results also indicate that existing extraction well EXT-15 was installed on the periphery of the TCE plume at a depth too deep to extract the most impacted groundwater. Grain size analyses of samples collected from the screen interval of EXT-15 also indicate that the soil geology is too silty for extraction of groundwater at a rate greater than one gallon per minute.

Based on the Geoprobe findings and current site conditions, STS recommends installation of an extraction well at the location of TW-1 with the well screen set at elevation 565 to 575 MSL. Groundwater modeling results suggest a substantial portion of the TCE plume located further downgradient of the source will be captured with this proposed well. The extraction well will be connected via transfer piping to extraction well EXT-15 where it will be fed through existing piping to the treatment system.

Remedial Design and Construction

STS has enclosed engineering Drawings 18367XF-401 and 402 for the proposed extraction well and transfer piping that we discussed with you during our meeting on October 19, 1994. The extraction well and transfer piping will augment the existing remediation system as described above. STS and Paragon are currently applying for a site access permit with the Wisconsin Department of Transportation to install the proposed system in their right-of-way. Construction and drilling bids have also recently been solicited. STS anticipates construction to commence within three weeks of issuance of the access permit.

If you have any questions regarding this letter, please contact us.

Sincerely,

STS CONSULTANTS LTD.

Paul R. Blindauer
Associate

James A. Senger, CPG
Principal Geologist

PRB/hlw

Enclosures:

STS Drawings 18367XF-201 through 208
STS Drawings 18367XF-401 through 402
Enviroscan Corp. Analytical Report

GEOPROBE™ SAMPLING
AND
ON-SITE GROUNDWATER
AND SOIL SCREENING REPORT

FOR

STS CONSULTANTS LTD.

SITE LOCATION:

Paragon Electric
Two Rivers, Wisconsin

BY:

ENVIROSCAN CORP.

August 25, 1994

GEOPROBE™ SAMPLING
AND
ON-SITE GROUNDWATER AND SOIL SCREENING REPORT

FOR

STS CONSULTANTS LTD.

TABLE OF CONTENTS

GEOPROBE™ SAMPLING
AND
ON-SITE GROUNDWATER AND SOIL SCREENING REPORT

FOR

STS CONSULTANTS LTD.

I. CLIENT INFORMATION

The groundwater/soil sampling and on-site analysis work summarized in this report was conducted for:

STS Consultants Ltd. (STS)
1035 Kepler Drive
Green Bay, WI 54311

Contact Person: Mr. Paul Blindauer
Phone Number: (414) 468-1978

II. PROJECT DESCRIPTION

A. Site Description

The field sampling and on-site analysis was conducted at Paragon Electric, Two Rivers, Wisconsin.

B. Project Objectives

The primary objective of this project was to determine the presence of Trichloroethylene (TCE) in the groundwater and soil at selected sampling locations.

C. Target Compounds

STS personnel selected TCE as the analytical target parameter for this project.

III. FIELD SAMPLING PROCEDURES

A. General

Groundwater and soil samples were collected by Enviroscan during the field work conducted on July 26 and 27, 1994. Thirty-two soil samples and 21 groundwater samples were analyzed by mobile laboratory gas chromatograph (GC). The samples were collected using the Geoprobe™ system. All sample point locations were selected by STS personnel.

Before mobilizing to the project site, all sampling equipment was decontaminated by washing thoroughly in a hot water/detergent solution followed by rinsing with hot tap water. Equipment was allowed to air dry prior to use in the field. Clean sampling equipment was used at each sample point.

After removal of the probe column, the probe holes were completely filled with granular bentonite.

B. Collection of Soil Samples

All soil samples were collected using the Geoprobe™ AT-660 series, large bore, soil sampling system. This system is designed to collect a discrete soil sample at depth without contamination from the upper soil profile through which the sampler is driven. The sampling device consists of a two-foot long, 1.125-inch diameter, steel sample tube with a removable cutting shoe and acetate tube liner. The sampling tube assembly attaches to standard Geoprobe™ probe rods by means of a drive head adapter fitting. A pointed steel piston, which

completely seals the mouth of the sample tube, is held securely in place by a threaded piston stop pin in the drive head adapter fitting. After the probe column is driven to the desired sampling depth, a small-diameter threaded rod is inserted down the probe column into the threaded piston stop pin. The piston stop pin (having a left-hand thread) is unscrewed and removed along with the small-diameter threaded rod. Removal of the stop pin releases the piston and the sampler is driven approximately two feet deeper into the soil profile. The piston retracts as soil is forced into the sample tube. The entire probe column is then removed from the probe hole and the sampler is disassembled. The acetate liner is removed from the steel sample tube allowing visual examination of the two-foot soil profile contained within. Loose soil may be poured from the acetate tube or the liner tube may be cut open for sample collection and classification. When full, the sample tube recovers approximately 400 milliliters of soil.

Between samples, the sampling device was decontaminated by washing with laboratory detergent and thoroughly rinsing with clean tap water. A clean, unused acetate tube liner was used for each sample.

STS personnel examined the two-foot soil profiles and indicated the sample to be used by Enviroscan for mobile lab analysis.

C. Collection of Groundwater Samples

Groundwater samples were collected by Enviroscan by advancing a clean, two foot long, alloy steel, slotted well screen into the groundwater table. The well screen (connected to Geoprobe™ rods) was allowed to fill with groundwater. A clean, unused length of 1/4-inch O.D. Teflon tube was lowered to the bottom of the probe column. The upper end of the Teflon tube was fitted through a rubber stopper into a clean glass vacuum flask. A hand operated vacuum pump was used to draw a vacuum on the flask which, in turn, drew groundwater from the probe into the Teflon tubing. Groundwater from the tubing was immediately transferred into 40-milliliter VOC vials following standard sampling protocol for VOC analysis. Each vial contained several drops of hydrochloric acid as preservative. The groundwater vials were temporarily stored on ice or were prepared for on-site analysis immediately after sampling.

The vacuum flask was washed between samples with laboratory detergent solution and was thoroughly rinsed with clean tap water followed by distilled water.

IV. ANALYTICAL PROCEDURE

All groundwater and soil samples collected for field headspace screening were analyzed by Enviroscan personnel. Analytical instrumentation consisted of a compact HNU Model 321, temperature-programmable gas chromatograph (GC) with a photoionization detector (PID) using a 10.2 eV lamp, and a flame ionization detector (FID) operated

in series. The GC system was set up with a wide-bore capillary column and programmed for temperature ramping. Data acquisition and management was facilitated by an on-board 386 computer system with printer and a commercially available gas chromatography software package.

Fifteen-gram samples of soil were collected for mobile lab analysis from the acetate soil sampler tube. Each 15-gram sample was weighed out into a 40-milliliter vial containing 15 milliliters of distilled water and several drops of hydrochloric acid as preservative. The vial was agitated for approximately 30 seconds, then was placed in a dry, constant-temperature bath. After thermal and chemical equilibrium was established (a minimum of 25 minutes), a one-milliliter volume of headspace was removed from the vial through the septum and was injected into the GC using a gas-tight GC syringe.

Groundwater samples, collected in 40-milliliter vials, were prepared for analysis by removing and discarding 20 milliliters of sample from the vial. This was performed by inserting the needle of a clean, unused, 20-milliliter disposable syringe through the vial septum. A second disposable syringe needle was inserted through the vial septum to allow ambient air to enter the vial headspace while 20 milliliters of sample was withdrawn. The syringe needles were removed and the vial was then placed in a constant-temperature dry bath (65-70°C). After a minimum of 25 minutes, a one-milliliter volume of headspace vapor was removed and injected into the GC using a gas-tight GC syringe.

Quality Assurance/Quality Control (QA/QC) for analysis performed during this project consisted of the following:

- GC calibration using a minimum of three calibration standard concentrations per target compound (performed on site or prior to mobilization).
- A minimum of one calibration check standard at the beginning and end of each field day to check calibration and retention times.

V. DISCUSSION

The results of field headspace analysis are presented in Table 1 (Appendix A). The results summarize the concentrations of TCE in the samples and related compounds Tetrachloroethylene (Perc) and TCE degradation products cis- and trans-1,2-Dichloroethylene (c12DCE and t12DCE). Vinyl chloride, another degradation product, was observed in several samples (designated "VC" in Table 1) but could not be quantitated as the field GC was not in calibration for this compound. The GC was in calibration for Toluene which was quantified for two samples. One sample (PB4-2,10-12') contained numerous low concentration peaks indicating the potential presence of hydrocarbons.

The concentrations of TCE and related compounds in the samples were frequently very high. In an attempt to keep the concentrations on-scale and in quantifiable amounts, the attenuation of the GC was increased from 10 to 100 and the headspace volume injected into the GC was diluted 1:10. Concentrations that were still off-scale are reported as low estimates of the actual concentrations. Concentrations that exceeded the highest calibration standard are designated with "*" for c12DCE (>148. ug/l without dilution and

>1,480. ug/l with a 1:10 dilution) and "**" for TCE (>196. ug/l without dilution and >1,980. ug/l with a 1:10 dilution) for both soils and groundwaters.

Three groundwater samples were also selected for laboratory confirmation analysis: GP3-30', GP4-25' and GP6-30'. In general, the field results indicate good correlation with the laboratory results, also given in Table 1. Even with high concentrations of one or two compounds in a sample, the lower-concentration compounds were still well quantified.

VI. QUALIFICATIONS AND LIMITATIONS

The information gathered during this groundwater/soil sampling and field screening work is limited in scope to a specific study area and a specific type of contamination. The results and conclusions of this survey should not be construed as relating in any way to contamination outside the specified study area nor to contaminants for which analyses were not run.

It should be noted that the calibration of this field screening method is based on a mixture of VOCs with varying vapor pressures and partition coefficients. The concentrations reported for compounds when only one or several compounds, or when numerous peaks (typical of petroleum products), are present in a sample, assumes that the same volatilization of each compound will occur as it does in the calibration mixture. Also, this method is restricted by the limit of compound that will volatilize into the headspace and dilution of the sample headspace creates a greater potential for variation in the results.

APPENDIX A

ON-SITE ANALYTICAL RESULTS

TABLE 1. SOIL AND GROUNDWATER ANALYTICAL RESULTS
PARAGON ELECTRIC, TWO RIVERS, WISCONSIN
JULY 26 & 27, 1994
for STS CONSULTANTS LTD.

Sample	Depth	Run/ Number	Dilu	Attn	t12DCE	c12DCE	TCE	PERC	COMMENTS
2.0 ug/l Water Stnd	--	0726-02	--	10	2.7	1.8	3.1	4.4	
					(+) 30%	(-) 4%	(+) 27%	(+) 79%	
6.0 ug/kg Soil Stnd	--	0726-03	--	10	20.5	18.4	23.3	23.6	
					(-) 2%	<1%	(-) 5%	(-) 4%	
PB3-1	5-7'	0726-06	--	10	<2.0	<2.0	<2.4	NA	
PB3-2	10-12'	0726-07	--	10	<2.0	<2.0	<2.4	<2.4	
PB3-3	15-17'	0726-08	--	10	<2.0	<2.0	<2.4	<2.4	
	GW	0726-12	--	10	<1.0	<1.0	<1.2	<1.2	
PB3-4	20-22'	0726-09	--	10	<2.0	<2.0	29.7	<2.4	
	GW	0726-13	--	10	<1.0	<1.0	11.0	<1.2	
PB3-5	25-27'	0726-10	--	100	36.6	115.	106.	<6.0	
	GW	0726-14	--	100	113.	406.*	171.	<3.0	VC
PB3-6	30-32'	0726-11	--	100	7.0	130.	<6.0	<6.0	VC
	GW	0726-15	--	100	35.0	>462.*	15.4	<3.0	VC
	GW-LAB RESULTS	*16752*	--	--	*34.8*	*529.*	*75.6*	*<0.5*	*VC=71.85*
PB4-1	5-7'	0726-16	--	10	<2.0	<2.0	<2.4	<2.4	
PB4-2	10-12'	0726-17	--	10	<2.0	<2.0	3.8	<2.4	Hydrocarbons
PB4-3	15-17'	0726-18	--	10	<2.0	<2.0	23.5	<2.4	
	GW	0726-22	--	100	<2.5	<2.5	<3.0	<3.0	
PB4-4	20-22'	0726-19	--	100	<5.0	64.8	>800.**	48.8	
	GW	0726-23	--	100	3.2	188.	>809.**	88.8	
PB4-5	25-27'	0726-20	--	100	<5.0	361.	>735.**	<6.0	
	GW	0726-24	1:10	100	322.	>7,480.*	>9,000.**	<30.	Toluene=105.
	GW-LAB RESULTS	*16751*	--	--	*<250.*	*11,559.*	*48,032.*	*<250.*	*Toluene <1000.*
PB4-6	30-32'	0726-21	1:2	100	193.	>1,430.*	453.**	<12.	
	GW	0726-25	1:10	100	679.	>6,000.*	>6,360.**	<30.	

TABLE 1. SOIL AND GROUNDWATER ANALYTICAL RESULTS
PARAGON ELECTRIC, TWO RIVERS, WISCONSIN
JULY 26 & 27, 1994
for STS CONSULTANTS LTD.

Sample	Depth	Run/ Number	Dltn	Attn	t12DCE	c12DCE	TCE	PERC	COMMENTS
PB6-1	15-17'	0726-26	--	10	<2.0	<2.0	>104.**	>34.3	
PB6-2	20-22'	0726-27	--	100	<5.0	8.1	>860.**	29.9	
	GW	0726-30	1:10	100	<25.	<25.	>7,950.**	352.	
PB6-3	25-27'	0726-28	1:10	100	<50.	380.	>6,560.**	<60.	
PB6-4	30-32'	0726-29	1:10	100	<50.	207.	1,350.	<60.	
	GW	0726-31	1:10	100	107.	476.	>4,930.**	<30.	
	GW-LAB RESULTS	*16750*	--	--	*<250.*	*339.*	*10,225.*	*<250.*	
20.ug/l Water Stnd	--	0726-32	--	100	17.9	13.0	24.4	22.8	
					(-) 14%	(-) 30%	<1%	(-) 7%	
80.ug/kg Soil Stnd	--	0726-34	--	100	79.8	76.6	92.6	91.2	
					(-) 5%	(+) 4%	(-) 6%	(-) 7%	
160.ug/l Water Stnd	--	0727-02	--	100	180.	187.	243.	301.	
					(+) 8%	(+) 27%	(+) 24%	(+) 35%	
160.ug/kg Soil Stnd	--	0727-03	--	100	194.	213.	257.	259.	
					(+) 14%	(+) 44%	(+) 24%	(+) 24%	
PB7-1	15-17'	0727-04	--	100	<5.0	<5.0	13.8	<6.0	
PB7-2	20-22'	0727-05	--	100	<5.0	<5.0	78.7	<6.0	
	GW	0727-08	1:10	100	<25.	<25.	288.	<30.	
PB7-3	25-27'	0727-06	1:10	100	<50.	<50.	1,080.	<60.	
PB7-4	30-32'	0727-07	1:10	100	<50.	<50.	<60.	<60.	
	GW	0727-09	--	100	10.1	12.9	160.	<3.0	
PB2-1	15-17'	0727-10	--	100	<5.0	<5.0	>491.**	10.2	
PB2-2	20-22'	0727-11	1:10	100	<50.	<50.	>6,010.**	<60.	
	GW	0727-14	1:10	100	<25.	1,080.	>6,700.**	136.	
PB2-3	25-27'	0727-12	1:10	100	114.	>7,270.*	>8,640.**	<60.	
	GW	0727-15	1:10	100	250.	>8,000.*	>9,050.**	<30.	Toluene=109.
PB2-4	30-32'	0727-13	1:10	100	267.	4,010.*	>4,810.**	<60.	
	GW	0727-16	1:10	100	566.	>6,380.*	>6,500.**	<30.	

TABLE 1. SOIL AND GROUNDWATER ANALYTICAL RESULTS
PARAGON ELECTRIC, TWO RIVERS, WISCONSIN
JULY 26 & 27, 1994
for STS CONSULTANTS LTD.

Sample	Depth	Run/ Number	Dltn	Attn	t12DCE	e12DCE	TCE	PERC	COMMENTS
PB1-1	15-17'	0727-17	--	100	6.2	14.5	>805.**	16.0	
PB1-2	20-22'	0727-18	1:10	100	<50.	200.	>6,650.**	<60.	
	GW	0727-21	1:10	100	399.	1,080.	>7,910.**	49.4	
PB1-3	25-27'	0727-19	1:10	100	138.	533.	>4,410.**	<60.	
	GW	0727-22	1:10	100	301.	1,060.	>5,150.**	<30.	
PB1-4	30-32'	0727-20	1:10	100	<50.	<50.	<60.	<60.	
	GW	0727-23	1:10	100	58.1	122.	>3,300.**	<30.	
PB5-1	15-17'	0727-24	--	100	<5.0	<5.0	668.**	15.0	
PB5-2	20-22'	0727-25	1:10	100	<50.	<50.	3,130.**	<60.	
	GW	0727-28	1:10	100	<25.	<25.	>3,790.**	<30.	
PB5-3	25-27'	0727-26	1:10	100	<50.	56.2	214.	<60.	
	GW	0727-29	1:10	100	161.	146.	2,090.**	<30.	
PB5-4	30-32'	0727-27	--	100	<5.0	7.9	23.8	<6.0	
	GW	0727-30	1:10	100	54.1	44.4	105.	<30.	
80.ug/l Water Stnd	--	0727-31	--	100	66.1	61.7	78.4	94.2	
					(-) 21%	(-) 16%	(-) 20%	(-) 4%	
80.ug/kg Soil Stnd	--	0727-32	--	100	90.3	80.0	104.	112.	
					(+) 8%	(+) 8%	(+) 6%	(+) 14%	

Water Units: ug/l Soil Units: ug/kg

Dltn	Dilution
Attn	GC Attenuation
t12DCE	trans-1,2-Dichloroethylene
e12DCE	cis-1,2-Dichloroethylene
TCE	Trichloroethylene
PERC	Tetrachloroethylene
VC	Vinyl Chloride - Present but not quantified
*	Value is an estimate - exceeds highest standard concentration (174.ug/l; 1,740.ug/l for dilution)
**	Value is an estimate - exceeds highest standard concentration (198.ug/l; 1,980.ug/l for dilution)
>	Value is a low estimate - peak is beyond the range of the GC and may be above the highest standard concentrations listed under * and **

BUILDING B

LEGEND

- RAILROAD
- FENCE
- PP POWER POLE
- STATION
- FIRE HYDRANT
- TREE OR SHRUB
- GAS LINE
- WATER LINE
- SEWER PIPE
- MONITORING WELL
- BORING
- PIEZOMETER
- STORM SEWER MANHOLE
- SANITARY SEWER MANHOLE
- 591.0 SPOT ELEVATIONS
- STEEL POST
- WATER VALVE
- GEOPROBE BORING
- (581.17) GROUNDWATER ELEVATION
- GROUNDWATER FLOW DIRECTION
- 584 GROUNDWATER CONTOUR

BUILDING C

PRESS ROOM

DOOR

TOE FILLPIPE

FLAGPOLE

GAS VALVE

WATER LINE

GAS LINE

M/H STEEL COVER

ST 18" STEEL M/H

BILL BOARD

3" IRON PIPE ?

EXT-15 PROTECTED IN M/H

PAY PHONE

R.O.W.

PUMP ISLAND

GAS STATION

RR UTILITY BOX

48" DIA. ST SEWER TO LAKE MICHIGAN

48" DIA. CMP

MW-1 (584.05)
MW-2 (583.85)
MW-3 (583.07)
MW-4 (581.90)
MW-5 (584.17)
MW-6 (582.59)
MW-7 (582.15)
MW-8 (582.96)
PZ-4A
PZ-7
PZ-13
PZ-14
B-10
CBC-1
CBC-2
CBC-3
P-1
PB-1
PB-2
PB-3
PB-4
PB-5
PB-6
PB-7
TW-1

NOTE : LOCATION OF UTILITIES ARE APPROXIMATE

N

60 0 60
SCALE FEET
1"=60'

DRAWN BY	J.R.L.	DATE 10-18-94
CHECKED BY	J.E.L.	DATE 10-18-94
APPROVED BY		DATE

CADFILE C:\JRL\18367XF\RED\GEOPROBE.DWG

PARAGON ELECTRIC COMPANY, INC.
TWO RIVERS, WISCONSIN

GROUNDWATER CONTOUR MAP (6-30-94)

STS Consultants Ltd.
Consulting Engineers

STS PROJECT NO.	18367XF
STS PROJECT FILE	
SCALE	1"=60'
SHEET NO.	18367XF-201

BUILDING B

BUILDING C

LEGEND

- RAILROAD
- FENCE
- PP POWER POLE
- STATION
- FIRE HYDRANT
- TREE OR SHRUB
- GAS LINE
- WATER LINE
- SEWER PIPE
- MONITORING WELL
- BORING
- PIEZOMETER
- STORM SEWER MANHOLE
- SANITARY SEWER MANHOLE
- 561.0 SPOT ELEVATIONS
- STEEL POST
- WATER VALVE
- PROPOSED GEOPROBE BORING (GB)

MW-3, MW-5, PZ-4A, MW-4, CBC-1, CBC-3, CBC-2, PRESS ROOM, TCE FILLPIPE, DOOR, HYD., 5" DIA., P-1, MW-1, GAS VALVE, PZ-5A, WATER LINE, MW-12, GATE, FLAGPOLE, MW-2, M/H, MW-8, 10" DIA., P.P., PUMP ISLAND, GAS STATION, B-10, MW-9, SIGN, GAS VALVE, GAS LINE, 2" DIA., M/H STEEL COVER, 5" IRON PIPE ?, ST 18" STEEL M/H, PB-1, PB-2, PB-3, PB-4, PB-5, PB-6, PB-7, PZ-7, PZ-13, PZ-14, BILL BOARD, EXT-15 PROTECTED IN M/H, R.G.W., PAY PHONE, TW-1, WATER, LP, 48" DIA. ST SEWER TO LAKE MICHIGAN, RR UTILITY BOX, TEL, 48" DIA. CMP

60 0 60
SCALE FEET
1" = 60'

NOTE : LOCATION OF UTILITIES ARE APPROXIMATE

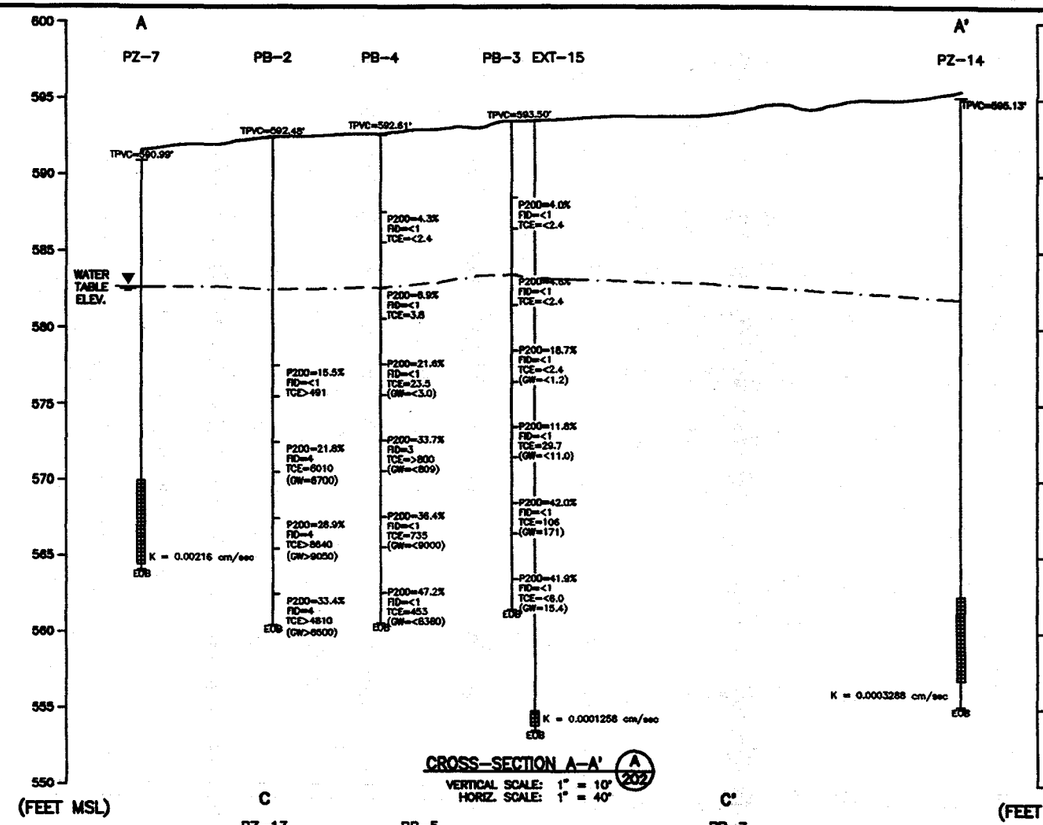
DRAWN BY J.R.L. DATE 10-18-94
CHECKED BY J.E.L. DATE 10-18-94
APPROVED BY DATE
CADFILE C:\JRL\18367XF\RED\R201INDX.DWG

PARAGON ELECTRIC COMPANY, INC.
TWO RIVERS, WISCONSIN

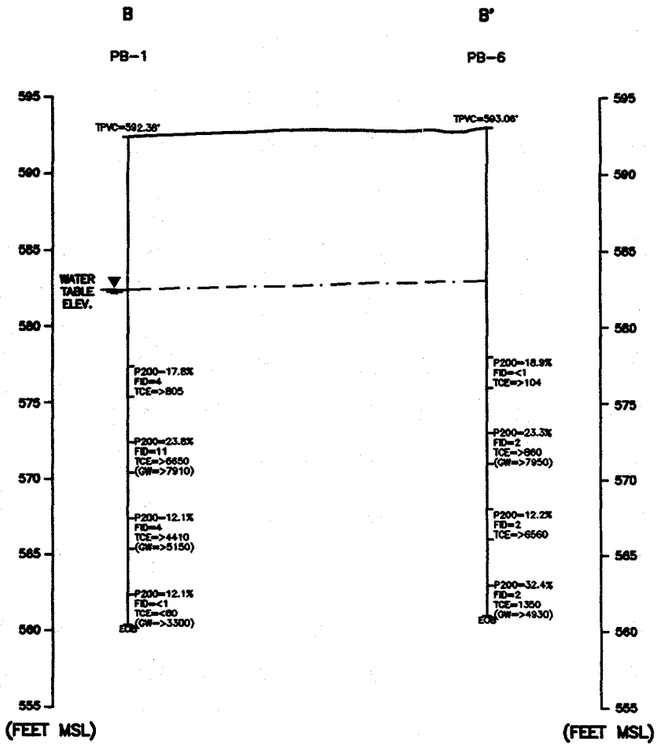
GEOLOGIC CROSS-SECTION INDEX

STS Consultants Ltd.
Consulting Engineers

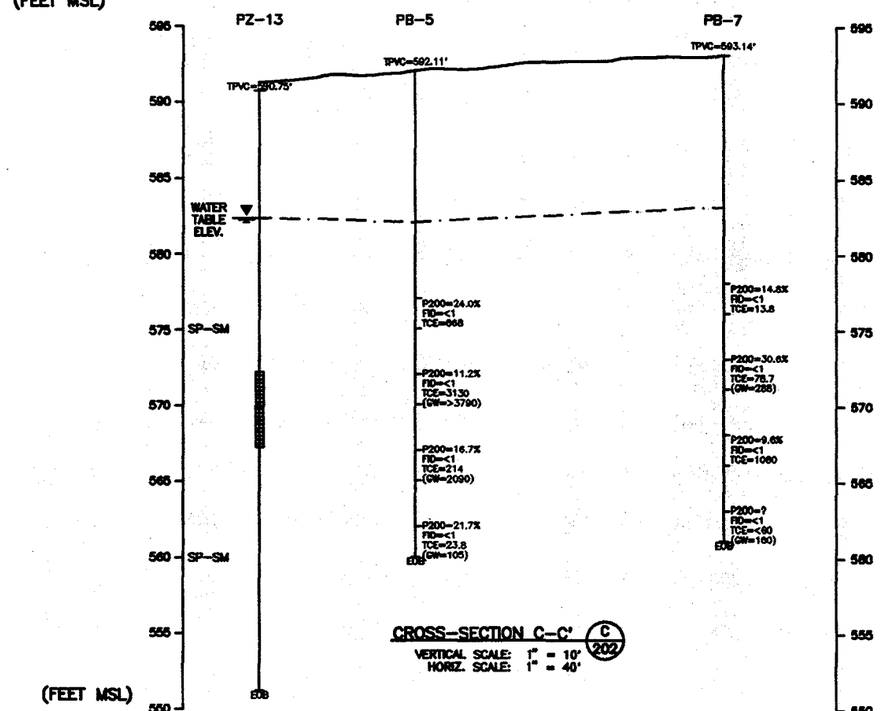
STS PROJECT NO. 18367XF
STS PROJECT FILE
SCALE 1" = 60'
SHEET NO. 18367XF-202



CROSS-SECTION A-A' (A 202)
VERTICAL SCALE: 1" = 10'
HORIZ. SCALE: 1" = 40'

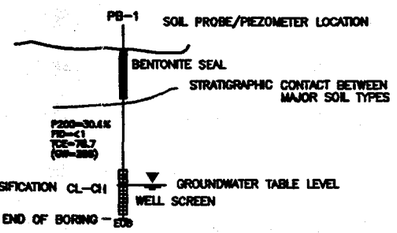


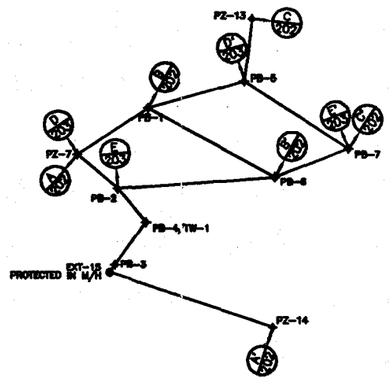
CROSS-SECTION B-B' (B 202)
VERTICAL SCALE: 1" = 10'
HORIZ. SCALE: 1" = 40'



CROSS-SECTION C-C' (C 202)
VERTICAL SCALE: 1" = 10'
HORIZ. SCALE: 1" = 40'

LEGEND





CROSS-SECTION INDEX
SCALE: 1" = 100'

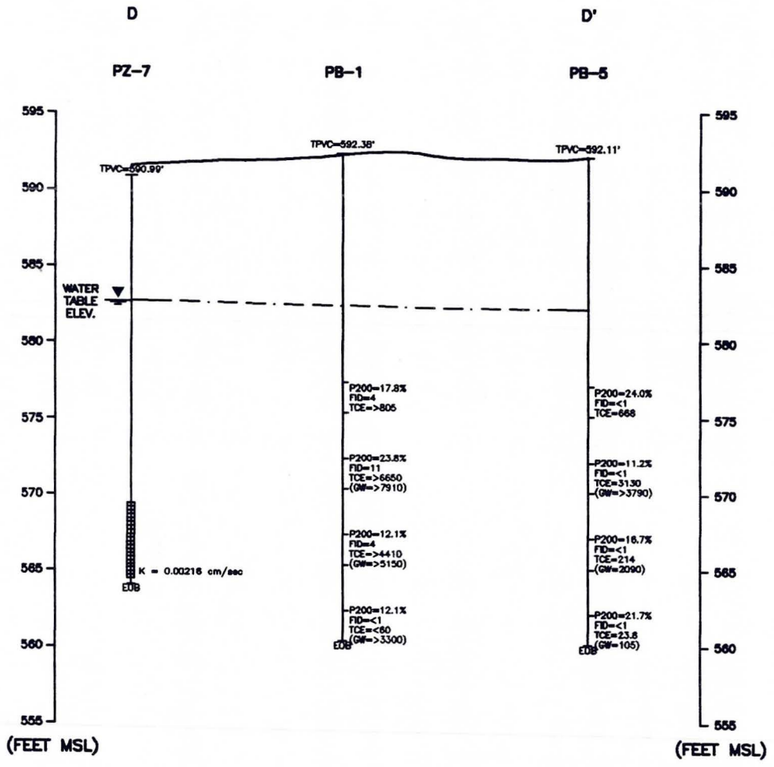
PARAGON ELECTRIC COMPANY, INC.
TWO RIVERS, WISCONSIN

GEOLOGIC CROSS-SECTION A-A', B-B', AND C-C'

DRAWN BY	J.R.L.	DATE 10-18-94
CHECKED BY	J.E.L.	DATE 10-18-94
APPROVED BY		DATE
CADFILE	C:\JRL\18367XF\RED\R202ABC.DWG	

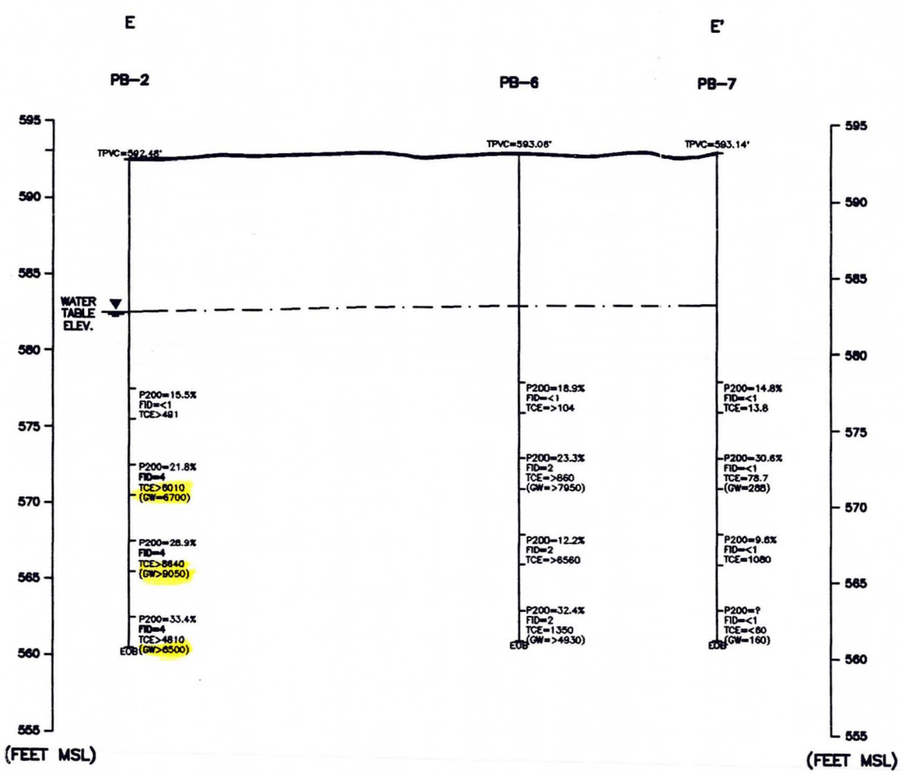
STS Consultants Ltd.
Consulting Engineers

STS PROJECT NO.	18367XF
STS PROJECT FILE	
SCALE	AS NOTED
SHEET NO.	18367XF-203



CROSS-SECTION D-D' (D / 203)

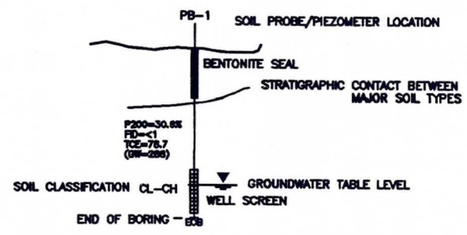
VERTICAL SCALE: 1" = 10'
HORIZ. SCALE: 1" = 40'

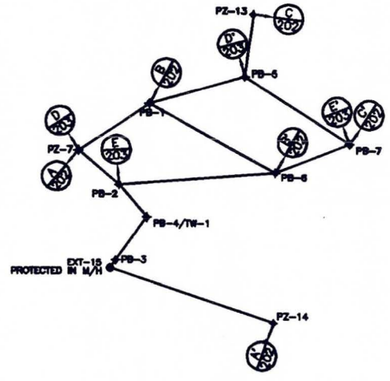


CROSS-SECTION E-E' (E / 203)

VERTICAL SCALE: 1" = 5'
HORIZ. SCALE: 1" = 20'

LEGEND





CROSS-SECTION INDEX

SCALE: 1" = 100'

PARAGON ELECTRIC COMPANY, INC.
TWO RIVERS, WISCONSIN

GEOLOGIC CROSS-SECTION D-D' AND E-E'

DRAWN BY J.R.L.	DATE 10-18-94	CADFILE C:\JRL\18367XF\RED\R203DE.DWG
CHECKED BY J.E.L.	DATE 10-18-94	
APPROVED BY	DATE	

STS Consultants Ltd.
Consulting Engineers

STS PROJECT NO.	18367XF
STS PROJECT FILE	
SCALE	AS NOTED
SHEET NO.	18367XF-204

BUILDING B

BUILDING C

LEGEND

- RAILROAD
- FENCE
- PP POWER POLE
- STATION
- FIRE HYDRANT
- TREE OR SHRUB
- GAS LINE
- WATER LINE
- SEWER PIPE
- MONITORING WELL
- BORING
- PIEZOMETER
- STORM SEWER MANHOLE
- SANITARY SEWER MANHOLE
- SPOT ELEVATIONS
- STEEL POST
- WATER VALVE
- GEOPROBE BORING
- (106) TCE CONCENTRATION IN SOIL (ug/kg)
- APPROXIMATE EXTENT OF TCE IN SOILS(BASED ON GEOPROBE DATA)
- TEMPORARY MONITORING WELL

PRESS ROOM

TCE FILLPIPE

DOOR

GAS VALVE

WATER LINE

GAS LINE

SIGN

FLAGPOLE

GATE

ST 15" STEEL M/H

M/H STEEL COVER

BILL BOARD

3" IRON PIPE ?

EXT-15 PROTECTED IN M/H

PAY PHONE

R.O.W.

P.P.

RR UTILITY BOX

48" DIA. ST SEWER TO LAKE MICHIGAN

48" DIA. CMP

PUMP ISLAND

GAS STATION

MW-1 MW-2 MW-3 MW-4 MW-5 MW-6 MW-7 MW-8 MW-12

PZ-4A PZ-6A PZ-13 PZ-14

B-10

P-1

TW-1

PB-1 (>6850)
PB-2 (>8640)
PB-3 (106)
PB-4 (>800)
PB-5 (3130)
PB-6 (>6560)
PB-7 (1080)

CBC-1 CBC-2 CBC-3

NOTE : LOCATION OF UTILITIES ARE APPROXIMATE

N

30 0 30
SCALE 1" = 30' FEET

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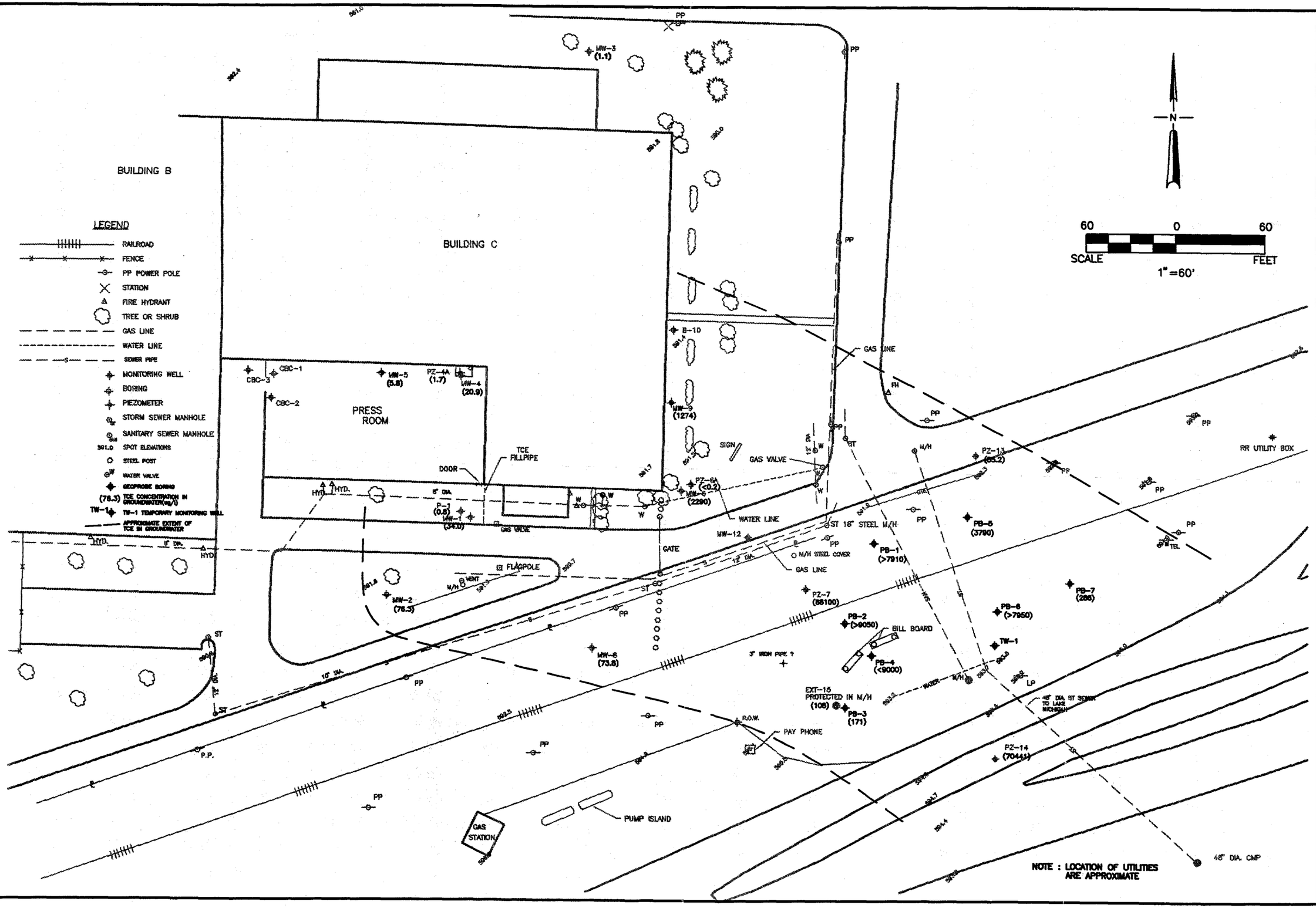
APPROVED BY DATE
CADFILE C:\JRL\18367XF\RED\TCESOIL.DWG

PARAGON ELECTRIC COMPANY, INC.
TWO RIVERS, WISCONSIN

TCE CONCENTRATION IN SOILS - ELEVATION 565-575 FEET
GEOPROBE DATA 8-25-94

STS Consultants Ltd.
Consulting Engineers

STS PROJECT NO. 18367XF
STS PROJECT FILE
SCALE 1"=60'
SHEET NO. 18367XF-205



DRAWN BY J.R.L. DATE 10-18-94
CHECKED BY J.E.L. DATE 10-18-94
APPROVED BY DATE
CADFILE C:\JRL\18367XF\RED\RSAVE.DWG

PARAGON ELECTRIC COMPANY, INC.
TWO RIVERS, WISCONSIN

TCE CONCENTRATION IN GROUNDWATER
GEOPROBE AND MONITORING WELL DATA

STS Consultants Ltd.
Consulting Engineers

STS PROJECT NO. 18367XF
STS PROJECT FILE
SCALE 1"=60'
SHEET NO. 18367XF-206

BUILDING B

BUILDING C

PRESS ROOM

LEGEND

- RAILROAD
- FENCE
- PP POWER POLE
- STATION
- FIRE HYDRANT
- TREE OR SHRUB
- GAS LINE
- WATER LINE
- SEWER PIPE
- MONITORING WELL
- BORING
- PIEZOMETER
- STORM SEWER MANHOLE
- SANITARY SEWER MANHOLE
- 591.0 SPOT ELEVATIONS
- STEEL POST
- WATER VALVE
- PB-6 GEOPROBE LOCATION
- TW-1 PROPOSED EXTRACTION WELL LOCATION
- 580.0 ESTIMATED GROUNDWATER CONTOUR DURING PUMPING
- ESTIMATED CAPTURE ZONE

N

60 0 60

SCALE FEET

1"=60'

NOTE : LOCATION OF UTILITIES ARE APPROXIMATE

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CHECKED BY J.E.L.	DATE 10-18-94	
APPROVED BY	DATE	
CADFILE C:\JRL\18367XF\RED\GEOPROBE.DWG		

PARAGON ELECTRIC COMPANY, INC.
TWO RIVERS, WISCONSIN

ESTIMATED GROUNDWATER CAPTURE ZONE TW-1
PUMPING RATE = 1 GALLON PER MINUTE

STS Consultants Ltd.
Consulting Engineers

STS PROJECT NO.	18367XF
STS PROJECT FILE	
SCALE	1"=60'
SHEET NO.	18367XF-207

PARAGON ELECTRIC COMPANY, INC.
TWO RIVERS, WISCONSIN

ESTIMATED GROUNDWATER CAPTURE ZONE AROUND WELL TW-1
PUMPING RATE = 4 GALLON PER MINUTE

BUILDING B

BUILDING C

PRESS ROOM

LEGEND

- RAILROAD
- FENCE
- PP POWER POLE
- STATION
- FIRE HYDRANT
- TREE OR SHRUB
- GAS LINE
- WATER LINE
- SEWER PIPE
- MONITORING WELL
- BORING
- PIEZOMETER
- STORM SEWER MANHOLE
- SANITARY SEWER MANHOLE
- 591.0 SPOT ELEVATIONS
- STEEL POST
- WATER VALVE
- PB-6 GEOPROBE LOCATION
- TW-1 PROPOSED EXTRACTION WELL LOCATION
- 588.0 ESTIMATED GROUNDWATER CONTOUR DURING PUMPING
- ESTIMATED CAPTURE ZONE

N

60 0 60
SCALE FEET
1"=60'

NOTE : LOCATION OF UTILITIES ARE APPROXIMATE

DRAWN BY J.R.L.	DATE 10-18-94	
CHECKED BY J.E.L.	DATE 10-18-94	
APPROVED BY	DATE	

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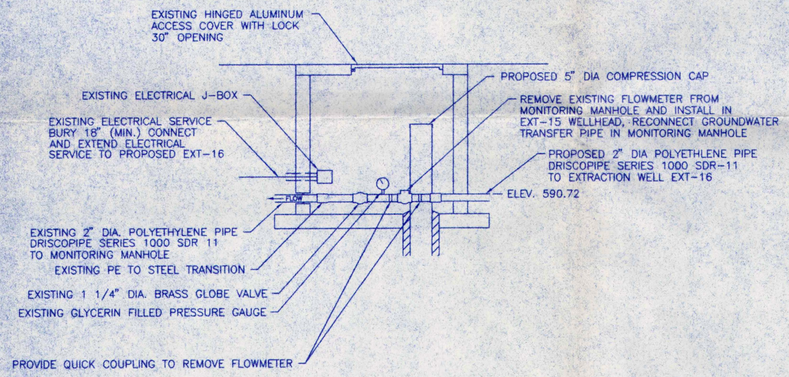
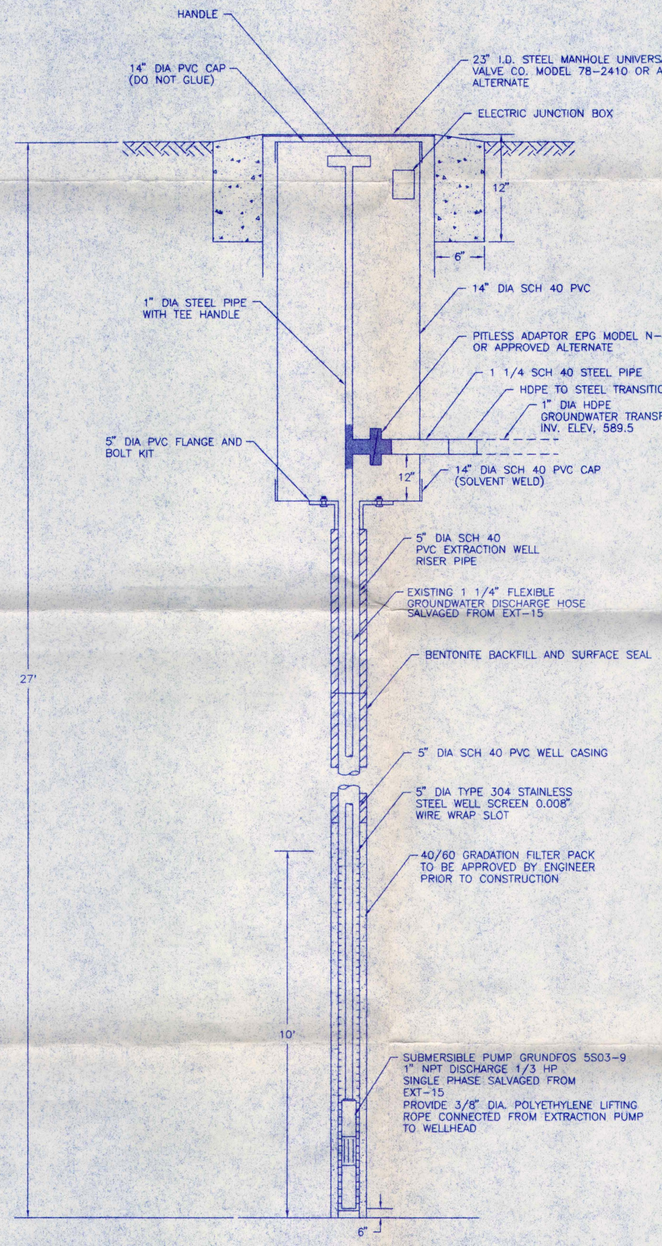
STS Consultants Ltd.
Consulting Engineers

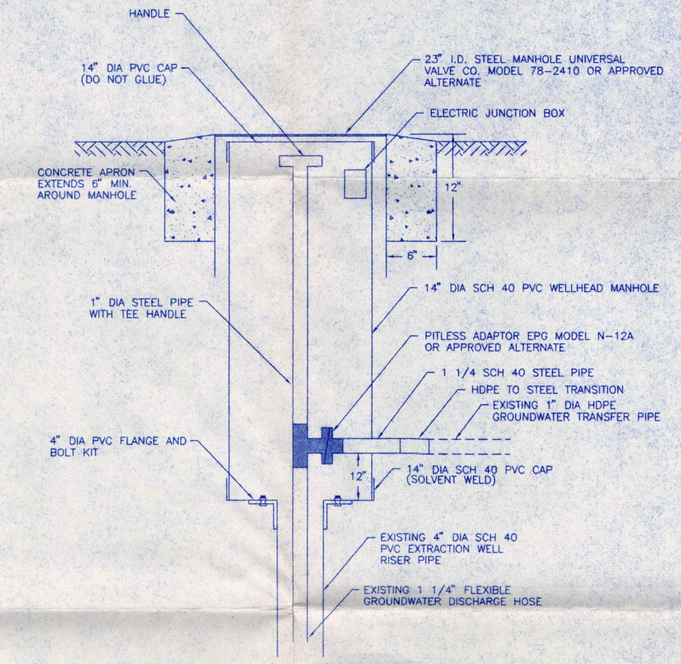
STS PROJECT NO.	18367XF
STS PROJECT FILE	
SCALE	1"=60'
SHEET NO.	18367XF-208



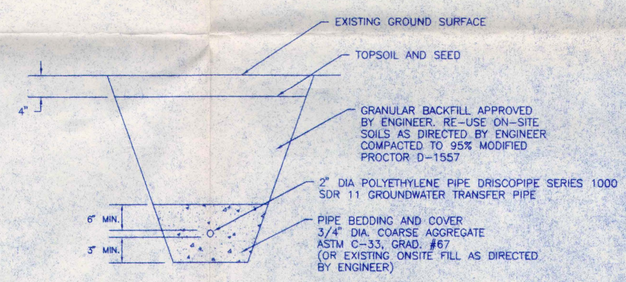
EXTRACTION WELL EXT-15
WELLHEAD MODIFICATIONS
NOT TO SCALE



PROPOSED EXTRACTION WELL EXT-16
NOT TO SCALE



EXTRACTION WELL EXT-6 WELLHEAD MODIFICATIONS
NOT TO SCALE



GROUNDWATER TRANSFER PIPE FROM EXTRACTION WELL EXT-16
TO EXT-15 WELLHEAD
NOT TO SCALE

REVISION	BY	DATE

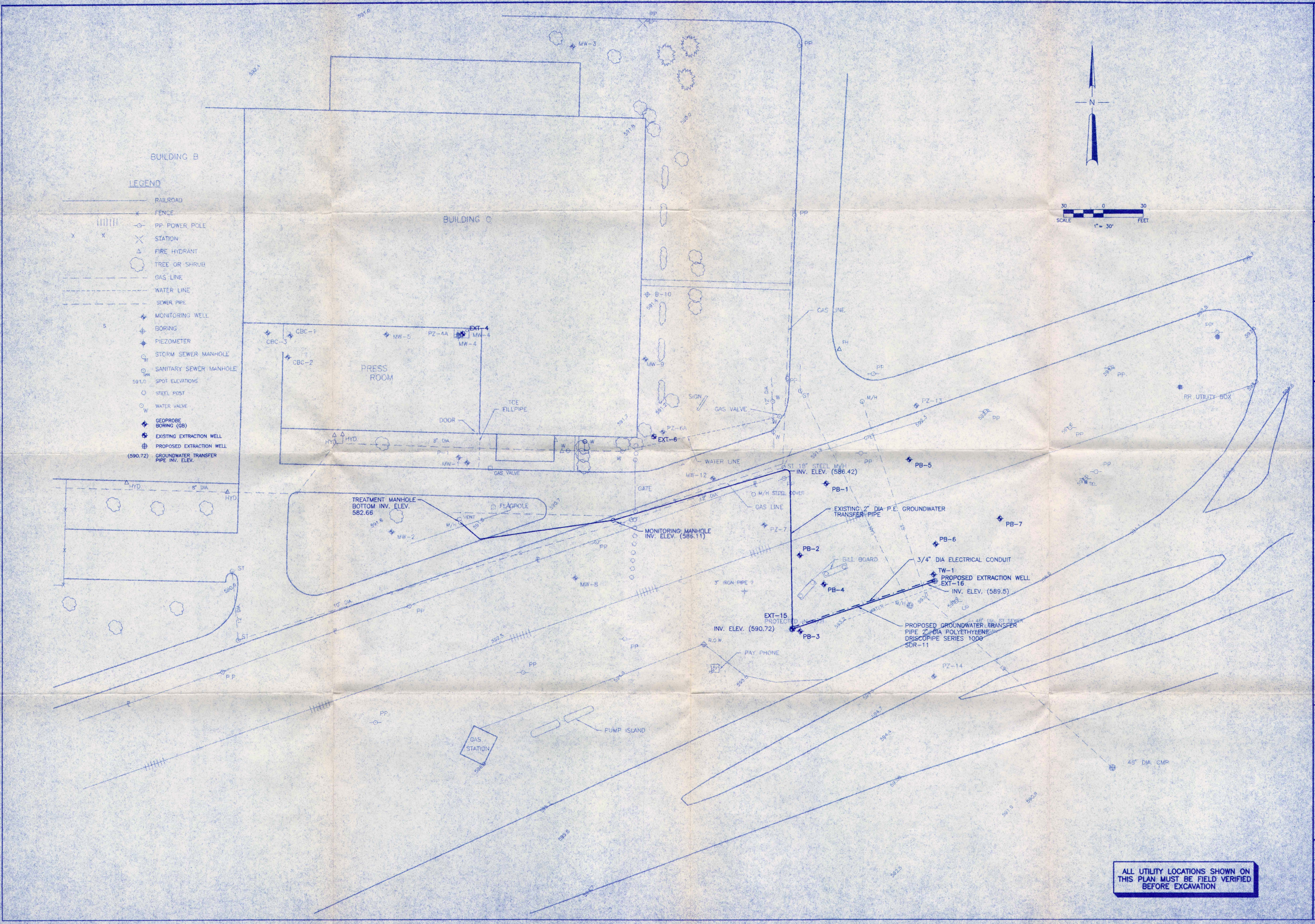
DRAWN BY: RAB — DATE: 11-23-94
CHECKED BY: MWM — DATE: 11-28-94
APPROVED BY: PRB — DATE: 12-16-94
CADFILE: 18367D.DWG

PARAGON ELECTRIC
TWO RIVERS, WISCONSIN
CONSTRUCTION DETAILS

STS Consultants Ltd.
Consulting Engineers

STS PROJECT NUMBER: 18367XF
STS PROJECT FILE:
SCALE: AS NOTED
SHEET NUMBER: 18367XF-402

02-36-0001853A



REVISION	DATE	BY

DRAWN BY D.T.B. DATE 6-10-94
CHECKED BY DATE
APPROVED BY DATE
CADFILE C:\DTB\PARAGON\GEOPROBE.DWG

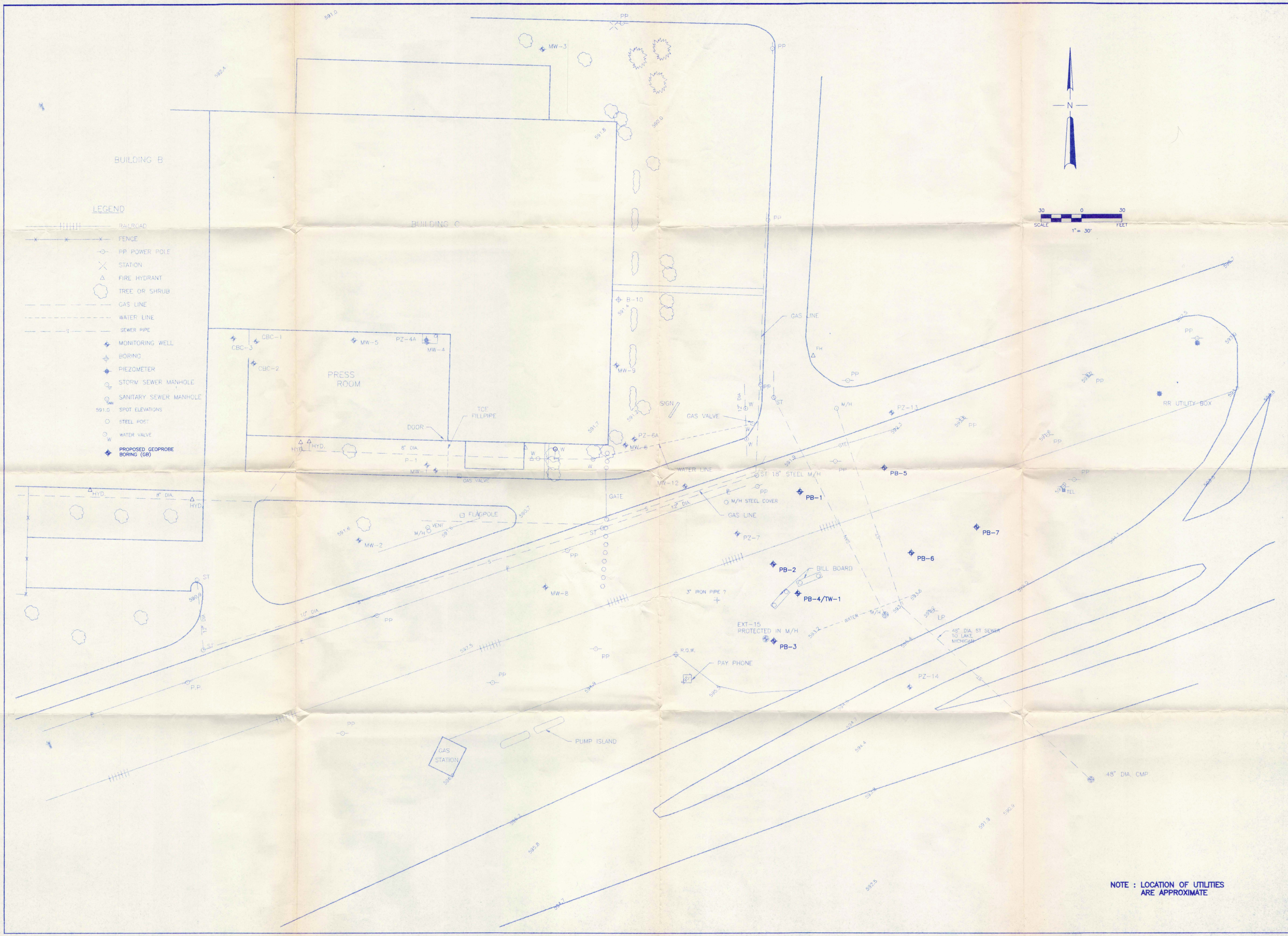
PARAGON ELECTRIC
TWO RIVERS, WISCONSIN

PROPOSED EXTRACTION WELL EXT-16 AND TRANSFER PIPE LOCATION

STS Consultants Ltd.
Consulting Engineers

STS PROJECT NUMBER 18367XF
STS PROJECT FILE
SCALE 1" = 30'
SHEET NUMBER 18367XF-401

02-36-000153B



REVISION | BY | DATE

DRAWN BY: D.T.B.
AUTOCAD FILE: 6-10-94
DATE
CHK BY
APPROVED BY: W:\DTB\PARAGON\GEOPROBE.DWG

PARAGON ELECTRIC
TWO RIVERS, WISCONSIN

PROPOSED GEOPROBE BORING LOCATION DIAGRAM

STS Consultants Ltd.
Consulting Engineers

STS PROJECT NUMBER: 18367XF
STS PROJECT FILE
SCALE: 1"= 30'
SHEET NUMBER

02-36-000153C