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MEMORANDUM

TO:	Jonathan Sytsma, MDOT	REF. NO.:	056394-01-0004
FROM:	Jeni Quigley/jq/8/Kal.	DATE:	December 14, 2011
CC:	Richard Gay, Weyerhaeuser Greg Carli, CRA		
RE:	Summary of Soil Sample Results Proposed Prince and Church Street Storm Sewer Alignment Former Plainwell, Inc. Mill Property Plainwell, Michigan		

Consistent with your request, Conestoga-Rovers & Associates (CRA), on behalf of Weyerhaeuser Company (Weyerhaeuser), has prepared the attached figures and tables summarizing the locations and analytical results for soil samples collected in the general vicinity of a proposed storm sewer alignment at the former Plainwell, Inc. Mill property (Site). The soil samples were collected by Weyerhaeuser during the implementation of the Phase II Remedial Investigation (RI) at the Site.

Figures 1 and 2 present the locations of the soil samples collected during the RI relative to the proposed alignment of the Prince Street and Church Street storm sewer lines, respectively. Tables 1 and 2 present a summary of the soil sample analytical results for the locations presented on Figures 1 and 2, respectively, compared to the Michigan Act 451, Part 201 Generic Residential and Non-Residential Cleanup Criteria. It should be noted that the sample locations and associated analytical results presented in this memorandum include only those locations within and immediately adjacent to the approximated proposed storm sewer easements as identified during our meeting on December 12, 2011, and do not represent a comprehensive summary of available site data. Should the proposed storm sewer easement locations change in the future, additional data can be provided at that time.

EQUAL EMPLOYMENT OPPORTUNITY EMPLOYER

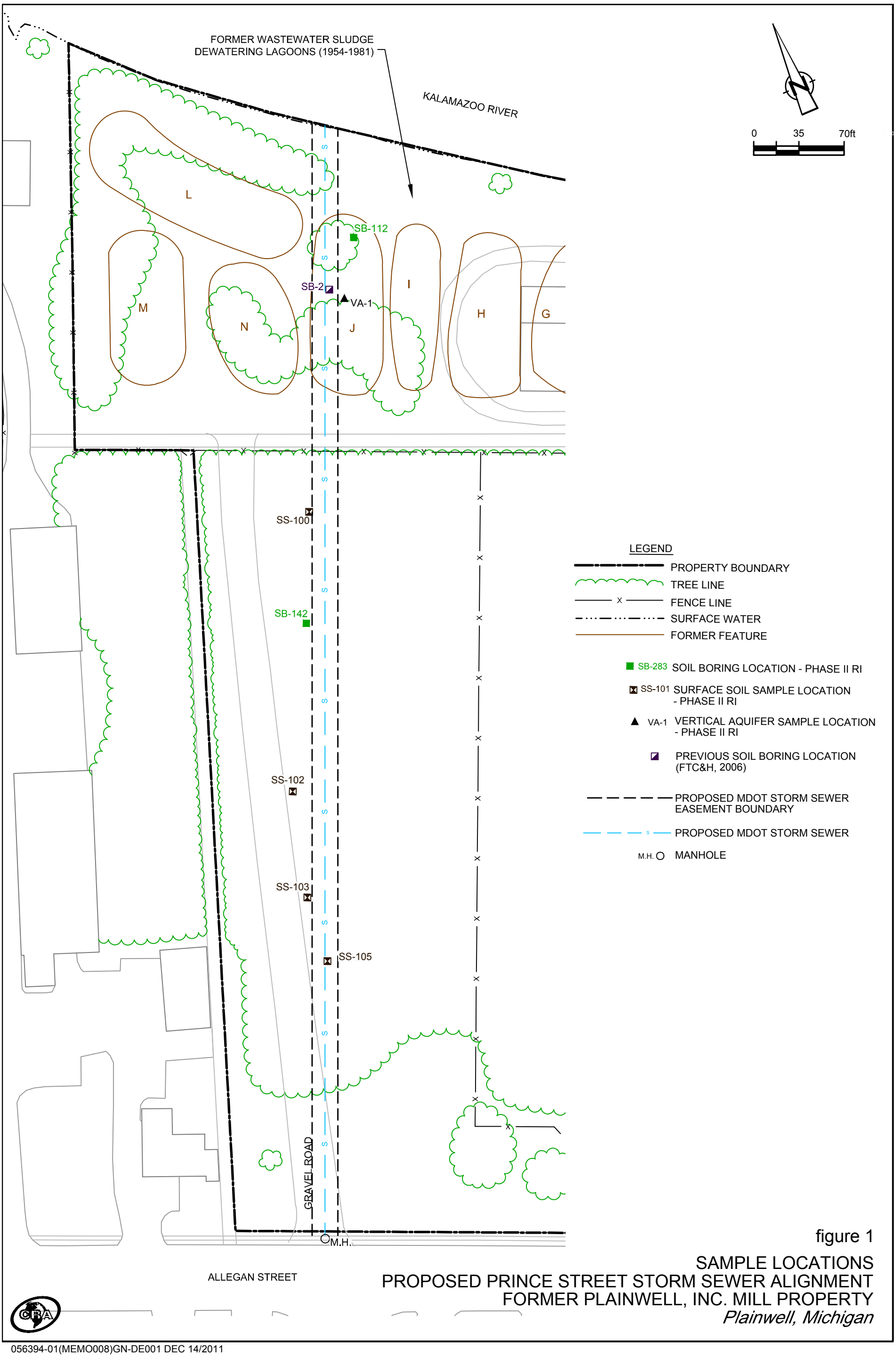

figure 1

SAMPLE LOCATIONS
PROPOSED PRINCE STREET STORM SEWER ALIGNMENT
FORMER PLAINWELL, INC. MILL PROPERTY
Plainwell, Michigan

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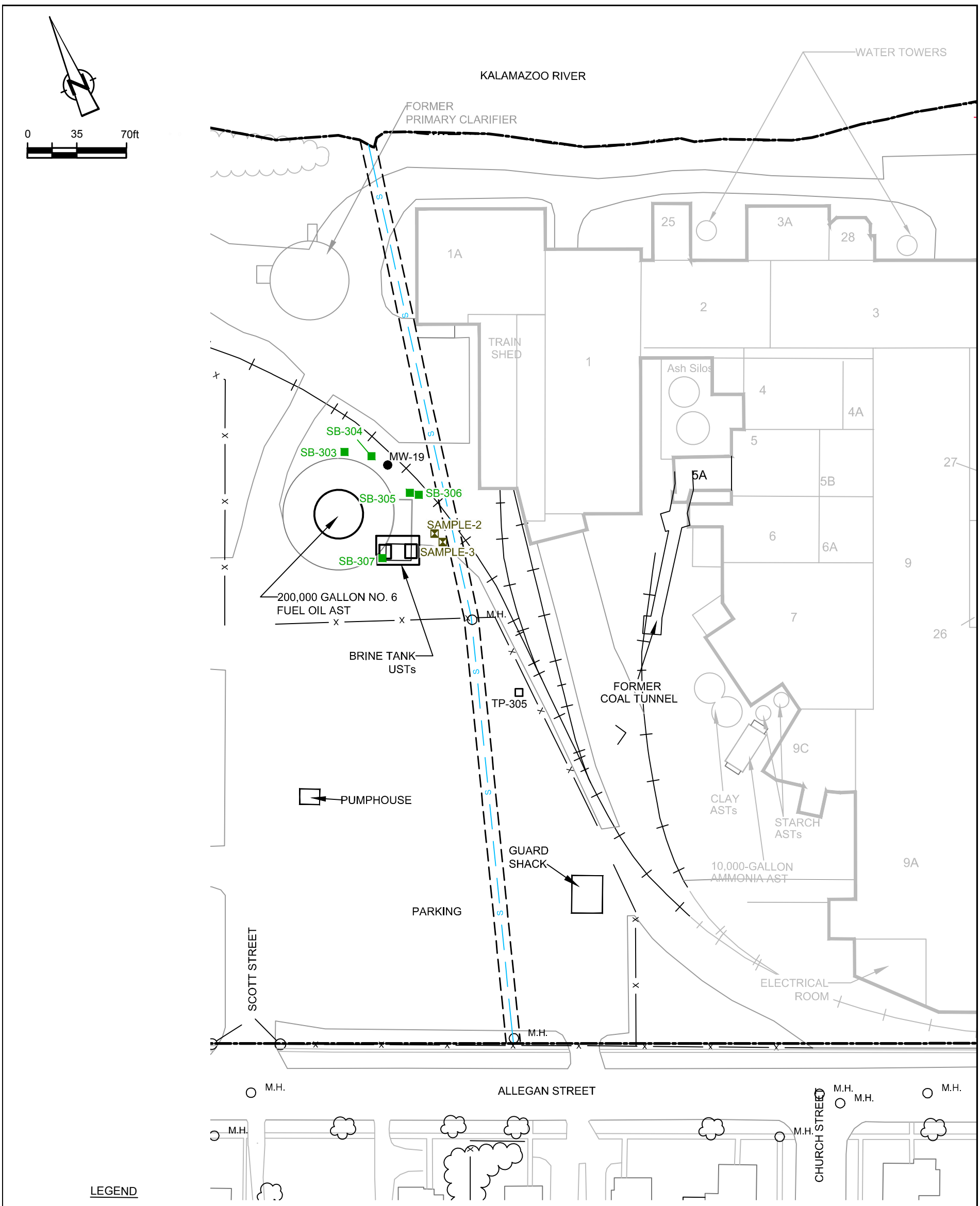

figure 2

SAMPLE LOCATIONS
PROPOSED CHURCH STREET STORM SEWER ALIGNMENT
FORMER PLAINWELL, INC. MILL PROPERTY
Plainwell, Michigan

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TABLE 1

PART 201 EXCEEDANCES FOR SOIL SAMPLES COLLECTED WITHIN APPROXIMATE AREA OF PROPOSED MDOT PRINCE STREET STORM SEWER EASEMENT FORMER PLAINWELL, INC. MILL PROPERTY PLAINWELL, MICHIGAN

Sample Location ID	Sample Depth (ft BGS)	Constituent	Result (mg/kg)	GCC (mg/kg)	Part 201 GCC Exceeded
SB-2	(9-10)	Selenium	0.49	0.4	GSIPC
SB-112	(0-1)	Iron	18,500 J	6, 6	RDWPC, NRDWPC
		Magnesium	23,800 J	8,000, 22,000	RDWPC, NRDWPC
		Magnesium	18,200 J	8000	RDWPC
	(6-8)	4-Methylphenol	2.2 J	1	GSIPC
		Naphthalene	1.5 J	0.73	GSIPC
		Tetrachloroethene	0.21 J	0.1, 0.1	RDWPC, NRDWPC
		Aluminum	12,300	1, 1	RDWPC, NRDWPC
SB-113	(0-1)	Selenium	0.5	0.4	GSIPC
		Magnesium	11,000 J	8,000	RDWPC
	(8-10)	Arsenic	10.5	5.8, 5.8, 5.8, 7.6	RDWPC, NRDWPC, GSIPC, RDCC
		Cobalt	7.2	0.8, 2, 2	RDWPC, NRDWPC, GSIPC
		Chromium	22	3.3	GSIPC
		Selenium	1.7	0.4	GSIPC
		Manganese	452	1, 1, 100	RDWPC, NRDWPC, GSIPC
		Iron	19,000	6, 6	RDWPC, NRDWPC
		Aluminum	11,800	1, 1	RDWPC, NRDWPC
SB-142	(0-1)	Manganese	832	1, 1, 100	RDWPC, NRDWPC, GSIPC
	(8.5-10.5)	Magnesium	21,700	8,000	RDWPC
SS-100	(0-2)	Manganese	733	1, 1, 100	RDWPC, NRDWPC, GSIPC
SS-102	(0-2)	Manganese	735	1, 1, 100	RDWPC, NRDWPC, GSIPC
SS-103	(0-2)	Arsenic	8.6	5.8, 5.8, 5.8, 7.6	RDWPC, NRDWPC, GSIPC, RDCC
		Selenium	0.6	0.4	GSIPC
		Aluminum	8,200 J	1, 1	RDWPC, NRDWPC
		Iron	14,200	6, 6	RDWPC, NRDWPC
		Manganese	1,260	1, 1, 100	RDWPC, NRDWPC, GSIPC
SS-105	(0-2)	Arsenic	8.7	5.8, 5.8, 5.8, 7.6	RDWPC, NRDWPC, GSIPC, RDCC
		Selenium	0.6	0.4	GSIPC
		Aluminum	8,460 J	1, 1	RDWPC, NRDWPC
		Iron	14,000	6, 6	RDWPC, NRDWPC
		Manganese	1,510	1, 1, 100, 1,500	RDWPC, NRDWPC, GSIPC, NRPSIC
VA-1	(0-2)	Magnesium	17,200	8000	RDWPC
	(8-10)	4-Chloro-3-methylphenol	0.38	0.28	GSIPC
		Selenium	1	0.4	GSIPC
		Pentachlorophenol	0.91	0.022, 0.022	RDWPC, NRDWPC
		2,4,6-Trichlorophenol	0.36	0.33	GSIPC
		4-Methylphenol	2.6	1	GSIPC
		Ethylbenzene	0.43	0.36	GSIPC
		Tetrachloroethene	0.43	0.1, 0.1	RDWPC, NRDWPC
		Aluminum	16,300	1, 1	RDWPC, NRDWPC
		Chromium	21	3.3	GSIPC

Notes:
GCC - Generic Cleanup Criteria
R - Residential
NR - Non-Residential
DWPC - Drinking Water Protection Criteria
GSIPC - Groundwater Surface Water Interface Protection Criteria
DCC - Direct Contact Criteria
PSIC - Particulate Soil Inhalation Criteria
ft BGS - feet below ground surface
mg/kg - milligrams per kilogram

TABLE 2

PART 201 EXCEEDANCES FOR SOIL SAMPLES COLLECTED WITHIN APPROXIMATE AREA OF PROPOSED MDOT CHURCH STREET STORM SEWER EASEMENT FORMER PLAINWELL, INC. MILL PROPERTY PLAINWELL, MICHIGAN

Sample Location ID	Sample Depth (ft BGS)	Constituent	Result (mg/kg)	GCC (mg/kg)	Part 201 GCC Exceeded
MW-19	(0-2)	Xylenes (total)	1.5	0.82	GSIPC
		Aluminum	7,370	1, 1	RDWPC, NRDWPC
		Iron	14,100	6, 6	RDWPC, NRDWPC
		Manganese	602	1, 1, 100	RDWPC, NRDWPC, GSIPC
		Cobalt	7.5	0.8, 2, 2	RDWPC, NRDWPC, GSIPC
		Mercury	0.61	0.05	GSIPC
		Arsenic	18	5.8, 5.8, 5.8, 7.6	RDWPC, NRDWPC, GSIPC, RDCC
		Selenium	1.6	0.4	GSIPC
	(8-10)	Magnesium	15,700 J	8,000	RDWPC
Sample-2	(0.7-0.7)	Phenanthrene	5.6	2.1	GSIPC
		Naphthalene	7.6	0.73	GSIPC
		Xylenes (total)	2.8	0.82	GSIPC
		Benzene	0.12	0.1, 0.1	RDWPC, NRDWPC
		1,2,4-Trimethylbenzene	0.68	0.57	GSIPC
Sample-3	(0.7-0.7)	Phenanthrene	2.5	2.1	GSIPC
		Naphthalene	2.3	0.73	GSIPC
		Xylenes (total)	0.86	0.82	GSIPC
SB-303	(3.5-5.5)	Aluminum	7,250	1, 1	RDWPC, NRDWPC
		Manganese	716	1, 1, 100	RDWPC, NRDWPC, GSIPC
	(0-2)	Iron	13,100	6, 6	RDWPC, NRDWPC
		Cobalt	7.3	0.8, 2, 2	RDWPC, NRDWPC, GSIPC
		Mercury	0.18	0.05	GSIPC
		Arsenic	12.8	5.8, 5.8, 5.8, 7.6	RDWPC, NRDWPC, GSIPC, RDCC
		Selenium	1.3	0.4	GSIPC
	(5.5-7.5)	Magnesium	20,600 J	8,000	RDWPC
		Arsenic	7.2	5.8, 5.8, 5.8	RDWPC, NRDWPC, GSIPC
	(8-10)	Magnesium	23,500 J	8,000, 22,000	RDWPC, NRDWPC
		Magnesium	33,800 J	8,000, 22,000	RDWPC, NRDWPC
SB-304	(0-2)	Arsenic	12.1	5.8, 5.8, 5.8, 7.6	RDWPC, NRDWPC, GSIPC, RDCC
		Selenium	0.8	0.4	GSIPC
		Tetrachloroethene	0.12	0.1, 0.1	RDWPC, NRDWPC
		Xylenes (total)	1.67	0.82	GSIPC
		Benzene	0.17	0.1, 0.1	RDWPC, NRDWPC
		Iron	15,200	6, 6	RDWPC, NRDWPC
		Magnesium	10,600 J	8,000	RDWPC
		Mercury	0.43	0.05	GSIPC
	(4-6)	Iron	12,300	6, 6	RDWPC, NRDWPC
		Arsenic	6.8	5.8, 5.8, 5.8	RDWPC, NRDWPC, GSIPC
	(6-8)	Magnesium	27,700 J	8,000, 22,000	RDWPC, NRDWPC
		Arsenic	7.6	5.8, 5.8, 5.8	RDWPC, NRDWPC, GSIPC
SB-304	(8-10)	Magnesium	18,600 J	8,000	RDWPC
		Manganese	487	1, 1, 100	RDWPC, NRDWPC, GSIPC
SB-305	(0-2)	Methylene chloride	0.21 J	0.1, 0.1	RDWPC, NRDWPC
		Tetrachloroethene	0.38	0.1, 0.1	RDWPC, NRDWPC
		Xylenes (total)	1.5	0.82	GSIPC
		Manganese	661	1, 1, 100	RDWPC, NRDWPC, GSIPC
		Mercury	0.17	0.05	GSIPC
		Arsenic	8.5	5.8, 5.8, 5.8, 7.6	RDWPC, NRDWPC, GSIPC, RDCC
		Selenium	0.7	0.4	GSIPC
	(8-10)	Iron	12,300	6, 6	RDWPC, NRDWPC

TABLE 2

PART 201 EXCEEDANCES FOR SOIL SAMPLES COLLECTED WITHIN APPROXIMATE AREA OF PROPOSED MDOT CHURCH STREET STORM SEWER EASEMENT FORMER PLAINWELL, INC. MILL PROPERTY PLAINWELL, MICHIGAN

Sample Location ID	Sample Depth (ft BGS)	Constituent	Result (mg/kg)	GCC (mg/kg)	Part 201 GCC Exceeded
SB-306	(0-1)	Tetrachloroethene	0.12	0.1, 0.1	RDWPC, NRDWPC
		Xylenes (total)	1.79	0.82	GSIPC
		Iron	12,500	6, 6	RDWPC, NRDWPC
		Magnesium	8,640 J	8000	RDWPC
		Manganese	467	1, 1, 100	RDWPC, NRDWPC, GSIPC
		Mercury	1.67	0.05	GSIPC
		Pentachlorophenol	0.25 J	0.022, 0.022	RDWPC, NRDWPC
		Arsenic	11.4	5.8, 5.8, 5.8, 7.6	RDWPC, NRDWPC, GSIPC, RDCC
		Selenium	0.9	0.4	GSIPC
	(7.5-9.5)	Chromium	19	3.3	GSIPC
	(9.5-11)	Magnesium	17,300 J	8000	RDWPC
SB-307	(0-1)	Ethylbenzene	0.88	0.36	GSIPC
		Xylenes (total)	8.1	5.6, 5.6, 0.82	RDWPC, NRDWPC, GSIPC
		Benzene	0.24	0.1, 0.1	RDWPC, NRDWPC
		Mercury	0.39	0.05	GSIPC
		Naphthalene	0.91	0.73	GSIPC
		Arsenic	7.6	5.8, 5.8, 5.8	RDWPC, NRDWPC, GSIPC
		Selenium	1.1	0.4	GSIPC
	(6-8)	Arsenic	7.4	5.8, 5.8, 5.8	RDWPC, NRDWPC, GSIPC
		Selenium	0.6	0.4	GSIPC
		Iron	14,000	6, 6	RDWPC, NRDWPC
		Manganese	458	1, 1, 100	RDWPC, NRDWPC, GSIPC
		Arsenic (Duplicate)	7.4	5.8, 5.8, 5.8	RDWPC, NRDWPC, GSIPC
	(8-10)	Magnesium	26,000 J	8,000, 22,000	RDWPC, NRDWPC
TP-305	(0.5-1.5)	Methylene chloride	0.20 J	0.1, 0.1	RDWPC, NRDWPC
		Arsenic	16	5.8, 5.8, 5.8, 7.6	RDWPC, NRDWPC, GSIPC, RDCC
		Selenium	2.6	0.4	GSIPC
	(2-4)	Aluminum	7,140	1, 1	RDWPC, NRDWPC
		Manganese	1,200	1, 1, 100	RDWPC, NRDWPC, GSIPC
		Cobalt	9.7	0.8, 2, 2	RDWPC, NRDWPC, GSIPC
		Arsenic	6.6	5.8, 5.8, 5.8	RDWPC, NRDWPC, GSIPC
	(6-8)	Magnesium	8,220	8,000	RDWPC

Notes:
GCC - Generic Cleanup Criteria
R - Residential
NR - Non-Residential
DWPC - Drinking Water Protection Criteria
GSIPC - Groundwater Surface Water Interface Protection Criteria
DCC - Direct Contact Criteria
ft BGS - feet below ground surface
mg/kg - milligrams per kilogram
J - Laboratory estimated concentration