REPORT FOR AN INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT

FOR THE SOUTH BEND AREA A PROPERTIES

Located at:
SOUTH OF SAMPLE STREET, EAST OF PRAIRIE AVENUE, NORTH OF CONRAIL, AND WEST OF FRANKLIN STREET SOUTH BEND, INDIANA

Prepared for:
THE CITY OF SOUTH BEND DEPARTMENT OF COMMUNITY AND ECONOMIC DEVELOPMENT
1200 COUNTY-CITY BUILDING
SOUTH BEND, INDIANA 46601

FEBRUARY 2002

VOLUME 1

Hull & associates, inc.

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1.0 INTRODUCTION

1.1 General

Hull & Associates, Inc. (Hull) was retained by the City of South Bend Department of Community and Economic Development (City) to complete an initial Phase II Environmental Site Assessment (ESA) for the Area A properties of the Studebaker Corridor. This assessment was conducted as part of a beneficial reuse study for Area A and to investigate recognized environmental conditions (RECs) that were identified during a Phase I ESA (Hull Document #SBI002.100.0001) for Area A, completed by Hull in January 2001.

Work for the initial Phase II ESA was conducted in general conformance with the initial Phase II ESA Work Plan (Hull Document # SBI002.100.0003) that was prepared in December 2000. The initial Phase II ESA Work Plan was prepared, and field work was performed, consistent with Indiana Department of Environmental Management's (IDEM's) Voluntary Remedial Program (VRP) guidance and a Quality Assurance Project Plan (QAPP) dated August 2001 (Hull Document # SBI002.300.0008). Following completion of fieldwork and due to a variety of circumstances, the City elected to evaluate risk at the Site consistent with Indiana's Risk Integrated System of Closure (RISC) non-rule policy. For this reason, the scope of work completed at the Site slightly differs from protocols recommended under RISC. Hull has made an attempt to point out these differences where applicable in this report.

1.2 Site History

Area A, shown on Figure 1, comprises four contiguous properties that occupy approximately 88 acres. The properties are located south of Sample Street, east of Prairie Avenue, north of Conrail and west of Franklin Street. The properties included in Area A are the Underground Pipe & Valve property located at 1100 Prairie Avenue, the Huckins Tool & Die property located at 1010 Prairie Avenue, the South Bend Lathe property located at 400 West Sample Street and the Allied Products Corp. property located at 601 West Broadway Street. Cumulatively, these properties make up Area A.

The above properties have been historically used as a lumber yard and in the manufacturing and supplying parts for the automobile industry. Operations under the Studebaker Corporation began as early as 1927 and consisted of a foundry and manufacturing facilities. During subsequent years, numerous buildings were added to the Facility. Operations of the properties,

apparently ceased in the early 1960's and the majority was subdivided and sold to Mr. Jay Huckins, ARG Corporation (South Bend Lathe), Allied Products Corporation, and Cummins Engine Co, Inc.

Based on the Phase I ESA Report, the following RECs were revealed:

RECOGNIZED ENVIRONMENTAL CONDITIONS

REC	REC ITEM	POTENTIAL CHEMICALS OF CONCERN
Huckins Tool & Die Property(Property A)		
A1	10,000-gallon UST reportedly stored oil was located on the north portion of the Huckins Tool & Die property	Total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs)
A2	Drywell located north of the Huckins building	VOCs, semivolatile organic compounds (SVOCs), TPH, metals
A3	10,000-gallon UST reportedly stored oil was located near the exterior northeast corner of the Huckins Tool & Die building	TPH, VOCs
A4	Drywell located east of the east building addition	VOCs, SVOCs, TPH, metals
A5	Dust collector and metal shavings located at the exterior southwest corner of the east building addition	metals, VOCs
A6	5,000-gallon UST reportedly stored gasoline is located east of the south portion of the building	TPH, VOC, lead
A7	Former hydraulic lift located centrally in the Huckins Tool & Die building	TPH, VOCs, PCBs
A8	Former rails located on the east portion of the property	metals, SVOCs
Underground Pipe & Valve Property (Property B)		
B1	500-gallon UST reportedly stored gasoline, located north of the west portion of the main building	TPH, VOCs, lead
B2	10,000-gallon UST reportedly stored fuel oil, located north of the east portion of the main building	TPH, VOCs
B3	Three, 10,000-gallon core oil tanks located north of the east portion of the main building	TPH, VOCs
B4	A pit with a steel-plate cover located northwest of the former pumphouse	TPH, VOCs, SVOCs
B5	Former rails located on the east and north portions of the property	metals, SVOCs
B6	Two outfalls from the direction of the facility to the reservoir located on the southwest portion of the property	metals, VOCs, SVOCs
B7	Half-buried metal structure (potential tank) located in the east wall of the reservoir	VOCs, TPH, lead
B8	Numerous pits located inside the foundry filled with wood and metal debris	VOCs, SVOC,s metals

REC	REC ITEM	POTENTIAL CHEMICALS OF CONCERN
Underground Pipe & Valve Property (Property B) (cont.)		
B9	Bins with sand and potential historic coke pits located at the eastern portion of the Underground Pipe & Valve building	metals, VOCs, SVOCs, TPH
B10	Four historic ASTs located at the south end of the Underground Pipe & Valve building	metals, VOCs, SVOCs, TPH
South Bend Lathe (Property C)		
C1	2 5,000-gallon USTs with unknown contents located east of the southern portion of the building	VOCs, SVOCs, metals, TPH
C2	3,000-gallon gasoline tank located south of the Engineering Building	VOCs, SVOCs, TPH, lead
C3	2 8,000-gallon USTs of unknown contents located south of the Engineering Building	VOCs, SVOCs, metals, TPH
C4	2 5,000-gallon USTs reportedly containing motor oil, located south of the eastern portion of the building	VOCs, SVOCs, TPH
C5	20,000-gallon UST reportedly containing fuel oil, located north of the AEP property	VOCs, SVOCs, TPH
C6	2 20,000-gallon USTs reportedly containing fuel oil, located west of the AEP property	VOCs, SVOCs, TPH
C7	Heavy oil staining by the trash bin containing metal shavings and associated catch basin	VOCs, SVOCs, metals, TPH
C8	Oil staining by the wood bins located east of the chip house on the south side of the main building and associated catch basin	VOCs, SVOCs, metals, TPH
C9	Areas of stressed vegetation and bare soil located between the AEP property and the metal storage building	VOCs, SVOCs, metals, TPH
C10	6,000-gallon UST reportedly containing waste oil, located south of the west portion of the building	VOCs, SVOCs, TPH
C11	Former rails located on the west and east portions of the property	metals, SVOCs
C12	Pit located in the heat treat room located in the south portion of the main building	VOCs, SVOCs, metals
C13	Potential releases from PCB-containing transformers located in the building	PCBs
Allied Products Corporation Property (Property D)		
D1	20,000-gallon UST reportedly containing heating oil located near the northwest corner of Building 78	VOCs, SVOCs, TPH
D2	Potential UST of unknown size and contents located south of Building 78 approximately 130 ft. west of the southeast corner of the building	VOCs, SVOCs, metals, TPH
D3	10,000-gallon enamel reducer tank (removed), located on the northeast portion of the property	VOCs, SVOCs, TPH
D4	Former and current rails located on the property	metals and SVOCs
D5	6,000-gallon enamel reducer tank, located west of the south end of Building 79	VOCs, SVOCs, TPH

REC	REC ITEM	POTENTIAL CHEMICALS OF CONCERN
Allied Products Corporation Property (Property D)(cont.)		
D6	Tank farm formerly comprised ten USTs reportedly containing gasoline and kerosene	VOCs, SVOCs, TPH, lead
D7	Catch basin with an oily sheen located west of Building 80	VOCs, TPH
D8	4 4,000-gallon USTs reportedly containing trichloroethene and fuel oil locate west of Building 86	VOCs, SVOCs, TPH
D9	5,000-gallon UST reportedly containing gasoline, located east of the central portion of Building 86	VOCs, SVOCs, TPH, lead
D10	5,000-gallon UST reportedly containing diesel fuel, located east of Building 93	VOCs, SVOCs, TPH
D11	Potential releases from PCB-containing transformers	PCBs
D12	Press pits with petroleum product located inside building 80	VOCs, TPH, metals
D13	Oil change pit located near the northeast corner of Building 93	VOCs, TPH
D14	Former die wash area located at the south end of Building 142	VOCs, TPH, SVOCs
D15	Press pits with petroleum product located in Building 142	VOCs, TPH, SVOCs
D16	Press pits with petroleum product located in Building 86	VOCs, TPH, SVOCs
D17	Three potential drywells located in the southern portion of Building 79.	VOCs, TPH, SVOCs, metals
D18	Potential releases from ASTs and 55-gallon drums located south of Building 93.	VOCs, TPH, SVOCs
D19	Potential releases from ASTs that were historically located at the south end of Building 93.	VOCs, SVOCs

The locations of these RECs and other pertinent Site features and property usage are shown on Figure 2. A detailed description of the Site history and background is presented in the Phase I ESA (Hull document #SBI002.100.0001).

1.3 Previous Environmental Site Assessments

A number of Phase I and II ESAs have been completed on Area A and adjacent properties. These investigations were reviewed as part of the Phase I ESA. It should be noted that the reviewed information is not a complete package of previous studies performed at Area A. The provided previous investigation information is discussed below. A copy of the reviewed previous reports is provided in Appendix L of the Phase I ESA.

An "Interim Phase I Environmental Site Assessment" for the Studebaker Corridor, prepared by ATEC (September 21, 1990) was reviewed for the Assessment. The report discussed the area to the east of the Site. The report states that eight USTs containing petroleum, kerosene and fuel oil are located at the Allied Products Corp. property. The report also cited the Michiana Area Council of Governments, stating that several potential sites impacting groundwater south and east of the Site include South Bend Auto Parts, Bush Auto Salvage, Steve and Jean's Junk Yard and AM General LTV. Based on the Phase I information, an initial Phase II Study was performed under a separate cover at Lot One Site, which refers to the previous Avanti Manufacturing Plant located north of the Site where Franklin Street dead-ends into Sample Street (presently the site of the new County Detention Center). This report is discussed below.

The "Initial Phase II Final Report" for the Lot One Studebaker Corridor, prepared by ATEC in March of 1991, was reviewed for the Phase I ESA. Four groundwater-monitoring wells (MW-1 through MW-4) were installed near a U-shaped building located on the northern portion of the property. The locations of these wells are shown on Figure 3 of the report. One well was installed south and west of the U-shaped building and three wells were installed north of the U-shaped building. Soil samples were collected during the installation of the monitoring wells and were sent to a laboratory for analysis. Partial laboratory results for total heavy metals were included in the provided information. The report indicates that barium, chromium and lead were detected in the soil samples. The highest concentration of barium was detected at MW-3 at 6.7 mg/kg (depth of 23.5 to 25.0 ft. below ground surface (bgs)). The highest concentration of chromium was detected at MW-4 at 5.8 mg/kg (depth of 21.0 to 22.5 ft. bgs). The highest concentration of lead was detected in MW-1 at 3.5 mg/kg (depth of 23.5 to 25.0 ft. bgs). Groundwater samples were also collected from the monitoring wells. Partial laboratory results for volatile organic compounds (VOCs) were included in the provided information. Four compounds were listed in the report. The highest concentration of trans-1,2-dichloroethene (trans-1,2-DCE) was detected in MW-2 at 37 ug/L. The highest concentration of 1,1,1-trichloroethane (1,1,1-TCA) was detected in MW-3 at 10 ug/L. The highest concentration of trichloroethene (TCE) was detected in MW-2 at <5 ug/L. The highest concentration of tetrachloroethene (PCE) was detected in MW-2 at 10 ug/L. Soil boring logs were also included in the provided information for the Lot 1 Phase II Study.

A report titled "Environmental Investigation South Bend Lathe" was prepared by EIS Environmental Engineers, Inc. in July of 1992. Only portions of this report were received for this Assessment. This report was prepared to address potential impact to soil and groundwater from five USTs and an associated fuel oil piping track and to analyze possible asbestos-containing roofing materials. Four of the USTs investigated are located on the south side of the South Bend Lathe building near the chip house. The remaining UST is located at the east portion of the South Bend Lathe property, south of the Engineering Building. The approximate locations of these USTs are shown on Figure 2. According to the report, eight borings were installed near the five tanks and soil and groundwater samples were collected from each boring location and were submitted to a laboratory. The report states that soil samples were analyzed only for total petroleum hydrocarbons (TPH), groundwater samples were analyzed for TPH and VOCs. The report also states that 24 samples of potential asbestos-containing roofing material were collected for analysis.

Borings 1 and 2 (B-1 and B-2) were installed near the waste oil UST located approximately 135 ft. east of the southwest corner of the South Bend Lathe building. The higher concentration of TPH in soil from these two borings is 10,400 mg/kg from B-2 at a depth of 16.5 to 18 ft. bgs. The higher concentration of TPH in groundwater is 124 mg/L from B-2. Xylenes were detected in B-2 at 0.013 mg/L and 1,1-DCA was detected in B-1 at 2.9 ug/L. The following chemicals of concern (COCs) were detected in B-2; p-isopropyltoluene was detected at 24 ug/L, naphthalene was detected at 20 ug/L, 1,2,4-trimethylbenzene was detected at 125 ug/L, 1,3,5-trimethylbenzene was detected at 40 ug/L and xylenes were detected at 12.5 ug/L.

Borings 3 and 4 (B-3 and B-4) were installed near a 20,000-gallon fuel oil UST located southwest of the chip house on the south side of the South Bend Lathe building. TPH and benzene, toluene, ethylbenzene, and xylenes (BTEX) results were below the laboratory's detection limit. The higher concentration of 1,1-DCA was collected from B-3 at 2.0 ug/L. The higher concentration of cis-1,2-DCE was collected from B-3 at 4.6 ug/L. The higher concentration of 1,1,1-TCA was collected from B-3 at 3.1 ug/L and the higher concentration of TCE was collected from B-3 at 15 ug/L.

Boring 5 was installed north of the piping track and east of the previously mentioned chip house. Two soil samples were submitted from B-5 for TPH. One sample was collected 1.5 to 3.0 ft. bgs (2,550 mg/kg) and one sample was collected 16.5 to 18.0 ft. bgs (112 mg/kg). Groundwater

analysis results from B-5 include the following; TPH at 0.44 mg/L, toluene at 0.010 mg/L, xylenes at 0.008 mg/L, 1,1-DCA at 1.5 ug/L, cis-1,2-dichloroethene (cis-1,2-DCE) at 3.5 ug/L, 1,1,1-TCA at 1.4 ug/L and TCE at 11 ug/L.

Borings 6 and 7 (B-6 and B-7) were installed near a 20,000-gallon fuel oil UST located approximately 105 ft. east of the chip house on the south side of South Bend Lathe. TPH and BTEX results of the soil and groundwater samples were below the laboratory's detection limit. Remaining VOC analytical information was either not provided or was not included in the parameter list for analysis.

Boring 8 was installed near 5,000-gallon gasoline UST located on the South Bend Lathe property, approximately 60 ft. south of the Engineering Building. The only result above the laboratory's detection limit for the soil and groundwater collected from B-8 is TPH in groundwater at 0.59 mg/L. Remaining VOC analytical information was either not provided or was not included in the parameter list for analysis.

A report titled "Site Remediation, 10,000-Gallon Underground Storage Tank, 32,000-gallon Cistern" was prepared by Warner & Sons, Inc. in June of 1993 and was reviewed for this Assessment. The report states that during demolition of the Avanti building located north of Area A, a 10,000-gallon heating oil UST and a large cistern with obviously contaminated materials were encountered. The UST was removed in December of 1992 and approximately 200 cubic yards of impacted soil was excavated from near the UST. The UST reportedly stored heating oil. Less than 50 gallons of sludge were removed from the tank prior to the tank's removal. Five confirmation soil samples were collected following the removal of the UST. The samples were submitted to a laboratory and analyzed for TPH. One sample resulted in a TPH concentration of 14 PPM and the other four samples were below the laboratory's detection limit. The impacted soil was disposed of as special waste at Prairie View Landfill on April 20, 1993. An approximately 32,000-gallon cistern, located at the Avanti property, was discovered during demolition operations. A dark, oily, aqueous solution was observed in the cistern. The source of the material is unknown. On December 2, 3, and 4, 1992 and on April 20 and 22, 1993, a total of 20,432 gallons of the material were removed from the cistern and disposed of at SER Oil Services. A sample of the material was collected and analyzed for TPH, ignitability, paint filter testing, TCLP volatiles and semivolatiles, total PCBs, reactivity, cyanide, total phenolics, pH, and TCLP metals. A TPH concentration of 190,000 PPM, a barium concentration of 9.0 mg/L, a

cadmium concentration of 0.15 mg/L and a lead concentration of 1.4 mg/L were detected in the sample. The concrete material associated with the cistern was also sampled prior to removal. The material was found to be a special waste and was disposed of at Prairie View Landfill on April 20 and 21, 1993. No visual impact was detected in soils adjacent to the cistern.

A letter prepared by APT in April of 1994 was reviewed for this Assessment. The letter was prepared for IDEM concerning a historic release from the four USTs located on the west end of Building 86 on the Allied Products Corp. property. The report indicates that, during the closure in-place of four USTs, Allied temporarily stored fuel oil and Studebaker reportedly used to store solvents. Soil samples were therefore collected near the USTs. These samples were submitted to a laboratory for TPH and VOC analysis. Results indicated elevated concentrations of PCE in soil near the tank. The report also indicated that no product was located in the tank prior to closure activities. The report states that IDEM incident number 94031118 was issued for the incident. No further action regarding remediation activities is stated in the letter.

A report titled "Site Investigation Report," prepared by APT in May of 1995 was reviewed for this Assessment. A portion of the report was received from the City of South Bend; however, this copy of the report did not include figures that showed the locations of the USTs that were removed from the Site (as discussed below), nor did it contain the majority of laboratory data from the on-Site investigations. A copy of what is believed to be the full report was received from IDEM on January 18, 2001. A review of the report and associated figures and laboratory data follows.

The report discusses potential releases associated with seventeen UST systems. Thirteen of the tanks were reportedly closed by Petroleum Equipment, Inc. during June 1989 to October 1991 and the remaining four tanks were closed by APT in March 1994. Ten USTs were reportedly removed from a tank farm located between Building 86 and 79. The tank farm consisted of six-10,000-gallon tanks, one-8,000-gallon tank, and three-12,000-gallon tanks that reportedly stored gasoline, kerosene and heating oil prior to closures. However, based on the age of the USTs the tanks may have stored several different materials in their lifetime. Soil samples were collected near the USTs and were sent to a laboratory and analyzed for TPH. The report stated that, based on the results of these samples, a release did not occur from this UST system. The report also stated that groundwater was not sampled in this area since it was not encountered during the UST excavation.

One 5,000-gallon UST, which was reportedly used to store gasoline, was located approximately midway along the outside of the east wall of the east building (Building 86). The report does not indicate if the tank was removed or closed in-place. Soil samples were collected near the UST and were sent to a laboratory for TPH analysis. Sample results indicated that releases had occurred from the UST and, therefore, soil was overexcavated and disposed of. Groundwater was not sampled at this time because it was not encountered during tank closure. The report does not state whether confirmatory samples were collected following excavation.

One 20,000-gallon UST that reportedly stored heating oil prior to its closure was located near the northwest corner of the west building (Building 86). The tank was abandoned in-place and soil samples were collected near the tank and sent to a laboratory for TPH analysis. It is not stated how many samples were collected; however, the report did state that two of the soil samples exhibited concentrations of TPH at 62 mg/kg and at 17 mg/kg. No remedial action was discussed in association with this tank. Groundwater was not sampled at this time because it was not encountered during tank closure.

According to the report, a 10,000-gallon UST that reportedly stored mineral spirits and kerosene was removed from the Site in October of 1991. The tank was located north of the east building. Strong petroleum odors were noted during the excavation of the UST. Soil samples were collected and sent to a laboratory for TPH and VOC analysis. A sample collected from the soil stockpile produced during the excavation exhibited a TPH concentration of 6,300 mg/kg and a soil sample collected from the floor of the excavation exhibited a TPH concentration of 31 mg/kg and a 1,2,4-trimethylbenzene concentration of 1,052 ug/kg. 2,264 cubic yards of soil near the tank was excavated, bioremediated, and returned to the excavation after concentrations of constituents were below the detection limit.

Four 4,000-gallon USTs historically containing PCE and fuel oil at different times of their operational use were closed in 1994. One monitoring well was installed near the tanks and one sample analyzed from the monitoring well indicated a release of PCE from the UST. The report also states that soil samples collected near the UST system confirmed a release of material with concentration of PCE and TPH. Table 1 through Table 3 in the report lists the parameter and the concentration of the respective COC. A narrative of the tables is provided below.

Samples were collected from the sidewalls and bottoms of the tank excavations and were analyzed for TPH diesel range organics (TPH-DRO). The laboratory's lower detection limit in these samples ranged from 10 mg/kg to 5,000 mg/kg. Five of the sample results were above the laboratory's detection limit. Sample T4-SSE (Tank 4 south side, east end) analysis resulted in a TPH-DRO concentration of 2,300 mg/kg. Sample T4-SSW (Tank 4 south side, west end) analysis resulted in a TPH-DRO concentration of 11 mg/kg. Sample T4-WE (Tank 4, west end) analysis resulted in a TPH-DRO concentration of 11 mg/kg. Sample T3-WE (Tank 3, west end) analysis resulted in a TPH-DRO concentration of 11 mg/kg. Sample T4-NSW (Tank 4 north side, west end) analysis resulted in a TPH-DRO concentration of 3,600 mg/kg.

Samples were collected from the sidewalls and bottoms of the tank excavations and were analyzed for VOCs. Acetone was detected in the samples collected from Tanks 1, 2, 3 and 4. The highest concentration of acetone detected was from sample T1-SSE (Tank 1 south side, east end) at 1,000 ug/kg. Acetone was also detected in the laboratory blank indicating that the acetone concentrations may be due to a laboratory contaminant. Acetone is a typical laboratory contaminant. 2-butanone was detected in samples collected from Tanks 1, 2, 3 and 4. The highest concentration of 2-butanone detected was from sample T3-NSE (Tank 3-north side, east end) at 34 ug/kg. Carbon disulfide was detected in one sample collected from Tank 4. The concentration of carbon disulfide detected was from sample T4-NSE (Tank 4-north side, east end) at 2.7 ug/kg. 1,2-dichloroethene (1,2-DCE) was detected in samples collected from Tanks 3 and 4. The highest concentration of 1,2-DCE detected was from sample T3-EE (Tank 3- east end) at 8.7 ug/kg. Ethylbenzene was detected in samples collected from Tanks 3 and 4. The highest concentration of ethylbenzene detected was from sample T4-NSE (Tank 4- north side, east end) at 6.1 ug/kg. 2-hexanone was detected in one sample collected from Tank 4. The concentration of 2-hexanone detected was from sample T4-BE (Tank 4- bottom, east end) at 12 ug/kg. Methylene chloride was detected in samples collected from Tanks 1, 2, 3 and 4. The highest concentration of methylene chloride detected was from sample T3-NSE (Tank 3- north side, east end) at 17 ug/kg. 1,1,2,2-tetrachloroethane was detected in one sample collected from Tank 1. The concentration of 1,1,2,2-TCA detected was from sample T1-SSE (Tank 1- south side, east end) at 610 ug/kg. PCE was detected in samples collected from Tanks 1,2,3 and 4. The highest concentration of PCE detected was from sample T2-SSE (Tank 2- south side, east end) at 72,000 ug/kg. Toluene was detected in samples collected from Tanks 3 and 4. The highest concentration of toluene detected was from sample T4-NSE (Tank 4- north side, east end) at 7 ug/kg. TCE was detected in samples collected from Tanks 3 and 4. The highest

concentration of toluene detected was from sample T3-EE (Tank 3- east end) at 6.8 ug/kg. Total xylenes were detected in samples collected from Tanks 3 and 4. The highest concentration of xylenes detected was from sample T4-NSE (Tank 4- north side, east end) at 24 ug/kg. No other VOCs were detected above the laboratory's detection limit.

Samples were collected from the sidewalls and bottoms of the tank excavations and were analyzed for semivolatile organic compounds (SVOCs). Benzo (a) pyrene was detected in one sample collected from Tank 1 (T1-NSW-north side, west end) at 59 ug/kg. Benzo (b) fluoranthene was detected in one sample collected from Tank 1 (T1-NSW-north side, west end) at 94 ug/kg. Benzo(ghi)perylene was detected in one sample collected from Tank 1 (T1-NSW-north side, west end) at 55 ug/kg. Benzo (k) fluoranthene was detected in one sample collected from Tank 1 (T1-NSW-north side, west end) at 53 ug/kg. Bis(2-ethylhexyl)phthalate was detected in samples collected from Tanks 1 and 4. The highest concentration of bis(2-ethylhexyl)phthalate detected was from sample T4-BW (Tank 4- bottom, west end) at 2,900 ug/kg. Carbazole was detected in one sample collected from Tank 1 (T1-NSW-north side, west end) at 35 ug/kg. Chrysene was detected in samples collected from Tanks 1 and 3. The highest concentration of chrysene detected was from sample T3-NSE (Tank 3- north side, east end) at 930 ug/kg. Di-n-butyl phthalate was detected in samples collected from Tanks 1, 2, 3 and 4. The highest concentration of di-n-butyl phthalate detected was from sample T3-NSW (Tank 3- north side, west end) at 480 ug/kg. Diethyl phthalate was detected in one sample collected from Tank 2 (T2-SS-south side) at 42 ug/kg. Fluoranthene was detected in one sample collected from Tank 1 (T1-NSW-north side, west end) at 160 ug/kg. Indeno (1,2,3-cd) pyrene was detected in one sample collected from Tank 1 (T1-NSW-north side, west end) at 53 ug/kg. Phenathrene was detected in samples collected from Tanks 1, 3 and 4. The highest concentration of phenathrene detected was from sample T4-SSE (Tank 4- south side, east end) at 2,100 ug/kg. Pyrene was detected in samples collected from Tanks 1 and 3. The highest concentration of pyrene detected was from sample T3-NSE (Tank 3- north side, east end) at 670 ug/kg. No other SVOCs were detected above the laboratory's detection limit.

The report also discusses the hydrogeology of the area, stating that, according to referenced materials, there is a shallow, unconfined aquifer located approximately 25 ft. bgs and a generally confined deep aquifer located approximately 100 ft. bgs. The report states that based

on on-Site investigations, a single, unconfined aquifer underlies the facility from ground surface to approximately 76 ft. bgs, followed by a 37 ft. thick interval consisting of interbedded till and sand/gravel units down to bedrock, which occurs at approximately 113 ft. bgs.

As part of the Phase II investigation performed at the Allied Products Corp. property, 24 shallow monitoring wells, 17 deep monitoring wells and nine soil borings were installed on the property. Shallow wells were screened at the water table (approximately 25 ft. bgs) and deep wells were screened at approximately 40-45 ft. bgs at a stained interval identified during previous investigations.

A summary of the soil analysis results follows:

1. six of the 71 soil samples analyzed for TPH exceeded the IDEM LUST cleanup objective of 100mg/kg[1], the highest of which was 39,000 mg/kg in MW1D at 38 ft. bgs; the remaining exceedences were 930 mg/kg (MW-2 at 21 ft. bgs), 320 mg/kg (MW-7 at 40 ft. bgs), 290 mg/kg (MW20D at 42 ft. bgs), 2,300 mg/kg (T4-SSE) and 3,600 mg/kg (T4-NSW);

2. VOCs were detected in 46 of the 47 soil samples collected and two VOC constituents were detected in concentration that exceeded the VRP Tier II cleanup objectives[2]. The PCE cleanup objective of 8,010 ug/kg was exceeded in six samples, and the 1,1,2,2-tetrachloroethane cleanup objective of 210 ug/kg was exceeded in one of the samples; and,

3. none of the 73 soil samples analyzed for SVOCs exceeded the IDEM LUST nor the VRP Tier II cleanup objectives.

A summary of the groundwater analysis results follows:

1. thirty-four of the 68-groundwater samples were analyzed for TPH and the 18 samples that exhibited concentrations of TPH were above the IDEM LUST cleanup objective of 100/ug/L[3]. These samples were collected from MW-E, MW-2, MW-3, MW-4, MW-12, MW-7, MW-23S, MW-13S, MW-13D, MW-15S, MW-15D, MW-11D, MW-16D, MW-18D, MW-20D, MW-22;

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[1] Note that the LUST program developed under RISC does not include a default closure level for TPH.

[2] These concentrations also exceed RISC Commercial /Industrial default closure levels for soil.

[3] See footnote #1.

2. forty of the 43-groundwater samples analyzed for VOCs exhibited concentrations of one or more VOCs. Two constituents of VOCs were detected in concentrations that exceeded the VRP Tier II cleanup criteria[4]. PCE was detected at concentrations that exceeded this criteria in eight samples (MW-1, MW-2, MW-6, MW-13-GW1, MW13D-GW1, MW-15D-GW1, and MW15-GW2). Vinyl chloride was detected in MW17S-GW1 that exceeded the cleanup criteria of 10ug/L. The concentration of this sample was not provided; and,

3. twenty-one of the 26 groundwater samples analyzed for SVOCs exhibited concentrations of one or more SVOC. Two SVOC constituents were detected in concentrations that exceeded the VRP Tier II cleanup criteria[4]. Bis(ethylhexyl)phthalate was detected at a concentration of 300 ug/L. APT stated that they believe this is a laboratory contaminant. Pentachlorophenol was detected in MW-3 at a concentration of 82 ug/L. This well was then resampled and Pentachlorophenol was not detected.

A portion of a Phase II report prepared by EIS Environmental Engineers, Inc. was made available for review for this Assessment. The report was prepared in August of 1995 and includes two figures. The first figure shows groundwater flow on the properties east of the Site to be towards the northeast. The second figure shows groundwater analytical results of monitoring wells installed off-Site northeast of the Site properties. Elevated concentrations of PCE and TCE were detected in the closest downgradient well to the Site.

A letter prepared by ATEC Associates, Inc. in January of 1996 summarizes the findings of the APT report that was prepared in 1995. It is likely that this is the same report that was reviewed for this Assessment and is summarized previously in this report.

A letter report provided for review included an April 1998 letter prepared by EIS Environmental Engineers, Inc. The cover letter includes a brief narrative describing groundwater sampling and analysis and well abandonment at the Avanti facility, a summary of analytical results, laboratory analytical results, the chain-of-custody for the samples, field sampling forms, and IDNR water well records documenting well abandonment. The letter stated that three of the four wells located on the Avanti property were abandoned and the fourth well was not located. The wells were installed by ATEC in November 1990. Sampling conducted prior to well abandonment indicates that VOCs in the submitted samples were below the laboratory's detectable limit. VOCs was the only parameter analyzed. Field forms for wells 1 and 2 indicate an odor was

[4] These concentrations also exceed RISC Commercial/Industrial default closure levels for groundwater.

detected during the well abandonment. The type of odor was not specified. One figure was included that showed the location of monitoring wells on the Avanti property located north of Area A.

A report prepared by Grauvogel & Associates in April of 2000 was reviewed for this Assessment. The report discusses the removal of three USTs and the closure in-place of one UST on the Engineering Building property located adjacent to the west of South Bend Lathe and northeast of Allied Products. Two 8,000-gallon USTs and one 5,000-gallon UST that historically stored gasoline were removed from the property in January of 2000. One 1,500-gallon UST that historically stored, at different periods, lubrication oil and mineral spirits. The 1,500-gallon UST was reportedly closed in-place due to its close proximity to a building foundation. No visual signs of leakage were noted near any of the tanks during excavation. The excavated tanks were observed for corroded areas where product might have escaped the tank. No such areas were noted. Approximately 150 gallons of mineral spirits were removed from the 1,500-gallon UST prior to closure. Approximately 1,120 gallons of water was removed from one of the 8,000-gallon USTs and approximately 8,000 gallons of water with trace gasoline was removed from the other 8,000-gallon UST prior to removal. Approximately 5,000 gallons of water with trace gasoline was removed from the 5,000-gallon UST prior to removal. One excavation was created to remove the two 8,000-gallon USTs and to expose the 1,500-gallon UST (east excavation) and another excavation was created to remove the 5,000-gallon UST (west excavation). Groundwater was not encountered during excavation. Soil samples were collected from both excavations. Soil samples from the east excavation were analyzed for lead and TPH. The highest result of lead was collected from the north portion of the west wall at 119 mg/kg. All TPH results were below the laboratory's detectable limit of 20 mg/kg. All TPH results from the west excavation were below the laboratory's detectable limit of 20 mg/kg. Five samples of the excavated soil was collected and found to be below the laboratory's detectable limit of 20 mg/kg. The excavated soil was returned to the excavation and additional backfill was brought in to return the excavations to grade. One sample was collected from the additional fill material required and was found to be below the laboratory's detectable limit of 20 mg/kg. Additional sampling is recommended for the area of the closed USTs to address the potential for the presence of VOCs and SVOCs.

2.0 STATEMENT OF WORK

2.1 Phase II Environmental Site Assessment Work Plan

The statement of work and objectives of the Phase II ESA are presented in the Work Plan and Field Sampling and Analysis Plan for a Phase II ESA (Hull Document #SBI002.100.0003) that was prepared for the City prior to the initiation of field activities. This work plan contained descriptions of the sampling rationale and methods for soil and groundwater investigation during the Phase II ESA.

The Work Plan assumed that environmental data collected as part of the assessment will be compared with Indiana RISC default closure levels. It is Hull's understanding that the Site will be developed for a future commercial/Industrial land use. RISC default closure levels for soils have therefore been considered to be applicable to commercial and industrial land use assumptions. Groundwater analytical data have been compared with closure levels assuming both commercial/industrial and residential land uses. Residential closure levels have been included in the evaluation as the downgradient extent of the COC has not been determined at the time this report was completed. Additional data collected downgradient of the Site would support the determination of applicable closure levels for the off-Site receptors.

2.2 Site-Specific Health and Safety Plan

Prior to initiation of the Phase II ESA field activities, Hull prepared a Health and Safety Plan (Hull Document #SBI001.100.0010) in general conformance with IDEM's Site Safety Plan requirements.

2.3 Quality Assurance Project Plan

The field work was performed consistent with U.S. EPA Region V requirements, the Indiana Department of Environmental Management's (IDEM's) VRP Program, and the U.S. EPA-approved Quality Assurance Project Plan (QAPP) dated August 2001 (Hull Document # SBI002.300.0008).

3.0 SITE CHARACTERIZATION INVESTIGATION

3.1 Baseline Ecological Assessment

The Site is located within the City of South Bend corporate limits in an urban (commercialized and residential) area. The storm water runoff for Area A is largely controlled by the Site's internal drainage system. Storm water collected by this system is then diverted to the City's combined sanitary and storm sewer system. An apparent retention basin that is located west of the building at the former Studebaker foundry (currently Underground Pipe & Valve – Property B). Based on observations during the Phase I and II ESA, it appears that this basin is used to management storm water from the roof drain system of the foundry. The nearest surface water body is the St. Joseph River, which is located approximately 1.5 miles northeast of the Site. Based on moderate concentrations of the COC in the subsurface and groundwater at the Site, the potential threat to aquatic wildlife and the river is limited.

There are no wetland areas, riparian areas, or other environmentally sensitive areas on, or adjacent to the Site. The locations of floodplain and wetland areas are described and mapped in the Phase I ESA Report. Environmental conditions at the Site do not appear to represent a threat to the local wildlife or potential endangered species.

3.2 Background Concentrations

Hull did not establish background concentrations for soils given the fact that risk-based cleanup goals were available for comparison to sampling data and considering that past industrial activities over most of the surrounding areas. As described in section 3.4, concentrations of the COCs in soil are evaluated based on RISC default closure levels consistent with the intended final use of the Site.

Hull evaluated background concentrations for groundwater based on the analytical results from an upgradient monitoring well. These analytical data, as described in section 3.5, are used to evaluate if the detected concentrations in on-Site wells are from releases on-Site, or are the result of migration onto the Site from on upgradient source.

3.3 Background Hydrogeologic Assessment

The Site is located along the southern edge of the Michigan Basin and northeast of the Kankakee Arch that separates the Illinois and Michigan Basins. The surface and near-surface

geology is part of the Kankakee Lowland. This area is characterized by fine-grained Holocene alluvium overlying the outwash sand and gravel deposit, which in turn overlies lacustrine silty clay materials. These unconsolidated materials are approximately 20 to 400 ft. thick, overlying the Devonian Age Ellsworth Shale. The Ellsworth Shale is described as predominantly green marine shale.

The Site lies above the St. Joseph Aquifer System, a highly productive aquifer capable of yielding greater than 250 gallons per minute. The St. Joseph Aquifer System is primarily composed of fine to medium sand with layers of sand and gravel. These granular deposits range in thickness from 20 to 400 ft. Groundwater is typically encountered at depths ranging from 15 to 75 ft. bgs. The regional groundwater flow within the aquifer system is to the northeast at a hydraulic gradient of 0.005 ft/ft and generally follows the surface topographic expression. The St. Joseph River appears to be the local discharge area for groundwater. Recharge to the aquifer system is primarily through the vertical percolation of the rain through the highly permeable subsurface. Therefore, the aquifer would be highly susceptible to releases of contaminants at the surface.

According to reviewed publications, thin (3 to 5 ft. thick) silty clay layers are interspersed within the aquifer and moderately thick deposit of the glacial tills separate the upper sand and gravel aquifer from the lower more productive sand and gravel aquifer. Based upon review of available information, there are no faults beneath, or within the vicinity of the Site.

Geologic information obtained from continuously sampled soil borings and monitoring wells indicate that subsurface soils and the aquifer consist of predominantly medium sand with secondary percentages of gravel and fines (clay and silt). Groundwater in the aquifer was encountered at depth ranging from approximately 20 to 27 ft. bgs. Beneath the aquifer unit, a low permeability layer unit was encountered at a number of deep monitoring well locations. Where present, this unit was encountered at depths ranging from approximately 60 to greater than 120 ft. bgs. In some areas, the unit was described as grey and brown dense sandy silt that was noted as being damp. In other areas, the unit was described as being a dense, grey and brown silty clay with secondary percentage of sand and gravel. Note that this unit was not fully penetrated to preclude creating a pathway to potential lower water bearing zones.

3.4 Phase II Environmental Site Assessment Sampling Methodology

The Phase II ESA was designed to evaluate the concentrations of COCs (in surface and subsurface soils and groundwater) and to characterize the geologic and hydrogeologic conditions beneath the Site. Field activities included the installation of the numerous groundwater monitoring wells and soil borings. The locations of these soil borings and monitoring wells are shown on Figure 3. Selected soil borings and monitoring wells were continuously sampled using 24-inch split-spoon samplers that were decontaminated between each sampling interval. Monitoring wells were installed in boreholes created by advancing 4.25 inch, inside-diameter (ID), hollow stem augers. The wells were constructed of two-inch ID Schedule 40 PVC screen and casing. Soil boring logs and monitoring well construction diagrams are provided in Appendix A. Construction information for the monitoring wells is summarized in Table 1.

As stated in the Initial Phase II ESA work plan, the objectives of the soils investigations were to:

1. evaluate the stratigraphy and textural characteristics of the vadose zone and the unconfined aquifer;
2. collect soil samples and conduct geotechnical analyses to evaluate contaminant transport characteristics;
3. provide initial data to demonstrate the completeness or incompleteness of potential exposure pathways of identified COCs; and,
4. collect soil samples from identified REC areas and additional areas for chemical analyses to evaluate the absence/presence and concentration of COCs.

To address these objectives, continuous sampling was completed at 32 shallow direct-push borings (to a depth of four ft. bgs), five shallow soil borings, and at selected shallow and deep monitoring well locations to characterize the vadose zone stratigraphy and potential exposure pathways. Note that when nested wells were installed, only the deeper of the borings was continuously sampled.

To evaluate the horizontal and vertical extent of COCs in the vadose zone, 98 discrete samples (excluding quality assurance/quality control (QA/QC) samples) were submitted to the analytical laboratory for analyses. In addition, six samples were submitted to a geotechnical laboratory to evaluate the textural composition and physical properties of the unsaturated soils.

The objectives of the groundwater investigation were to:

1. assess the location and stratigraphy of the unconfined aquifer(s) and the presence or absence of confining layers in the unconsolidated material;

2. determine the nature and concentrations of COCs in groundwater;

3. evaluate the groundwater yield and hydraulic characteristics of the unconsolidated aquifer; and,

4. evaluate the general flow direction and gradient of groundwater.

These objectives were achieved by installing 26 shallow monitoring wells, 9 intermediate monitoring wells, and 21 deep monitoring wells. Continuous sampling of the saturated portion of the unconfined aquifer was completed in selected deep monitoring well locations, and at selected intermediate monitoring well locations where no deep monitoring wells were proposed. In addition, continuous sampling of the upper portion of the unconfined aquifer was completed when only a shallow monitoring well was installed.

The newly installed monitoring wells were properly developed in accordance with procedures described in the Initial Phase II ESA Work Plan. Field data sheets for the well development activities are provided in Appendix B.

To determine the extent of COCs in the unconfined aquifer, 72 representative groundwater samples were collected from the newly installed monitoring wells and from selected existing monitoring wells installed by APT, Inc. Field data sheets documenting that the groundwater samples were collected consistent with the procedures in the Work Plan are provided in Appendix C. In conjunction with the groundwater sampling event, static water levels were collected to evaluate horizontal and vertical groundwater flow.

Detailed descriptions of the investigative and sampling rationale, soil and groundwater sampling methods, analytical methods for soil and groundwater, and QA/QC protocols are provided in the Work Plan for a Phase II ESA (Hull Document # SBI002.100.0003) and the QAPP (Hull Document # SBI002.300.0008). This Work Plan was prepared prior to completing the field work for the Initial Phase II ESA. Adherence to the procedures in the Work Plan and QAPP provided for collection of representative soil and groundwater samples.

3.5 Phase II Environmental Site Assessment Results

3.5.1 Sample Analysis Results

Soil

Hull selected at least one representative soil sample from the soil borings and monitoring wells for laboratory analysis based on the results of photoionization detector (PID) headspace screening or by evidence (staining, odors, etc.) of the presence of COCs as observed in the field. If a boring or well did not exhibit any evidence of COCs, Hull submitted the sample from the upper two ft. of the soil column to TestAmerica Laboratories for analysis. In cases where field screening and/or visual observation identified the potential presence of COCs, Hull submitted two soil samples from a boring or well to evaluate the vertical extent of the potential contaminants. In addition to the soil samples, Hull collected trip and field blanks, duplicate samples, and matrix spike/matrix spike duplicate (MS/MSD) samples for submittal to the laboratory as QA/QC measure. During collection, handling, and transportation of these samples, Hull maintained strict chain-of-custody protocols to protect the chemical integrity of the soil samples. Laboratory analytical reports for the soil samples and QA/QC samples along with the chain-of-custody documents are included in Appendix D.

These soil analytical data generated during the course of this investigation were evaluated in accordance with the procedures described in the QAPP. These data were determined to meet the substantive requirements for the precision, accuracy, representativeness, completeness, and comparability (PARCC). An evaluation of field blank (equipment rinseate) samples result indicate that the field decontamination procedures were effective since no target analytes were detected in any of the field blank samples. Similarly, target analytes were not detected in any of the trip blank samples.

Analytical data generated by the subcontracted laboratory were evaluated in accordance with the QAPP. Specifically, laboratory QA/QC samples (i.e., replicates, MS/MSD, calibration checks, etc.) were performed in strict accordance with laboratory's Standard Operating Procedures (SOPs) that were included as Appendix A of the QAPP. Any deviations were clearly indicated in the case narrative for each sample delivery group and the analytical results were qualified as appropriate. Upon receipt, Hull's Quality Assurance Officer reviewed analytical data generated by the laboratory subcontractor prior to distribution. The analytical

reports with case narratives and QC summaries for the soil samples have been included as Appendix D of this report. Level 4 data packages (CLP-like deliverables) were prepared for each sample delivery group and are available upon request.

Tables 2 and 5, summarizes the analytes that were detected above respective method detection limits for the surface soils (i.e., 0 to 0.5 ft. bgs) and subsurface soils (i.e., > 0.5 ft. bgs and above the water table smear zone). In addition, Table 2 provides a summary of applicable RISC commercial/industrial default closure levels. These data are also shown on Figure 4 to illustrate the distribution of COCs that exceed RISC commercial/industrial closure levels. As summarized in Tables 2 and 5, COCs at the Site that exceed RISC Commercial/Industrial default closure levels include:

Metals

1. arsenic;
2. cadmium;
3. chromium; and,
4. lead.

SVOCs

1. benzo(a)anthracene;
2. benzo(a)pyrene;
3. benzo(b)fluoranthene;
4. chrysene;
5. dibenzo(a,h)anthracene; and,
6. indeno(1,2,3-cd)pyrene.

VOCs

1. PCE.

Arsenic was detected in 33 samples at concentrations ranging from 3.4 mg/kg at SB-6 to 114 mg/kg at HA-3. Arsenic exceeded the RISC Commercial/Industrial default closure level of 20 mg/kg at 10 locations with concentrations ranging from 21.4 mg/kg at HMW-22D to 114 mg/kg

at HA-3. Locations where arsenic concentrations exceed closure levels are shown on Figure 4 and are summarized in Table 5. The source of the elevated arsenic concentrations is probably the former railroad spurs and ties.

Cadium was detected in five samples at concentrations ranging from 2.0 mg/kg at GB-19 to 89.2 mg/kg at GB-10. Cadium exceeded the RISC Commercial/Industrial default closure level of 77 mg/kg at GB-10. The location where the cadium concentration exceeds the closure level is shown on Figure 4 and is summarized in Table 5. The source of the elevated cadium concentration is currently unknown.

Chromium was detected in 70 samples at concentrations ranging from 2.8 mg/kg at HMW-19D to 177 mg/kg at GB-12. Chromium exceeded the RISC Commercial/Industrial default closure level of 120 mg/kg only at GB-12 at a concentration of 177 mg/kg. The location where chromium concentration exceeds the closure level is shown on Figure 4 and is summarized in Table 5. The source of the elevated chromium concentration is currently unknown.

Lead was detected at 67 locations at concentrations ranging from 5.9 mg/kg at HMW-6S to 13,600 mg/kg for the duplicate sample at HMW-24D. Lead exceeded or equaled the RISC Commercial/Industrial default closure level of 230 mg/kg at 19 locations with concentrations ranging from 241 mg/kg at HMW-12S to 13,600 mg/kg at HMW-24D. Locations where lead concentrations exceed closure levels are shown on Figure 4 and are summarized in Table 5. The source of the elevated lead concentrations is currently unknown. Possible sources could be residual paint chips that were incorporated into the soil during the demolition of the residents that once occupied this portion of Area A, fugitive dust from foundry operations, or paints used in the automobile manufacturing process.

Benzo(a)anthracene was detected in 33 samples at concentrations ranging from 353 ug/kg at HMW-34S to 29,200 ug/kg at GB-34. Benzo(a)anthracene exceeded the RISC Commercial/Industrial default closure level of 15,000 ug/kg only at GB-34. The location where the benzo(a)anthracene concentration exceeds the closure level is shown on Figure 4 and is summarized in Table 5. The suspected source of the benzo(a)anthracene is likely the railroad ties and cutting oil that occupy Area A. Note that at no single location is the total SVOC concentration greater than 10,000 mg/kg.

Benzo(a)pyrene was detected at 39 locations at concentrations ranging from 195 ug/kg at GB-2 to 30,900 ug/kg at GB-34. Benzo(a)pyrene concentrations exceed the RISC Commercial/Industrial default closure level of 1,500 ug/kg at 12 location at concentrations ranging from 1,610 ug/kg at GB-11 to 30,900 ug/kg at GB-14. Locations where benzo(a)pyrene concentrations exceed closure levels are shown on Figure 4 and are summarized in Table 5. The suspected source of the benzo(a)pyrene is likely the railroad ties and cutting oil that occupy Area A.

Benzo(b)fluoranthene was detected in 35 samples at concentrations ranging from 415 ug/kg at SB-3 to 48,600 ug/kg at GB-34. Benzo(b)fluoranthene concentrations exceed the RISC Commercial/Industrial default closure level of 15,000 ug/kg at GB-10 (16,000 ug/kg) and GB-34 (48,600 ug/kg). Locations where benzo(b)fluoranthene concentrations exceed closure levels are shown on Figure 4 and are summarized in Table 5. The suspected source of the benzo(b)fluoranthene is likely the railroad ties and cutting oil that occupy Area A.

Chrysene was detected in 36 samples at concentrations ranging from 360 ug/kg at GB-33 to 36,900 ug/kg at GB-34. Chrysene exceeded the RISC Commercial/Industrial default closure level of 25,000 ug/kg only at GB-34. The location where the chrysene concentration exceeds the closure level is shown on Figure 4 and is summarized in Table 5. The suspected source of the benzo(a)anthracene is likely the railroad ties and cutting oil that occupy Area A.

Dibenzo(a,h)anthracene was detected in five samples at concentrations ranging from 368 ug/kg at HMW-27S to 2,530 ug/kg at GB-34. Dibenzo(a,h)anthracene exceeds the RISC Commercial/Industrial default closure level of 1,500 ug/kg only at GB-34 (2,530 ug/kg). The locations where dibenzo(a,h)anthracene exceeds closure levels is shown on Figure 4 and is summarized in Table 5. The suspected source of the dibenzo(a,h)anthracene is likely the railroad ties and cutting oil that occupy Area A.

PCE was detected at nine locations at concentrations ranging from 9.7 ug/kg at HMW-18S to 4,740 ug/kg at HMW-9I. PCE exceeds the RISC Commercial/Industrial default closure level of 640 ug/kg only at HMW-9I. In addition, based on Hull's experience modeling volatilization to indoor in soils similar to the soils at Area A, the concentration of PCE at HMW-9I would result in

an unacceptable risk should a build be constructed over this area. The likely source of the PCE is spill from prior part degreasing operations. Note that at no single location is the total VOC concentration greater than 1,000 mg/kg.

Groundwater

The groundwater data generated during the course of this investigation were evaluated in accordance with the procedures described in the QAPP. The data were determined to meet the substantive requirements for the precision, accuracy, representativeness, completeness, and comparability (PARCC). All field measurements were reviewed by the Project Manager or Quality Assurance Officer and any corrections have been clearly documented on the field data sheets that have been included in this report. An evaluation of field blank (equipment rinseate) samples result indicates that the field decontamination procedures were effective since no target analytes were detected in any of the samples. Similarly, target analytes were not detected in any of the trip blank samples.

Analytical data generated by the subcontracted laboratory was evaluated in accordance with the QAPP. Specifically, laboratory QA/QC samples (i.e., replicates, MS/MSD, calibration checks, etc.) were performed in strict accordance with laboratory's SOPs that were included as Appendix A of the QAPP. Any deviations were clearly indicated in the case narrative for each sample delivery group and the analytical results were qualified as appropriate. Upon receipt, Hull's Quality Assurance Officer reviewed analytical data generated by the laboratory subcontractor prior to distribution. The analytical reports with case narratives and QC summaries for the groundwater samples have been included as Appendix E of this report. Level 4 data packages (CLP-like deliverables) were prepared for each sample delivery group and are available upon request.

Following development and purging, Hull collected groundwater samples from 74 monitoring wells. In addition to the groundwater samples, Hull collected trip and field blanks, a duplicate sample, and a MS/MD sample for submittal to the laboratory as a QA/QC measure. During collection, handling, and transportation of these samples, strict chain-of-custody protocols were maintained to protect the chemical integrity of the groundwater samples. Laboratory analytical reports for the groundwater and QA/QC samples along with the chain-of-custody document are included in Appendix E.

Table 3 summarizes the analytical parameters in groundwater that were detected above their respective method detection limit. In addition, Table 3 provides a summary of applicable RISC commercial/industrial and residential default closure levels. Sampling locations exceeding the RISC default closure levels are shown on Figure 5 to illustrate the lateral extent of groundwater above applicable default closure levels. As summarized on Table 3, several analytical results for groundwater are above the applicable land use closure levels.

Arsenic was detected in 22 groundwater sampling locations at concentrations ranging from 5.3 ug/L at HMW-33S to 2,860 ug/L at HMW-19S. Of these locations, arsenic concentrations exceeded both RISC commercial/industrial and residential default closure levels (50 ug/L) at seven locations. Default closure levels were exceeded at HMW-2S, HMW-6S, HMW-19S, HMW-25S through HMW-27S, and HMW-31S. Figure 6 shows the approximate extent of groundwater that exceed commercial/industrial and residential closure levels for arsenic. As shown on Figure 6, there appears to be three separate areas or plumes where arsenic exceeds industrial and residential closure levels. However, it is evident that the arsenic concentrations, above closure levels, are apparently confined to the upper portion of the aquifer.

Barium was detected at 55 groundwater sampling locations at concentrations ranging from 29 ug/L at HMW-4S to 7,030 ug/L at HMW-25S. Of these locations, barium concentrations did not exceed the RISC commercial/industrial default closure levels of 7,200 ug/L. RISC residential default closure levels of 2,000 ug/L were exceeded at two locations. These locations are HMW-19S (3,100 ug/L) and at HMW-25S in the northeast portion of Area A. The locations of the monitoring wells are shown on Figure 5.

Chromium was detected at 14 groundwater sampling locations at concentrations ranging from 8.8 ug/L at HMW-33D to 224 ug/L at HMW-25S. Of these locations, chromium concentrations exceeded the RISC residential default closure level of 100 ug/L at two locations. No groundwater sample exceeded the RISC commercial/industrial default closure level of 310 ug/l. HMW-2S (163 ug/L) is located in the western portion of Property B and at HMW-25S in the northeast portion of Property D. The locations of these monitoring wells are shown on Figure 6.

Lead was detected at 54 groundwater sampling locations at concentrations ranging from 1.1 ug/L at MW-1D to 1,410 ug/L at HMW-25S. The RISC residential default closure level of 15 ug/L was exceeded at 19 locations. The RISC commercial/industrial default closure level for

lead of 42 ug/L was exceeded at 11 locations. Figure 7 shows the approximate extent of groundwater that exceeds commercial/industrial and residential closure levels for lead. As shown on Figure 7, there are several apparently non-contiguous areas or plumes where lead exceeds industrial and residential closure levels, thereby indicating several potential source areas. The majority of the exceedances are concentrated in the southeastern half of Area A. It is also evident that the highest lead concentrations primarily within the upper portion of the aquifer.

One lead plume may originates from the former retention basin located southwest of the Property B building and extend to the northeast. However, as shown on Figure 7, the residential closure level was exceeded in HMW-1I (which is the upgradient well in this area). It is therefore not possible to distinguish whether the former retention basin is the source of the lead or if the lead is migrating onto Area A from an off-Site source. An additional well nest would need to be installed upgradient of the former retention basin to complete this determination. In addition, several monitoring well nests would need to be installed to evaluate the western extent of this lead plume.

A second lead plume appears to have originated from the northern portion of the Huckins Property. Additional monitoring wells would need to be installed to further characterize this plume. A third apparent lead plume appears to be originating from the northeast of the Allied Product Corp. Property. Based on the results of the monitoring wells located north of Sample Street, it appears that this plume is migrating off-Site.

A fourth lead plume appears to have originated from the southwest of the Property D and extended to the northeast. The plume appears to end in the vicinity of monitoring well nest #13, as shown on Figure 7. This plume is apparently confined within Area A boundaries.

The last lead plume appears to have originated from the southeastern portion of Area A, as shown on Figure 7, and may migrate off-Site. Note that since no monitoring wells have been installed upgradient, it is possible to conclude whether the plume originated from an on- or off-Site source. Additional monitoring wells would need to be installed to further characterize the upgradient and downgradient extent of this area.

Mercury was detected at four groundwater sampling locations at concentrations ranging from

0.3 ug/L at HMW-27S to 2.3 ug/L at HMW-25S. Of these locations, the mercury concentration exceeded the RISC residential default closure level of 2 ug/L only at HMW-25S. No groundwater sample exceeded the RISC commercial/industrial default closure level. HMW-25S is located in the northeast portion of Area A, as shown on Figure 5. Note that the detected mercury concentrations are concentrated in the northeast portion of Area A.

PCE was detected at 34 groundwater sampling locations at concentrations ranging from 1.0 ug/L at HMW-28S and HMW-31D to 749 ug/L at HMW-9S. The RISC residential default closure level of 5 ug/L was exceeded at 22 locations primarily in the southeastern half of Area A. The RISC commercial/industrial default closure level of 55 ug/L was exceeded at 12 sampling locations. As shown on Figure 8, the sampling locations that exceed the residential and commercial/industrial default closure level apparently coincide with the axis of the plume that appears to have originated from the southern portion of buildings 86 and 93. Based on the sampling results on the north side of Sample Street, the PCE plume has migrated off-Site. As no VOCs were detected in upgradient monitoring wells MW-8S, MW-8D and MW-30D, it is apparent that the source of PCE is located southeast portion of Area A, as supported by the detection of PCE in unsaturated soil in building 142.

TCE was detected at 35 groundwater sampling locations at concentrations ranging from 1.1 ug/L at MW-11S and MW-11D to 386 ug/L at HMW-13D. The RISC residential default closure level of 5 ug/L was exceeded at 26 locations. The RISC commercial/industrial default closure level of 260 ug/L was exceeded only at HMW-13D, located in the northern portion of building 80.

As shown on Figure 9, there appears to be two discrete TCE plumes in Area A. One TCE plume appears to have originated from the southern portion of buildings 86 and 93 and extend to the northeast and migrates off-Site. As no VOCs were detected in upgradient monitoring wells MW-8S, MW-8D and MW-30D, it is apparent that the TCE is originating from the southeast portion of Area A. An additional monitoring well nest would need to be installed to the southeast of building 142 to verify this conclusion.

The second TCE plume appears to have originated from the former retention basin located southwest of the Property B and extended to the northeast. As with the other TCE plume, based on the groundwater sampling results from monitoring wells on the north side of Sample Street, this plume is migrating off Area A. As shown on Figure 9, the residential closure level

goal was exceeded in HMW-1I (which is the upgradient well in this area). Therefore, it is not possible to identify whether the former retention basin is the source of the TCE, or if the TCE is migrating onto Area A from an off-Site source. An additional well nest would be required to be installed upgradient of the former retention basin to complete this determination. In addition, several other monitoring well nests would need to be installed to evaluate the western extent of this TCE plume.

Vinyl Chloride was detected at three groundwater sampling locations at concentrations ranging from 1.3 ug/L at HMW-31I to 4.1 ug/L at HMW-14S, exceeding the RISC commercial/industrial and residential default closure levels of 2 ug/L only at HMW-14S. HMW-14S is located in the northwest portion of Area A south of the western portion of the building on Property C, as shown on Figure 5. Vinyl Chloride may be biodegradation of TCE/or PCE, and appears to be isolated beneath Area A.

1,2,4-trimethylbenzene was detected at three groundwater sampling locations at concentrations ranging from 1.3 ug/L at HP-2d to 7,740 ug/L at HMW-23S. The 1,2,4-trimethylbenzene concentration at HMW-23S exceeded the commercial/industrial and residential closure levels that were derived by Hull from equations in Appendix F of the VRP Guidance Document. HMW-23S is located in the northeast portion of Area A, as shown on Figure 5. This COC appears to be related to the oily layer that was periodically encountered below the water table.

1,3,5-trimethylbenzene was detected at four groundwater sampling locations at concentrations ranging from 1.4 ug/L at MW-15D to 2,330 ug/L at HMW-23S. The 1,3,5-trimethylbenzene concentration at HMW-23S exceeded the RISC commercial/industrial and residential default closure levels that were derived by Hull from equations in Appendix F of the VRP Guidance Document. HMW-23S is located in the northeast portion of Area A as shown on Figure 5. This COC appears to be related to the oily layer that was periodically encountered below the water table.

3.5.2 Hydrogeologic Investigation Results

Based on the geologic information collected from the continuously sampled soil borings and monitoring wells, the Site is underlain by brown fine to medium sand with traces of silt and clay. The geologic conditions are illustrated on the generalized geologic cross sections A-A', B-B', C-

C' D-D' shown on Figure 10, 11, 12, and 13, respectively. Detailed descriptions of the unconsolidated materials encountered at each location are described on the Soil borings logs provided in Appendix A.

As shown on the geologic cross-sections and describe on the soil boring/monitoring well logs, the vadose zone ranges in thickness from approximately 20 to 27 ft. thickness. Soil samples collected from this zone were described in the field as predominantly brown fine to medium sand with a trace of gravel and fines (silt and clay). Soil samples submitted to the geotechnical laboratory for grain-size distribution analysis indicate that materials in this zone are primarily classified as SP, in accordance with Unified Soil Classification System (USCS), and are described as brown poorly sorted sands with trace to some gravel and trace to little fines.

Selected samples were also submitted to the analytical laboratory for total organic carbon (TOC) analysis – Walkley Black Method. The results of this analysis indicates that the TOC in vadose zone ranges from 0.036% to 0.18% with an average of 0.072%. This range and average appears to be typical of soil types encountered at Area A.

The saturated portion of the unconsolidated aquifer ranges in thickness from approximately 40 ft. to greater than 100 ft. As with the vadose zone, the aquifer material was described in the field as predominantly a brown fine to medium sand with secondary percentage gravel and fines. In addition, this portion of the unconsolidated deposits was also noted to contain relatively thin layer of sand and gravel and silty sand. These zones were determined to be isolated based on the fact that they were not encountered in adjacent soil borings/monitoring wells. These units are considered minor in term of the overall hydraulics of the aquifer system.

Beneath the aquifer, a lower confining layer was encountered at all locations, except HMW-22D and HMW-28D. Where present, the layer was described in the field as either a very dense, damp, silt or a hard, damp, silty clay. As shown on Figure 14, the top of this unit was encountered at elevations ranging from 631.1 ft. (USGS) at HMW-32D to 678.3 ft. at HMW-21D. Review of the Figure 8 suggests that this surface is likely an erosional surface that was created by fluvial activities prior to the depositional of the unconsolidated aquifer.

Soil samples submitted to geotechnical laboratory for grain-size analysis indicates that the saturated portion of the aquifer exhibit similar grain-size distribution as the unsaturated portion. Results of this analysis indicate that the materials are primarily classified as SP and are described as brown poorly sorted sand with some gravel and a trace of fines.

Selected samples from the aquifer were also submitted to the analytical laboratory for total organic carbon (TOC) analysis – Walkley Black Method. The results of this analysis indicates that the TOC in aquifer ranges from 0.088% to 0.17% with an average of 0.13%. This range and average appears to be typical of soil types encountered at Area A.

Legitimate slug tests could not be completed due to extremely fast recovery rates. Published hydraulic conductivity values from laboratory analyses indicate a range of conductivity values from 10^{-3} to 10^{-4} cm/sec for well sorted sands/glacial outwash (Fetter, 1994). Single well pumping tests may need to be completed to further characterize the hydraulic conductivity of the aquifer.

Static water levels from selected monitoring wells were used to evaluate the groundwater flow conditions in the upper and lower portions of the unconsolidated aquifer. These water levels were collected prior to groundwater sampling event. As shown on Figures 15 and 16, groundwater flow in upper and lower portions of the aquifer is to the northeast at a hydraulic gradient of 0.0007 ft/ft and is essentially identical. The highly variable nature of the lower confining units does not appear to significantly effect the groundwater flow regime in the lower portion of the aquifer.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 Summary of Potential Risks

Hull has conducted a preliminary evaluation of risk based on current Site conditions, as determined by the Initial Phase II ESA, available risk-based standards, and assumed future land uses. The evaluation considers:

1. potential receptors;
2. COC transport mechanisms; and,
3. Exposure pathways.

A brief discussion of the above factors follows.

Potential Receptors

Potential receptors include:

1. on-Site populations;
2. off-Site populations;
3. on-Site ecological resources; and,
4. off-Site ecological resources.

Current on-Site receptors primarily consist of workers at Underground Pipe & Valve and South Bend Lathe, visitors to these facilities and trespassers. Until recently, only a caretaker was consistently present at the Allied Products Corp. property. Both the Allied Product Corp property and the Huckins Tool & Die property are currently unoccupied. Trespassers may also be potential receptors.

Future use of the Site is expected to be commercial/industrial, and following development the population of potential receptors is expected to grow. During development activities construction workers are expected to be future on-Site receptors.

Off-Site populations consist of industrial, commercial and residential populations. Transient off-Site populations may also be present as construction workers (e.g., sewer repair).

As described in section 3 of this report, there are no known sensitive ecological receptors on the Site. Furthermore, potential off-Site ecological receptors (e.g., the St. Joseph River) are far enough from the Site to pose limited concern.

COC Transport Mechanisms

The primary transport mechanisms associated with COCs in soil and groundwater at the Site include:

1. direct contact with soil;
2. soil to air (particulates);
3. leaching of soil to groundwater;
4. groundwater migration;
5. migration via buried utilities:
6. vapor migration from soils; and,
7. vapor migration from groundwater.

Current conditions at the Site would greatly inhibit direct contact with soil, considering that most of the land surface is covered by asphalt, concrete and industrial buildings. Assuming that the Site will be developed as a commercial or industrial enterprise, the potential for soil contact or soil transport may be similar to what it is today. However, contact and transport could temporarily increase during demolition and construction activities.

The presence of asphalt, concrete and buildings over the Site probably limits infiltration of water, and thus leaching of COCs from soil to groundwater. However, the potential exists for leaching of COCs from unsaturated soils and migration into groundwater.

Initial Phase II ESA investigations determined that COC concentrations exceed risk-based closure levels in groundwater beneath the Site. Sampling has also determined probable migration from the Site to downgradient properties north of the Site.

Hull has a partial understanding of the utility and tunnel network beneath the Site. However, it is clear that sewers and other buried utilities traverse and leave the Site at several locations (refer to Figure 2). To Hull's knowledge, all utilities beneath and adjacent to the Site are above the

water table, and are therefore not subject to infiltration by groundwater. However, the current and future potential exists for limited infiltration by vapor-phase VOCs into sewers and subsequent transport as vapor or, via partitioning, as water carried by the sewers. Utility backfill materials do not appear to have significantly different permeabilities than the native soils and area fill materials, and are thus not expected to act as preferential pathways.

VOCs were detected in soils and groundwater beneath the Site. The potential therefore exists for vapors to migrate to indoor and outdoor air. Future development of the Site may or may not influence this transport mechanism.

Exposure Pathways

Soils

Based on current conditions at the Site, exposure pathways have the potential to result in unacceptable risk. As shown on Figure 4 and described on Table 5, soils exceed RISC commercial/industrial closure levels at 33 locations at the Site[5]. Of these locations, default direct contact closure levels are exceeded at the following 26 locations[6]:

1. GB-10;
2. GB-11;
3. GB-12;
4. GB-15;
5. GB-16;
6. GB-17;
7. GB-19;
8. GB-24;

[5] Soil concentrations were compared with single-chemical default closure levels derived for direct contact, construction worker and migration to groundwater (leaching) pathway values. For pH-dependent COCs, the soil pH was assumed to be within default ranges. Concentrations were also compared with soil saturation and soil attenuation capacity values, where applicable. Cumulative values for metals and organics fell below soil attenuation capacity ceilings (i.e., 10,000 mg/kg for metals, 6,000 mg/kg for organics in surface (0.0-0.5 ft. bgs) soils and 2,000 mg/kg in subsurface (>0.5 ft. bgs) soils).

[6] Samples in the above borings were collected from the upper two ft. bgs, consistent with original VRP protocol for surface sample analyses. While several of these samples include soils below 0.5 ft. bgs (i.e., the depth above which materials are considered surface soil pursuant to RISC guidance), Hull has conservatively compared COC concentrations against default direct contact closure levels for surface soils.

9. GB-29;
10. GB-31;
11. GB-32;
12. GB-34
13. GB-35;
14. GS-2;
15. GS-3;
16. HA-3;
17. HMW-2S;
18. HMW-15S;
19. HMW-18S
20. HMW-22D;
21. HMW-24D;
22. HMW-27D;
23. HMW-33D;
24. SB-1; and,
25. SB-5.

Fourteen of the locations exceeding single-chemical default closure levels, based on direct contact, are located along former railroad spurs that were paved over following decommissioning of the tracks. The locations exceeding the RISC direct contact exposure level are summarized in Table 5. The primary COCs exceeding closure levels at these locations are arsenic and benzo(a)pyrene, compounds commonly included in preservatives used on railroad ties. Two locations in the vicinity of Building 83 on Property D have lead concentrations ranging from 2,720 to 13,600 mg/kg. One of the samples was collected from beneath the slab in Building 83 and the other sample was collected from beneath the asphalt-covered parking lot. Other areas containing COCs at concentrations above single-chemical direct contact closure levels include:

three locations south of the building at Property C exhibiting oil staining or stressed vegetation and (benzo(a)pyrene);

1. near USTs on Property C containing (benzo(a)pyrene);
2. one location near the northern boundary of Property A containing (PCBs); and,
3. various locations on Property B - including areas inside the building and in the apparent retention basin (benzo(a)pyrene and arsenic).

Considering that most of the locations exceeding single-chemical soil closure levels are presently beneath asphalt or concrete which extends at least 100 ft. in all directions from the sampling points, current direct contact and airborne dust exposure pathways appear to be incomplete. Future exposures could occur during construction activities and if cover is not replaced or maintained. Furthermore, soils exceed default construction closure levels at two locations, including:

1. HMW-24D; and,
2. HMW-33D.

Both of the above locations are near locations in the vicinity of Building 83 Property D, and contain elevated concentrations of lead. As described previously, the elevated lead concentrations may be related to painting operations when the facility was used for automobile production.

No samples tested below a depth of two ft. bgs exceeded default leaching closure levels. The location exceeding RISC migration to groundwater closure levels are summarized in Table 5. However, soils within the upper two ft. bgs exceeded leaching closure levels at the following 24 locations:

1. GB-3;
2. GB-10;
3. GB-11;
4. GB-12;
5. GB-15;

6. GB-17;
7. GB-19;
8. GB-24;
9. GB-29;
10. GB-31;
11. GB-33;
12. GB-35;
13. GS-2;
14. GS-3;
15. HA-1;
16. HA-2;
17. HA-3;
18. HMW-4S;
19. HMW-7S;
20. HMW-9I;
21. HMW-12S;
22. HMW-24D;
23. HMW-33D; and,
24. SB-5.

Eleven of the locations that exceed migration to groundwater closure levels are along the former railroad spurs. The primary COCs that exceed closure levels in these locations are lead, arsenic and benzo(a)pyrene. Furthermore, cadmium, chromium, chrysene and indeno(1,2,3-cd)pyrene exceed their respective closure levels in at least one location. Two locations described previously near Building 83 on Property D contain lead at concentrations exceeding the migration to groundwater closure levels. Other areas containing soils that exceed migration to groundwater levels include:

1. two locations south of the building at Property C exhibiting oil staining or stressed vegetation (lead at one location chromium at another);

2. one location in building 142 on Property D near the former die washing area (PCE);

3. one location on Property A near an apparent dry well (lead);

4. two locations inside the southwest portion of the building at Property B in residual foundry materials (lead)[7];

5. beneath the slab in building 80 at Property D (lead);

6. west of building 86 at Property D (lead); and,

7. three locations in, or near the apparent retention basis at Property B (lead at two locations and arsenic at one).

The default migration to groundwater levels are conservative. Further evaluation using Site-specific factors may result in fewer locations where the closure levels are exceeded.

VOCs were detected in unsaturated soils and groundwater beneath the Site. Surface and subsurface soils are very permeable, and would not form a natural barrier to limit the migration of vapors, although the presence of impervious cover across most of the Site would greatly limit movement to indoor and outdoor air. Nevertheless, potential current and future completed exposure pathways exist. Given the types of COCs detected, their concentrations and their distribution, it is unlikely that volatilization to outdoor air currently poses (or in the future will pose) an unacceptable risk. Volatilization of VOCs from soils to indoor air does not currently appear to pose an unacceptable risk as the highest concentrations are either outside buildings or beneath unoccupied buildings on. Absent remediation, and based on available data, future indoor exposures would likely pose an unacceptable risk in only one location: in the southern portion of Property D in Building 142, where the PCE concentration in surface soil is 4,740 ug/kg. Quantification of the risk would require Site-specific modeling.

Groundwater

As shown on Figures 6 though 9, various metals and VOCs in on-Site groundwater exceed default closure levels. However, there are no drinking water wells on-Site, and therefore no exposure pathways are currently complete. While unlikely, a water supply well would be

installed on-Site (a scenario that could be eliminated via deed restriction), resulting in a completed exposure pathway.

[7] Materials sampled inside the foundry are unlikely to leach to groundwater as they appear to rest on the building slab.

Figures 6 through 9 and Table 6 indicate that COC concentrations in groundwater downgradient (i.e., north and potentially east) of the Site exceed default closure levels. As the City currently provides off-Site drinking water[8] completed pathways for exposure to groundwater at off-Site properties are currently unlikely. However, delineation of the extent of COCs exceeding closure levels and a survey of water use within the delineated plume would be required to definitively exclude the possibility of exposure. As the City currently does not prohibit installation of wells for private use within its corporate limits, there is future potential for creation of exposure pathways.

Based on Hull's experience and these data obtained during this investigation, volatilization from groundwater is unlikely to pose unacceptable risk on- or off-Site. However, as with unsaturated soils, quantification of risk would require Site-specific modeling.

In summary, current on-Site risk is limited due to an absence of receptors in many portions of the Site as well as a prevalence of impervious cover. As discussed in more detail in section 4.2, remediation, engineering controls and/or institutional controls may be used to address future on-Site risks.

Consistent with definitions and guidance provided in the RISC technical guide, the perimeter of compliance for a contaminant plume must be within an area of control by the property owner/volunteer. Control is defined by the ability to monitor and restrict access to the contaminated groundwater through engineering or institutional controls. The area that the City could rapidly implement control is assumed to be within the Site boundaries.

Based on analysis of water samples collected from wells north of Sample Street, it is apparent that COCs exceeding RISC commercial/industrial and residential default closure levels have migrated beyond the Site's perimeter of compliance. Furthermore, Initial Phase II ESA data indicate that the COCs originated at least in part from on-Site sources. As shown on Figure 17, historical sampling of monitoring wells indicates the presence of various COCs detected at the Site. While certainly not conclusive, these detections may be related to migration of COCs from

[8] Municipal water supply wells are sufficiently removed from the Site such that they are unlikely to be impacted by COCs originating at the Site.

the Site. Limited knowledge about activities at properties surrounding the Site adds uncertainties to the evaluation of current and future risk. For this reason, the lateral extent of off-Site groundwater contamination is the most significant data gap remaining.

4.2 Recommendations

The City has several options in addressing environmental conditions at the Site. Primary among these are:

1. entry into Indiana's VRP and use RISC guidance; or
2. use of a development agreement at the time of property transfer that addresses risk at the Site using RISC guidance[9].

Participation in the VRP would entail:

1. submittal of a confidential Voluntary Remediation Application (VRA) and a $1,000 fee to IDEM;
2. upon its review and approval, endorsement of the VRA by IDEM and the volunteer;
3. submittal of a Remediation Work Plan that would include:
   - documentation of previous investigations (e.g., Work Plan(s) and Phase I and Phase II ESA reports);
   - cleanup criteria selection;
   - statement of work;
   - risk assessment (as applicable)
   - remedial design/planning;
   - community relations plan;
   - schedule of implementation; and,
   - remedial cost estimate.
4. review and approval of the Remediation Work Plan by IDEM;
5. submittal of notice to IDEM of impending implementation of the Remediation Work Plan;
6. implementation of the Remediation Work Plan (with IDEM oversight), including:
   - any required supplemental pre-remedial studies;
   - selection and placement of land-use restrictions, as appropriate;
   - remedial construction;

[9] Although cleanups may be led by the U.S. EPA, detailed discussions on the options are outside the scope of this report.

- implementation of the remedial action;
- systems operations and maintenance, including ongoing environmental monitoring; and,
- confirmatory sampling.

7. preparation and submittal of a Remediation Completion Report to IDEM;

8. review and acceptance of the Remediation Completion Report by IDEM;

9. issuance of a Certificate of Completion by IDEM's Commissioner; and,

10. issuance of a Covenant not to Sue by the Governor's office[10].

RISC provides for default and non-default investigative approaches. Default sampling approaches are prescriptive, typically costly, and may be time consuming. Non-default approaches may be less costly and time consuming, but they may not provide as definitive quantification of risk as would default sampling approach.

Use of a development agreement in which cleanup standards are identified and agreed upon would probably be least costly of the options due to an absence of regulatory oversight costs. Furthermore, elimination of regulatory review periods would probably result in a reduced time period for investigation and cleanup. However, the development agreement would not result in a release of liability via a Covenant not to Sue.

Assuming that the project continues under the VRP, the City will have the opportunity to select source areas to receive a Certificate of Completion and Covenant Not to Sue following cleanup. Based upon information obtained to date, Hull recommends that at a minimum the City obtain liability limitation for those areas of soils known to exceed default closure levels (refer to Table 5) and any other source areas in soils determined through future investigation or identified during structure demolition/Site development. Known source areas will need to be further delineated. Hull recommends that the City meet with IDEM prior to initiating delineation efforts in order to identify non-default sampling strategies that would be suited to the size and complexity of the Site.

[10] A Memorandum of Agreement between IDEM and the U.S. EPA is in place that extends a release of liability to actions by the U.S. EPA when a Covenant not to Sue is obtained.

Future opportunities to incorporate development activities (i.e., demolition and/or construction) into remediation and potentially use of engineering controls to eliminate exposure pathways may limit remedial costs for contaminated soils. As described below, the City may wish to defer a decision on seeking a Certificate of Completion and Covenant Not to Sue for groundwater until additional data are gathered.

Uncertainties about the off-Site extent of COCs exceeding closure levels is the most significant data gap at the completion of the Initial Phase II ESA. Furthermore, addressing off-Site contamination is likely to be the most costly component of the environmental component of redevelopment.

Strategies for remediating and/or containing groundwater may be dependent upon the areal extent of off-Site contamination exceeding default closure levels, and may include one or a combination of the following general technologies:

1. groundwater extraction and ex-situ treatment;
2. groundwater extraction and discharge to the public operated treatment works;
3. installation of a reaction wall (or reaction wall in combination with barrier walls as a "funnel and gate" system) at the point of compliance;
4. in-situ chemical application (i.e., chemical oxidation, application of hydrogen- and/or oxygen-releasing compounds); and,
5. determination of a stable plume and ongoing monitoring to document stability.

In all cases, it is probable that some efforts in source control/remediation will be necessary. To the extent that unsaturated soils contribute to groundwater contamination, they may require excavation and off-Site disposal and/or treatment and/or in-situ remediation by methods such as soil vacuum extraction or chemical application.

Hydrogeology beneath the Site and in surrounding areas is such that all of the above technologies (with the exception of plume stability) would be effective in removing contaminant mass from the aquifer. To the extent that there are no dense nonaqueous phase liquids in groundwater, attainment of closure levels should be technically practicable, although the length of time and cost to achieve cleanup could be great. On-Site containment of COCs exceeding closure levels should also be achievable. Again, the design and efficacy of various cleanup or

containment strategies is highly dependent on the lateral extent of off-Site contamination and nature of potential exposures. In general, costs for addressing groundwater contamination will be high and long-term relative to soil contamination at the Site.

Given issues of cost and probable long duration of "active" groundwater remediation, and considering groundwater use within the City of South Bend, Hull recommends that the City consider using institutional controls to limit future exposures to groundwater contamination. Appendix 5 of the RISC Technical Guide (refer to Appendix G of this document) provides guidance on environmental notices (i.e., deed notices) that serve as institutional controls for contaminated sites that: receive a commercial or industrial land-use designation; have a remedy that includes an activity restriction; and/or have a remedy that employs an engineering control. Primary criteria for an institutional control, as described in the guidance document, include:

1. legal notice to current and potential future property owners of the nature and extent of the restrictions;
2. permanence; and,
3. legal validity.

An environmental notice can be applied to the VRP Site or, contingent upon agreement by the property owner, property onto which contamination has migrated. Such a scenario may be feasible when the volunteer and the adjacent property owner share common interests. However, implementation of environmental notices for multiple properties under which contaminated groundwater has migrated could prove cumbersome.

Possibly in consideration of such problems, IDEM has offered an alternative to an environmental notice that addresses groundwater contamination. The alternative approach allows a unit of local government to adopt an ordinance that limits exposure to groundwater (i.e., a prohibition of new drinking water wells within the municipality). IDEM would require documentation supporting the ordinance, including:

1. a copy of the ordinance and a proof of its recordation with the county;
2. mapped delineation of groundwater exceeding closure levels; and,
3. mapped boundaries and ownership of properties overlying the above-delineated plume.

The above information would be provided to all of the affected property owners. The owner of the site from which contamination originated would be required to monitor and notify IDEM of variances and contain or remediate contamination if variances result in unacceptable risks to groundwater users.

In order to delineate groundwater exceeding closure levels, the City would be required to gain access to off-Site properties, install probes/monitoring wells and collect groundwater samples for chemical analysis. A monitoring program would also need to be established to demonstrate that the plume is stable or diminishing.

5.0 REFERENCES

A variety of technical manuals, administrative documents and publications were referred to in preparing this document. Some of the references consulted are presented below. Referenced documents and publications may or may not have been reviewed in their entirety. The guidelines and procedures presented in the documents and publications referenced have been strictly adhered to unless stated otherwise.

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INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 1

SUMMARY OF MONITOR WELL INSTALLATION AND CONSTRUCTION DATA
AREA A

Piezometer I.D.	Hydraulic Location	Date Installed	Coordinates Northing	Coordinates Easting	Ground Surface Elevation (ft)	Total Depth (ft)	Casing/ Screen Material	Screened Interval (ft, bgs)	Sand Pack Interval (ft, bgs)	Sodium Bentonite Chip Interval (ft, bgs)	Sodium Bentonite Grout Interval (ft, bgs)	Concrete Interval (ft, bgs)
SHALLOW MONITOR WELLS												
HMW-1S		7-31-01	2338460.72	3178692.95	728.66	25.0	2.0" PVC	15.0-20.0	13.0-20.0	1.0-13.0		0.0-1.0
HMW-2S		8-02-01	2337648.27	3177376.15	724.86	25.0	2.0" PVC	20.0-25.0	18.0-25.0	1.0-18.0		0.0-1.0
HMW-3S		8-01-01	2337868.73	3177542.45	725.65	26.0	2.0" PVC	21.0-26.0	20.0-26.0	1.0-20.0		0.0-1.0
HMW-4S		8-01-01	2337892.10	3177590.56	725.52	25.0	2.0" PVC	20.0-25.0	18.0-25.0	1.0-18.0		0.0-1.0
HWM-5S		8-01-01	2337987.21	3177588.19	725.34	25.0	2.0" PVC	20.0-25.0	18.0-25.0	1.0-18.0		0.0-1.0
HMW-6S		8-02-01	2338087.11	3177570.51	724.58	24.0	2.0" PVC	19.0-24.0	18.0-24.0	0.5-18.0		0.0-0.5
HMW-7S		8-07-01	2337093.63	3177969.85	729.24	28.0	2.0" PVC	23.0-28.0	21.0-28.0	1.0-21.0		0.0-1.0
HMW-8S		8-10-01	2336920.23	3177977.36	729.39	25.0	2.0" PVC	15.0-25.0	13.0-25.0	1.0-13.0		0.0-1.0
HMW-9S		8-20-01	2336735.87	3178197.56	730.79	30.0	2.0" PVC	20.0-30.0	18.0-30.0	1.0-18.0		0.0-1.0
HMW-10S		8-07-01	2336800.30	3178392.76	730.96	28.0	2.0" PVC	23.0-28.0	21.0-28.0	1.0-21.0		0.0-1.0
HMW-12S		8-14-01	2337350.86	3178515.16	729.72	30.0	2.0" PVC	20.0-30.0	18.0-30.0	1.0-18.0		0.0-1.0
HMW-13S		8-01-01	2337482.45	3178495.92	729.80	28.0	2.0" PVC	23.0-28.0	21.0-28.0	1.0-21.0		0.0-1.0
HMW-14S		8-15-01	2337889.66	3177830.98	728.75	31.5	2.0" PVC	21.5-31.5	19.5-31.5	0.5-19.5		0.0-0.5
HMW-15S		8-23-01	2337903.79	3178055.59	728.81	30.0	2.0" PVC	20.0-30.0	18.0-30.0	1.0-18.0		0.0-1.0
HMW-18S		8-14-01	2337934.77	3178621.08	728.90	32.0	2.0" PVC	22.0-32.0	20.0-32.0	1.0-20.0		0.0-1.0
HMW-19S		8-08-01	2337662.06	3178700.02	729.45	30.0	2.0" PVC	25.0-30.0	23.0-30.0	1.0-23.0		0.0-1.0
HMW-20S		8-06-01	2336649.12	3178714.95	731.21	27.0	2.0" PVC	22.0-27.0	20.0-27.0	1.0-20.0		0.0-1.0
HMW-23S		8-08-01	2337725.64	3178980.12	728.55	30.0	2.0" PVC	25.0-30.0	23.0-30.0	1.0-23.0		0.0-1.0
HMW-25S		8-10-01	2337831.22	3178878.10	729.32	29.5	2.0" PVC	19.5-29.5	17.0-29.5	1.0-17.0		0.0-1.0
HMW-26S		8-09-01	2337844.28	3178968.67	729.24	28.0	2.0" PVC	18.0-28.0	15.0-28.0	1.0-15.0		0.0-1.0
HMW-27S		8-13-01	2338095.23	3178850.99	728.45	33.0	2.0" PVC	23.0-33.0	21.0-33.0	1.0-21.0		0.0-1.0
HMW-28S		9-12-01	2338439.11	3177954.94	723.73	25.0	2.0" PVC	15.0-25.0	13.0-25.0	1.0-13.0		0.0-1.0
HMW-31S		9-10-01	2338462.53	3178696.09	725.34	28.0	2.0" PVC	18.0-28.0	16.0-28.0	0.5-18.0		0.0-0.5
HMW-33S		8-09-01	2337079.59	3178932.59	730.78	30.0	2.0" PVC	25.0-30.0	23.0-30.0	1.0-23.0		0.0-1.0
HMW-34S		8-14-01	2337917.74	3178156.93	728.71	31.6	2.0" PVC	21.6-31.6	19.6-31.6	0.6-19.6		0.0-0.6
HMW-35S		8-16-01	2337618.32	3177974.74	728.86	30.0	2.0" PVC	20.0-30.0	18.0-30.0	1.0-18.0		0.0-1.0
INTERMEDIATE MONITOR WELLS												
HMW-1I		7-31-01	2337058.35	3177114.05	728.77	48.0	2.0" PVC	43.0-48.0	41.0-48.0	1.0-41.0		0.0-1.0
HMW-8I		8-10-01	2336928.37	3177978.32	729.49	50.0	2.0" PVC	45.0-50.0	43.0-50.0	41.0-43.0	1.0-41.0	0.0-1.0
HMW-9I		8-20-01	2336736.66	3178202.73	730.95	50.0	2.0" PVC	45.0-50.0	43.0-50.0	41.0-43.0	1.0-41.0	0.0-1.0
HMW-11I		8-22-01	2336972.73	3178271.36	730.07	38.0	2.0" PVC	33.0-38.0	31.0-38.0	30.0-31.0	1.0-30.0	0.0-1.0
HMW-22I		8-08-01	2336484.80	3178922.55	731.24	55.0	2.0" PVC	50.0-55.0	48.0-55.0	46.0-48.0	1.0-46.0	0.0-1.0
HMW-29I		9-12-01	2338445.18	3178227.82	723.64	37.0	2.0" PVC	27.0-37.0	25.0-37.0	1.0-25.0		0.0-1.0
HMW-30I		9-13-01	2338465.32	3178471.68	724.76	39.0	2.0" PVC	29.0-39.0	27.0-39.0	1.0-27.0		0.0-1.0
HMW-31I		9-10-01	2338460.81	3178693.60	725.20	45.0	2.0" PVC	35.0-45.0	33.0-45.0	1.0-33.0		0.0-1.0
HMW-32I		9-10-01	2338472.12	3178969.44	725.06	41.0	2.0" PVC	31.0-41.0	29.0-41.0	1.0-29.0		0.0-1.0

INITIAL PHASE II ENVIRO ENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 1

SUMMARY OF MONITOR WELL INSTALLATION AND CONSTRUCTION DATA
AREA A

Piezometer I.D.	Hydraulic Location	Date Installed	Coordinates Northing	Coordinates Easting	Ground Surface Elevation (ft)	Total Depth (ft)	Casing/ Screen Material	Screened Interval (ft, bgs)	Sand Pack Interval (ft, bgs)	Sodium Bentonite Chip Interval (ft, bgs)	Sodium Bentonite Grout Interval (ft, bgs)	Concrete Interval (ft, bgs)
DEEP MONITOR WELLS												
HMW-1D		7-31-01	2337063.92	3177113.38	728.42	85.0	2.0" PVC	73.0-78.0	71.0-80.0	80.0-85.0/69.0-71.0/1.0-5.0	5.0-69.0	0.0-1.0
HMW-6D		8-01-01	2338075.22	3177571.71	724.27	88.0	2.0" PVC	80.0-85.0	78.0-88.0	76.0-78.0/1.0-5.0	5.0-76.0	0.0-1.0
HMW-8D		8-09-01	2336939.59	3177977.88	729.32	78.0	2.0" PVC	68.0-73.0	66.0-78.0	64.0-66.0/1.0-13.0	13.0-64.0	0.0-1.0
HMW-9D		9-15-01	2336791.64	3178071.83	729.99	66.0	2.0" PVC	61.0-66.0	59.0-66.0	58.0-59.0/1.0-12.0	12.0-58.0	0.0-1.0
HMW-11D		8-22-01	2336975.99	3178274.81	730.32	72.7	2.0" PVC	64.0-69.0	62.0-72.7	61.0-62.0	2.0-61.0	0.0-2.0
HMW-12D		8-13-01	2337266.37	3178211.28	730.39	68.0	2.0" PVC	61.0-66.0	59.0-68.0	57.0-59.0	1.0-57.0	0.0-1.0
HMW-13D		8-15-01	2337475.46	3178502.62	729.79	70.0	2.0" PVC	61.0-66.0	59.0-70.0	57.0-59.0	2.0-57.0	0.0-2.0
HMW-15D		8-23-01	2337903.93	3178062.62	728.72	63.3	2.0" PVC	57.0-63.0	56.0-63.3	54.0-56.0	1.0-54.0	0.0-1.0
HMW-16D		8-22-01	2337876.58	3178277.93	729.11	69.0	2.0" PVC	61.0-66.0	60.0-69.0	58.0-60.0	1.0-58.0	0.0-1.0
HMW-17D		8-27-01	2337592.20	3178323.03	730.42	70.0	2.0" PVC	61.0-66.0	59.0-70.0	57.0-59.0	2.0-57.0	0.0-2.0
HMW-19D		8-22-01	2337901.08	3178726.78	729.24	72.0	2.0" PVC	63.0-68.0	61.0-72.0	59.0-61.0	1.0-59.0	0.0-1.0
HMW-21D		8-13-01	2337024.15	3178818.17	730.08	47.0	2.0" PVC	31.0-46.0	34.0-47.0	47.0-60.0/32.0-34.0/1.0-10.0	10.0-32.0	0.0-1.0
HMW-22D		8-08-01	2336492.22	3178911.70	731.64	80.0	2.0" PVC	75.0-80.0	73.0-80.0	73.0-75.0	1.0-73.0	0.0-1.0
HMW-23D		8-21-01	2337023.47	3178677.72	729.21	86.0	2.0" PVC	81.0-86.0	79.0-88.3	78.0-79.0/1.0-15.0	15.0-78.0	0.0-1.0
HMW-24D		8-21-01	2337484.17	3179036.08	729.44	60.0	2.0" PVC	50.0-55.0	48.0-60.0	46.0-48.0/1.0-10.0	10.0-46.0	0.0-1.0
HMW-28D		8-29-01	2338436.46	3177958.96	723.65	95.0	2.0" PVC	85.0-95.0	83.0-95.0	1.0-5.0	5.0-83.0	0.0-1.0
HMW-29D		9-11-01	2338444.95	3178222.97	723.63	80.0	2.0" PVC	75.0-80.0	73.0-80.0	71.0-73.0/1.0-8.0	8.0-71.0	0.0-1.0
HMW-30D		9-05-01	2338461.13	3178471.56	724.95	68.0	2.0" PVC	63.0-68.0	61.0-68.0	59.0-61.0/1.0-5.0	5.0-59.0	0.0-1.0
HMW-31D		8-31-01	2338459.90	3178697.29	725.34	60.0	2.0" PVC	55.0-60.0	53.0-60.0	51.0-53.0/1.0-5.0	5.0-51.0	0.0-1.0
HMW-32D		9-06-01	2338468.95	3178967.48	725.07	93.0	2.0" PVC	88.0-93.0	86.0-93.0	84.0-86.0/1.0-5.0	5.0-84.0	0.0-1.0
HMW-33D		8-08-01	2337072.09	3178933.69	731.02	58.0	2.0" PVC	45.0-50.0	43.0-51.0	51.0-58.0/41.0-43.0	1.0-41.0	0.0-41.0

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
GB-1	SBI002:GB-1:S000010:412	8/9/01	0.0'-1.0'	Metals	Chromium	8.8	mg/kg dw	120**
					Barium	300	mg/kg dw	5,900
					Lead	114	mg/kg dw	230
				SVOCs	Acenaphthene	357	ug/kg dw	1,200,000
					Anthracene	1,230	ug/kg dw	51,000
					Benzo(a)anthracene	1,200	ug/kg dw	15,000
					Benzo(a)pyrene	1,170	ug/kg dw	1,500
					Benzo(b)fluoranthene	2,860	ug/kg dw	15,000
					Benzo(k)fluoranthene	916	ug/kg dw	39,000
					Chrysene	1,650	ug/kg dw	25,000
					Fluoranthene	2,700	ug/kg dw	880,000
					Fluorene	455	ug/kg dw	1,100,000
					Naphthalene	480	ug/kg dw	170,000
					Phenanthrene	4,690	ug/kg dw	126,049,825***
					Pyrene	4,530	ug/kg dw	570,000
				Dry Weight	Dry Weight	94.2	%	NS
	SBI002:GB-1D:S000010:412	8/9/01	0.0'-1.0'	Metals	Barium	311	mg/kg dw	5,900
					Chromium	10	mg/kg dw	120**
					Lead	125	mg/kg dw	230
					Mercury	0.053	mg/kg dw	32
				SVOCs	Anthracene	783	ug/kg dw	51,000
					Benzo(a)anthracene	934	ug/kg dw	15,000
					Benzo(a)pyrene	299	ug/kg dw	1,500
					Benzo(b)fluoranthene	2,090	ug/kg dw	15,000
					Benzo(k)fluoranthene	744	ug/kg dw	39,000
					Chrysene	1,320	ug/kg dw	25,000
					Fluoranthene	2,170	ug/kg dw	880,000
					Naphthalene	518	ug/kg dw	170,000
					Phenanthrene	2,530	ug/kg dw	126,049,825***
					Pyrene	3,150	ug/kg dw	570,000
				Dry Weight	Dry Weight	94.2	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
GB-2	SBI002:GB-2:S010015:412	8/9/01	1.0'-1.5'	Metals	Barium	191	mg/kg dw	5,900
					Chromium	9.3	mg/kg dw	120**
					Lead	62.5	mg/kg dw	230
					Mercury	0.278	mg/kg dw	32
				SVOCs	Benzo(a)pyrene	195	ug/kg dw	1,500
				Dry Weight	Dry Weight	88	%	NS
GB-3	SBI002:GB-3:S005020:412	8/8/01	0.5'-2.0'	Metals	Arsenic	13.5	mg/kg dw	20
					Barium	342	mg/kg dw	5,900
					Chromium	32.3	mg/kg dw	120**
					Lead	306	mg/kg dw	230
					Mercury	0.576	mg/kg dw	32
				SVOCs	Acenaphthylene	419	ug/kg dw	7,565,408***
					Benzo(a)anthracene	666	ug/kg dw	15,000
					Benzo(a)pyrene	710	ug/kg dw	1,500
					Benzo(b)fluoranthene	1,430	ug/kg dw	15,000
					Benzo(k)fluoranthene	434	ug/kg dw	39,000
					Chrysene	755	ug/kg dw	25,000
					Fluoranthene	810	ug/kg dw	880,000
					Phenanthrene	657	ug/kg dw	126,049,825***
					Pyrene	1,640	ug/kg dw	570,000
				Dry Weight	Dry Weight	86.8	%	NS
	SBI002:GB-3D:S005020:412	8/8/01	0.5'-2.0'	Metals	Arsenic	8.3	mg/kg dw	20
					Barium	159	mg/kg dw	5,900
					Chromium	11	mg/kg dw	120**
					Lead	102	mg/kg dw	230
					Mercury	0.396	mg/kg dw	32
				SVOCs	Benzo(a)pyrene	282	ug/kg dw	1,500
					Benzo(b)fluoranthene	532	ug/kg dw	15,000
					Pyrene	596	ug/kg dw	570,000
				Dry Weight	Dry Weight	87.2	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
GB-5	SBI002:GB-5:S015025:412	8/8/01	1.5'-2.5'	Metals	Barium	18.3	mg/kg dw	5,900
					Chromium	6.4	mg/kg dw	120**
					Lead	7.7	mg/kg dw	230
					Mercury	0.008	mg/kg dw	32
				SVOCs	All Analytes	<RL	--	--
				Dry Weight	Dry Weight	94.3	%	NS
GB-8	SBI002:GB-8:S000015:412	8/8/01	0.0'-1.5'	Metals	Barium	88.9	mg/kg dw	5,900
					Chromium	6.5	mg/kg dw	120**
					Lead	28.3	mg/kg dw	230
					Mercury	0.024	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				SVOCs	All Analytes	<RL	--	--
				TPH	TPH - FTIR Non-aq	<RL	NS	NS
				Dry Weight	Dry Weight	96	%	NS
GB-9	SBI002:GB-9:S000020:412	8/9/01	0.0'-2.0'	Metals	Barium	398	mg/kg dw	5,900
					Chromium	90.2	mg/kg dw	120**
					Lead	193	mg/kg dw	230
					Mercury	1.38	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				SVOCs	Benzo(a)anthracene	574	ug/kg dw	15,000
					Benzo(a)pyrene	427	ug/kg dw	1,500
					Benzo(b)fluoranthene	988	ug/kg dw	15,000
					Benzo(k)fluoranthene	451	ug/kg dw	39,000
					Chrysene	753	ug/kg dw	25,000
					Fluoranthene	1,040	ug/kg dw	880,000
					Phenanthrene	749	ug/kg dw	126,049,825***
					Pyrene	2,340	ug/kg dw	570,000
				PCBs	All Analytes	<RL	--	--
				TPH	TPH - FTIR Non-aq	2,320	mg/kg dw	NS
				Dry Weight	Dry Weight	95	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
GB-10	SBI002:GB-10:S000020:412	8/9/01	0.0'-2.0'	Metals	Barium	237	mg/kg dw	5,900
					Cadmium	**89.2**	mg/kg dw	77
					Chromium	16.2	mg/kg dw	120**
					Lead	147	mg/kg dw	230
					Mercury	0.419	mg/kg dw	32
				VOCs	Trichloroethene	7.9	ug/kg dw	3,000
				SVOCs	Anthracene	5,270	ug/kg dw	51,000
					Benzo(a)anthracene	12,300	ug/kg dw	15,000
					Benzo(a)pyrene	**10,900**	ug/kg dw	1,500
					Benzo(b)fluoranthene	**16,000**	ug/kg dw	15,000
					Benzo(k)fluoranthene	6,170	ug/kg dw	39,000
					Chrysene	12,500	ug/kg dw	25,000
					Fluoranthene	20,000	ug/kg dw	880,000
					Indeno(1,2,3-cd)pyrene	**3,160**	ug/kg dw	3,100
					Phenanthrene	19,100	ug/kg dw	126,049,825***
					Pyrene	30,600	ug/kg dw	570,000
				PCBs	All Analytes	<RL	--	--
				TPH	TPH - FTIR Non-aq	199	mg/kg dw	NS
				Dry Weight	Dry Weight	95.4	%	NS
GB-11	SBI002:GB-11:S000015:412	8/10/01	0.0'-1.5'	Metals	Arsenic	6.3	mg/kg dw	20
					Barium	127	mg/kg dw	5,900
					Chromium	7.7	mg/kg dw	120**
					Lead	**628**	mg/kg dw	230
					Mercury	0.275	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				SVOCs	Anthracene	412	ug/kg dw	51,000
					Benzo(a)anthracene	1,740	ug/kg dw	15,000
					Benzo(a)pyrene	**1,610**	ug/kg dw	1,500
					Benzo(b)fluoranthene	2,090	ug/kg dw	15,000
					Benzo(k)fluoranthene	751	ug/kg dw	39,000
					Chrysene	1,880	ug/kg dw	25,000
					Fluoranthene	4,210	ug/kg dw	880,000
					Indeno(1,2,3-cd)pyrene	521	ug/kg dw	3,100
					Phenanthrene	4,170	ug/kg dw	126,049,825***
					Pyrene	4,750	ug/kg dw	570,000
				PCBs	All Analytes	<RL	--	--
				TPH	TPH - FTIR Non-aq	<RL	NS	NS
				Dry Weight	Dry Weight	86.9	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
GB-12	SBI002:GB-12:S000020:412	8/9/01	0.0'-2.0'	Metals	Barium	187	mg/kg dw	5,900
					Chromium	**177**	mg/kg dw	120**
					Lead	167	mg/kg dw	230
					Mercury	0.523	mg/kg dw	32
					Anthracene	689	ug/kg dw	51,000
				VOCs	All Analytes	<RL	--	--
				SVOCs	Benzo(a)anthracene	2,740	ug/kg dw	15,000
					Benzo(a)pyrene	**2,650**	ug/kg dw	1,500
					Benzo(b)fluoranthene	5,660	ug/kg dw	15,000
					Benzo(k)fluoranthene	2,170	ug/kg dw	39,000
					Chrysene	2,830	ug/kg dw	25,000
					Fluoranthene	5,540	ug/kg dw	880,000
					Indeno(1,2,3-cd)pyrene	377	ug/kg dw	3,100
					Phenanthrene	4,650	ug/kg dw	126,049,825***
					Phenol	529	ug/kg dw	320,000
					Pyrene	9,230	ug/kg dw	570,000
				PCBs	All Analytes	<RL	--	--
				TPH	TPH - FTIR Non-aq	3,510	mg/kg dw	NS
				Dry Weight	Dry Weight	94	%	NS
GB-13	SBI002:GB-13:S010020:412	8/8/01	1.0'-2.0'	Metals	Barium	110	mg/kg dw	5,900
					Chromium	12.5	mg/kg dw	120**
					Lead	201	mg/kg dw	230
					Mercury	1.25	mg/kg dw	32
				SVOCs	Benzo(a)anthracene	712	ug/kg dw	15,000
					Benzo(a)pyrene	668	ug/kg dw	1,500
					Benzo(b)fluoranthene	1,130	ug/kg dw	15,000
					Benzo(k)fluoranthene	378	ug/kg dw	39,000
					Chrysene	712	ug/kg dw	25,000
					Fluoranthene	1,300	ug/kg dw	880,000
					Phenanthrene	1,450	ug/kg dw	126,049,825***
					Pyrene	1,990	ug/kg dw	570,000
				Dry Weight	Dry Weight	94.6	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
GB-14	SBI002:GB-14:S015025:412	8/8/01	1.5'-2.5'	Metals	Barium	64.2	mg/kg dw	5,900
					Chromium	10	mg/kg dw	120**
					Lead	69.3	mg/kg dw	230
					Mercury	0.095	mg/kg dw	32
				SVOCs	All Analytes	<RL	--	--
				Dry Weight	Dry Weight	90.1	%	NS
GB-15	SBI002:GB-15:S000010:412	8/7/01	0.0'-1.0'	Metals	**Arsenic**	**27.6**	mg/kg dw	20
					Barium	171	mg/kg dw	5,900
					Cadmium	3	mg/kg dw	77
					Chromium	22.6	mg/kg dw	120**
					Lead	**391**	mg/kg dw	230
					Mercury	0.716	mg/kg dw	32
				SVOCs	Benzo(a)anthracene	452	ug/kg dw	15,000
					Benzo(a)pyrene	500	ug/kg dw	1,500
					Benzo(b)fluoranthene	826	ug/kg dw	15,000
					Chrysene	644	ug/kg dw	25,000
					Fluoranthene	489	ug/kg dw	880,000
					Indeno(1,2,3-cd)pyrene	371	ug/kg dw	3,100
					Phenanthrene	719	ug/kg dw	126,049,825***
					Pyrene	2,140	ug/kg dw	570,000
				Dry Weight	Dry Weight	89.4	%	NS
GB-16	SBI002:GB-16:S000005:412	8/7/01	0.0'-0.5'	Metals	Arsenic	17.2	mg/kg dw	20
					Barium	87	mg/kg dw	5,900
					Chromium	11.8	mg/kg dw	120**
					Lead	174	mg/kg dw	230
					Mercury	0.879	mg/kg dw	32
				SVOCs	Acenaphthylene	1210	ug/kg dw	7,565,408***
					Anthracene	851	ug/kg dw	51,000
					Benzo(a)anthracene	2,700	ug/kg dw	15,000
					Benzo(a)pyrene	**3,030**	ug/kg dw	1,500
					Benzo(b)fluoranthene	6,540	ug/kg dw	15,000
					Benzo(k)fluoranthene	2,070	ug/kg dw	39,000
					Chrysene	4,040	ug/kg dw	25,000
					Dibenzo(a,h)anthracene	602	ug/kg dw	1,500
					Fluoranthene	1,740	ug/kg dw	880,000
					Indeno(1,2,3-cd)pyrene	1,410	ug/kg dw	3,100
					Phenanthrene	539	ug/kg dw	126,049,825***
					Pyrene	4,020	ug/kg dw	570,000
				Dry Weight	Dry Weight	92.1	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
GB-17	SBI002:GB-17:S000015:412	8/7/01	0.0'-1.5'	Metals	**Arsenic**	**26**	mg/kg dw	20
					Barium	300	mg/kg dw	5,900
					Chromium	14.3	mg/kg dw	120**
					Lead	**337**	mg/kg dw	230
					Mercury	0.445	mg/kg dw	32
				SVOCs	Benzo(a)pyrene	245	ug/kg dw	1,500
					Benzo(b)fluoranthene	530	ug/kg dw	15,000
					Chrysene	434	ug/kg dw	25,000
					Phenanthrene	502	ug/kg dw	126,049,825***
					Pyrene	1,120	ug/kg dw	570,000
				Dry Weight	Dry Weight	88.9	%	NS
GB-19	SBI002:GB-19:S000010:412	8/8/01	0.0'-1.0'	Metals	**Arsenic**	**34**	mg/kg dw	20
					Barium	456	mg/kg dw	5,900
					Cadmium	2	mg/kg dw	77
					Chromium	22.4	mg/kg dw	120**
					Lead	**429**	mg/kg dw	230
					Mercury	0.588	mg/kg dw	32
				SVOCs	Benzo(a)pyrene	313	ug/kg dw	1,500
					Benzo(b)fluoranthene	993	ug/kg dw	15,000
					Chrysene	527	ug/kg dw	25,000
					Fluoranthene	722	ug/kg dw	880,000
					Phenanthrene	421	ug/kg dw	126,049,825***
					Pyrene	681	ug/kg dw	570,000
				Dry Weight	Dry Weight	88.5	%	NS
GB-20	SBI002:GB20:S005020:428	8/7/01	0.5'-2.0'	Metals	Barium	54.6	mg/kg dw	5,900
					Chromium	5.5	mg/kg dw	120**
					Lead	174	mg/kg dw	230
					Mercury	0.071	mg/kg dw	32
				SVOCs	All Analytes	<RL	--	--
				Dry Weight	Dry Weight	93.9	%	NS
GB-21	SBI002:GB21:S010030:428	8/7/01	1.0'-3.0'	Metals	Barium	65.7	mg/kg dw	5,900
					Chromium	6.1	mg/kg dw	120**
					Lead	79.7	mg/kg dw	230
					Mercury	0.081	mg/kg dw	32
				SVOCs	All Analytes	<RL	--	--
				Dry Weight	Dry Weight	89.1	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
GB-22	SBI002:GB22:S005020:428	8/7/01	0.5'-2.0'	Metals	Barium	26.6	mg/kg dw	5,900
					Chromium	6.8	mg/kg dw	120**
					Lead	15.6	mg/kg dw	230
					Mercury	0.051	mg/kg dw	32
				SVOCs	Benzo(a)pyrene	199	ug/kg dw	1,500
				Dry Weight	Dry Weight	88.3	%	NS
GB-23	SBI002:GB23:S005020:428	8/7/01	0.5'-2.0'	Metals	Barium	36.1	mg/kg dw	5,900
					Chromium	4.7	mg/kg dw	120**
					Lead	27.6	mg/kg dw	230
					Mercury	0.059	mg/kg dw	32
				SVOCs	Benzo(a)anthracene	487	ug/kg dw	15,000
					Benzo(a)pyrene	442	ug/kg dw	1,500
					Benzo(b)fluoranthene	663	ug/kg dw	15,000
					Chrysene	520	ug/kg dw	25,000
					Fluoranthene	845	ug/kg dw	880,000
					Phenanthrene	462	ug/kg dw	126,049,825***
					Pyrene	820	ug/kg dw	570,000
				Dry Weight	Dry Weight	91.6	%	NS
GB-24	SBI002:GB24:S005020:428	8/7/01	0.5'-2.0'	Metals	**Arsenic**	**35.9**	mg/kg dw	20
					Barium	114	mg/kg dw	5,900
					Chromium	7.3	mg/kg dw	120**
					Lead	28	mg/kg dw	230
					Mercury	0.08	mg/kg dw	32
				SVOCs	All Analytes	<RL	--	--
				Dry Weight	Dry Weight	89.1	%	NS
GB-26	SBI002:GB26:S020040:428	8/7/01	2.0'-4.0'	Metals	Barium	15.6	mg/kg dw	5,900
					Chromium	3.9	mg/kg dw	120**
					Lead	7.6	mg/kg dw	230
					Mercury	0.011	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
	SBI002:SB26A:S020040:505#	8/23/01	2.0'-4.0'	SVOCs	All Analytes	<RL	--	--
	SBI002:GB26:S020040:428	8/7/01	2.0'-4.0'	TPH	TPH - FTIR Non-aq	<RL	NS	NS
				Dry Weight	Dry Weight	94.6	%	NS
	SBI002:SB26A:S020040:505#	8/23/01	2.0'-4.0'	Dry Weight	Dry Weight	93.3	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
GB-27	SBI002:GB27:S020040:428	8/7/01	2.0'-4.0'	Metals	Barium	36	mg/kg dw	5,900
					Chromium	5.5	mg/kg dw	120**
					Lead	33.6	mg/kg dw	230
					Mercury	0.227	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
	SBI002:SB27A:S020040:505#	8/23/01	2.0'-4.0'	SVOCs	Benzo(a)anthracene	753	ug/kg dw	15,000
					Benzo(a)pyrene	815	ug/kg dw	1,500
					Benzo(b)fluoranthene	1,170	ug/kg dw	15,000
					Benzo(k)fluoranthene	506	ug/kg dw	39,000
					Chrysene	960	ug/kg dw	25,000
					Fluoranthene	2,130	ug/kg dw	880,000
					Phenanthrene	1,170	ug/kg dw	126,049,825***
					Pyrene	1,790	ug/kg dw	570,000
	SBI002:GB27:S020040:428	8/7/01	2.0'-4.0'	TPH	TPH - FTIR Non-aq	<RL	NS	NS
				Dry Weight	Dry Weight	92.9	%	NS
	SBI002:SB27A:S020040:505#	8/23/01	2.0'-4.0'	Dry Weight	Dry Weight	88.6	%	NS
GB-28	SBI002:GB-28:S000020:412	8/7/01	0.0'-2.0'	Metals	Barium	77.5	mg/kg dw	5,900
					Chromium	5.6	mg/kg dw	120**
					Lead	39	mg/kg dw	230
					Mercury	0.068	mg/kg dw	32
				SVOCs	Anthracene	521	ug/kg dw	51,000
					Benzo(a)anthracene	899	ug/kg dw	15,000
					Benzo(a)pyrene	707	ug/kg dw	1,500
					Benzo(b)fluoranthene	1,320	ug/kg dw	15,000
					Chrysene	827	ug/kg dw	25,000
					Fluoranthene	1,340	ug/kg dw	880,000
					Phenanthrene	1,800	ug/kg dw	126,049,825***
					Pyrene	1,660	ug/kg dw	570,000
				Dry Weight	Dry Weight	95.2	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
GB-29	SBI002:GB-29:S005015:412	8/7/01	0.5'-1.5'	Metals	**Arsenic**	**41.5**	mg/kg dw	20
					Barium	230	mg/kg dw	5,900
					Chromium	22.9	mg/kg dw	120**
					Lead	225	mg/kg dw	230
					Mercury	4.17	mg/kg dw	32
				SVOCs	Acenaphthylene	1,040	ug/kg dw	7,565,408***
					Anthracene	999	ug/kg dw	51,000
					Benzo(a)anthracene	2,570	ug/kg dw	15,000
					Benzo(a)pyrene	**2,620**	ug/kg dw	1,500
					Benzo(b)fluoranthene	5,110	ug/kg dw	15,000
					Benzo(k)fluoranthene	2,380	ug/kg dw	39,000
					Chrysene	3,370	ug/kg dw	25,000
					Fluoranthene	4,580	ug/kg dw	880,000
					Phenanthrene	1,350	ug/kg dw	126,049,825***
					Pyrene	6,650	ug/kg dw	570,000
				Dry Weight	Dry Weight	85.2	%	NS
GB-30	SBI002:GB30:S000020:428	8/7/01	0.0'-2.0'	Metals	Barium	80.9	mg/kg dw	5,900
					Chromium	9.3	mg/kg dw	120**
					Lead	22.9	mg/kg dw	230
					Mercury	0.022	mg/kg dw	32
				SVOCs	All Analytes	<RL	--	--
				Dry Weight	Dry Weight	89.7	%	NS
GB-31	SBI002:GB-31:S000010:412	8/7/01	0.0'-1.0'	Metals	Arsenic	6.7	mg/kg dw	20
					Barium	370	mg/kg dw	5,900
					Cadmium	2.2	mg/kg dw	77
					Chromium	16.5	mg/kg dw	120**
					Lead	**429**	mg/kg dw	230
					Mercury	5.13	mg/kg dw	32
				SVOCs	Acenaphthene	561	ug/kg dw	1,200,000
					Acenaphthylene	7,060	ug/kg dw	7,565,408***
					Anthracene	1,490	ug/kg dw	51,000
					Benzo(a)anthracene	4,380	ug/kg dw	15,000
					Benzo(a)pyrene	**8,900**	ug/kg dw	1,500
					Benzo(b)fluoranthene	8,600	ug/kg dw	15,000
					Benzo(k)fluoranthene	1,270	ug/kg dw	39,000
					Chrysene	3,180	ug/kg dw	25,000
					Dibenzo(a,h)anthracene	1,430	ug/kg dw	1,500
					Dibenzofuran	637	ug/kg dw	4,716,192***
					Fluoranthene	1,820	ug/kg dw	880,000
					Fluorene	1,620	ug/kg dw	1,100,000
					Indeno(1,2,3-cd)pyrene	2,370	ug/kg dw	3,100
					Phenanthrene	5,340	ug/kg dw	126,049,825***
					Pyrene	7,210	ug/kg dw	570,000
				Dry Weight	Dry Weight	82	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
GB-32	SBI002:GB-32:S000015:412	8/8/01	0.0'-1.5'	Metals	Barium	59	mg/kg dw	5,900
					Chromium	6.5	mg/kg dw	120**
					Lead	23	mg/kg dw	230
					Mercury	0.014	mg/kg dw	32
				SVOCs	Acenaphthene	1,950	ug/kg dw	1,200,000
					Acenaphthylene	780	ug/kg dw	7,565,408***
					Anthracene	4,830	ug/kg dw	51,000
					Benzo(a)anthracene	1,960	ug/kg dw	15,000
					Benzo(a)pyrene	**1,570**	ug/kg dw	1,500
					Benzo(b)fluoranthene	4,110	ug/kg dw	15,000
					Benzo(k)fluoranthene	866	ug/kg dw	39,000
					Chrysene	2,340	ug/kg dw	25,000
					Dibenzofuran	1,170	ug/kg dw	4,716,192***
					Fluoranthene	8,610	ug/kg dw	880,000
					Fluorene	2,250	ug/kg dw	1,100,000
					Naphthalene	2,710	ug/kg dw	170,000
					Phenanthrene	12,600	ug/kg dw	126,049,825***
					Pyrene	11,300	ug/kg dw	570,000
				Dry Weight	Dry Weight	95.4	%	NS
GB-33	SBI002:GB-33:S000010:412	8/7/01	0.0'-1.0'	Metals	Arsenic	9.7	mg/kg dw	20
					Barium	238	mg/kg dw	5,900
					Chromium	13	mg/kg dw	120**
					Lead	**397**	mg/kg dw	230
					Mercury	0.504	mg/kg dw	32
				SVOCs	Benzo(a)pyrene	339	ug/kg dw	1,500
					Benzo(b)fluoranthene	569	ug/kg dw	15,000
					Chrysene	360	ug/kg dw	25,000
					Fluoranthene	440	ug/kg dw	880,000
					Phenanthrene	456	ug/kg dw	126,049,825***
				Dry Weight	Dry Weight	92.9	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
GB-34	SBI002:GB-34:S000015:412	8/7/01	0.0'-1.5'	Metals	**Arsenic**	**34**	mg/kg dw	20
					Barium	89	mg/kg dw	5,900
					Chromium	9.4	mg/kg dw	120**
					Lead	125	mg/kg dw	230
					Mercury	0.23	mg/kg dw	32
				SVOCs	Acenaphthene	2,620	ug/kg dw	1,200,000
					Acenaphthylene	1,430	ug/kg dw	7,565,408***
					Anthracene	6,720	ug/kg dw	51,000
					Benzo(a)anthracene	**29,200**	ug/kg dw	15,000
					Benzo(a)pyrene	**30,900**	ug/kg dw	1,500
					Benzo(b)fluoranthene	**48,600**	ug/kg dw	15,000
					Benzo(k)fluoranthene	16,600	ug/kg dw	39,000
					Chrysene	**36,900**	ug/kg dw	25,000
					Dibenzo(a,h)anthracene	**2,530**	ug/kg dw	1,500
					Dibenzofuran	1,290	ug/kg dw	4,716,192***
					Fluoranthene	435	ug/kg dw	880,000
					Fluorene	2,130	ug/kg dw	1,100,000
					Indeno(1,2,3-cd)pyrene	**8,260**	ug/kg dw	3,100
					Naphthalene	879	ug/kg dw	170,000
					Phenanthrene	55,600	ug/kg dw	126,049,825***
					Pyrene	74,900	ug/kg dw	570,000
				Dry Weight	Dry Weight	88.7	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
GB-35	SBI002:GB-35:S000015:412	8/7/01	0.0'-1.5'	Metals	Arsenic	17.1	mg/kg dw	20
					Barium	170	mg/kg dw	5,900
					Chromium	13	mg/kg dw	120**
					Lead	**315**	mg/kg dw	230
					Mercury	0.635	mg/kg dw	32
				SVOCs	Benzo(a)anthracene	502	ug/kg dw	15,000
					Benzo(a)pyrene	469	ug/kg dw	1,500
					Benzo(b)fluoranthene	805	ug/kg dw	15,000
					Chrysene	548	ug/kg dw	25,000
					Fluoranthene	874	ug/kg dw	880,000
					Phenanthrene	521	ug/kg dw	126,049,825***
					Pyrene	1,010	ug/kg dw	570,000
				Dry Weight	Dry Weight	87.6	%	NS
	SBI002:GB-35D:S000015:412	8/7/01	0.0'-1.5'	Metals	Arsenic	13.3	mg/kg dw	20
					Barium	136	mg/kg dw	5,900
					Chromium	17.1	mg/kg dw	120**
					Lead	163	mg/kg dw	230
					Mercury	0.558	mg/kg dw	32
				SVOCs	Anthracene	497	ug/kg dw	51,000
					Benzo(a)anthracene	1,930	ug/kg dw	15,000
					Benzo(a)pyrene	**1,920**	ug/kg dw	1,500
					Benzo(b)fluoranthene	2,940	ug/kg dw	15,000
					Benzo(k)fluoranthene	1,060	ug/kg dw	39,000
					Chrysene	1,750	ug/kg dw	25,000
					Fluoranthene	3,170	ug/kg dw	880,000
					Indeno(1,2,3-cd)pyrene	393	ug/kg dw	3,100
					Phenanthrene	2,050	ug/kg dw	126,049,825***
				Dry Weight	Dry Weight	88.2	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
GB-36	SBI002:GB-36:S000020:412	8/10/01	0.0'-2.0'	Metals	Arsenic	4.8	mg/kg dw	20
					Barium	41.2	mg/kg dw	5,900
					Chromium	6.7	mg/kg dw	120*
					Lead	11	mg/kg dw	230
				SVOCs	All Analytes	<RL	--	--
				Dry Weight	Dry Weight	83.9	%	NS
GB-37	SBI002:GB37:S000020:428	8/7/01	0.0'-2.0'	Metals	Barium	51.8	mg/kg dw	5,900
					Chromium	10	mg/kg dw	120**
					Lead	14.3	mg/kg dw	230
					Mercury	0.022	mg/kg dw	32
				SVOCs	All Analytes	<RL	--	--
				Dry Weight	Dry Weight	87.2	%	NS
GS-2	SBI002:GS-2:S005010:412	8/1/01	0.5'-1.0'	Metals	Barium	32.7	mg/kg dw	5,900
					Chromium	17	mg/kg dw	120**
					Lead	**240**	mg/kg dw	230
					Mercury	0.059	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				SVOCs	2,4-Dimethylphenol	662	ug/kg dw	25,000
					2-Methylphenol	702	ug/kg dw	39,000
					Anthracene	1,250	ug/kg dw	51,000
					Benzo(a)anthracene	1,420	ug/kg dw	15,000
					Benzo(a)pyrene	**2,820**	ug/kg dw	1,500
					Benzo(k)fluoranthene	1,060	ug/kg dw	39,000
					Chrysene	3,310	ug/kg dw	25,000
					Dibenzofuran	866	ug/kg dw	4,716,192***
					Naphthalene	2,640	ug/kg dw	170,000
					Phenanthrene	4,850	ug/kg dw	126,049,825***
					Phenol	1,360	ug/kg dw	320,000
					Pyrene	3,190	ug/kg dw	570,000
				TPH	TPH - FTIR Non-aq	550	mg/kg dw	NS
				Dry Weight	Dry Weight	87.8	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
GS-3	SBI002:GS-3:S005010:412	8/1/01	0.5'-1.0'	Metals	**Arsenic**	**33.3**	mg/kg dw	20
					Barium	115	mg/kg dw	5,900
					Chromium	15.5	mg/kg dw	120**
					Lead	**259**	mg/kg dw	230
					Mercury	0.058	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				SVOCs	Benzo(a)anthracene	379	ug/kg dw	15,000
					Benzo(a)pyrene	269	ug/kg dw	1,500
					Benzo(b)fluoranthene	562	ug/kg dw	15,000
					Chrysene	445	ug/kg dw	25,000
					Fluoranthene	598	ug/kg dw	880,000
					Naphthalene	363	ug/kg dw	170,000
					Phenanthrene	688	ug/kg dw	126,049,825***
					Pyrene	856	ug/kg dw	570,000
				TPH	TPH - FTIR Non-aq	<RL	NS	NS
				Dry Weight	Dry Weight	95.3	%	NS
	SBI002:GS-3D:S005010:412	8/1/01	0.5'-1.0'	Metals	Barium	80.3	mg/kg dw	5,900
					Chromium	80.2	mg/kg dw	120**
					Lead	38.6	mg/kg dw	230
					Mercury	0.054	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				SVOCs	Phenanthrene	409	ug/kg dw	NS
					Pyrene	351	ug/kg dw	570,000
				TPH	TPH - FTIR Non-aq	<RL	NS	NS
				Dry Weight	Dry Weight	96	%	NS
HA-1	SBI002:HA-1:S000005:412	7/31/01	0.0'-0.5'	Metals	Arsenic	13.4	mg/kg dw	20
					Barium	63.9	mg/kg dw	5,900
					Cadmium	4.4	mg/kg dw	77
					Chromium	33.8	mg/kg dw	120*
					Lead	**599**	mg/kg dw	230
					Mercury	0.138	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				SVOCs	All Analytes	<RL	--	--
				Dry Weight	Dry Weight	90.8	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
HA-2	SBI002:HA-2:S000010:412	7/31/01	0.0'-1.0'	Metals	Arsenic	18	mg/kg dw	20
					Barium	49.6	mg/kg dw	5,900
					Chromium	32.5	mg/kg dw	120**
					Lead	**449**	mg/kg dw	230
					Mercury	0.114	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				SVOCs	Benzo(a)anthracene	839	ug/kg dw	15,000
					Benzo(a)pyrene	748	ug/kg dw	1,500
					Benzo(b)fluoranthene	1,690	ug/kg dw	15,000
					Benzo(k)fluoranthene	362	ug/kg dw	39,000
					Bis(2-ethylhexyl)phthalate	493	ug/kg dw	980,000
					Chrysene	1,580	ug/kg dw	25,000
					Fluoranthene	644	ug/kg dw	880,000
					Naphthalene	927	ug/kg dw	170,000
					Phenanthrene	1,170	ug/kg dw	126,049,825***
					Pyrene	1,540	ug/kg dw	570,000
				Dry Weight	Dry Weight	95	%	NS
HA-3	SBI002:HA-3:S000010:412	7/31/01	0.0'-1.0'	Metals	**Arsenic**	**114**	mg/kg dw	20
					Barium	454	mg/kg dw	5,900
					Chromium	13.2	mg/kg dw	120**
					Lead	**278**	mg/kg dw	230
					Mercury	0.188	mg/kg dw	32
				SVOCs	Acenaphthylene	1,000	ug/kg dw	7,565,408***
					Anthracene	1,860	ug/kg dw	51,000
					Benzo(a)anthracene	2,830	ug/kg dw	15,000
					Benzo(a)pyrene	**3,100**	ug/kg dw	1,500
					Benzo(k)fluoranthene	1,910	ug/kg dw	39,000
					Chrysene	3,190	ug/kg dw	25,000
					Dibenzofuran	914	ug/kg dw	4,716,192***
					Fluoranthene	3,770	ug/kg dw	880,000
					Indeno(1,2,3-cd)pyrene	584	ug/kg dw	3,100
					Naphthalene	1,300	ug/kg dw	170,000
					Phenanthrene	5,440	ug/kg dw	126,049,825***
					Pyrene	4,380	ug/kg dw	570,000
				Dry Weight	Dry Weight	78.7	%	--

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
HA-4	SBI002:HA-4:S000010:412	7/31/01	0.0'-1.0'	Metals	Arsenic	11	mg/kg dw	20
					Barium	89.1	mg/kg dw	5,900
					Chromium	41	mg/kg dw	120**
					Lead	45.5	mg/kg dw	230
					Mercury	0.203	mg/kg dw	32
				SVOCs	Acenaphthylene	421	ug/kg dw	7,565,408***
					Anthracene	410	ug/kg dw	51,000
					Benzo(a)anthracene	670	ug/kg dw	15,000
					Benzo(a)pyrene	907	ug/kg dw	1,500
					Benzo(b)fluoranthene	2450	ug/kg dw	15,000
					Benzo(k)fluoranthene	633	ug/kg dw	39,000
					Chrysene	783	ug/kg dw	25,000
					Fluoranthene	1,020	ug/kg dw	880,000
					Phenanthrene	0	ug/Kg	126,049,825***
					Pyrene	1,820	ug/kg dw	570,000
				Dry Weight	Dry Weight	83.7	%	NS
HMW-1D	SBI002:HMW1D:S000020:505	7/31/01	0.0'-2.0'	Metals	Arsenic	7.4	mg/kg dw	20
					Barium	194	mg/kg dw	5,900
					Chromium	9	mg/kg dw	120**
					Lead	68	mg/kg dw	230
					Mercury	0.1	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				SVOCs	Benzo(a)pyrene	277	ug/kg dw	1,500
					Benzo(b)fluoranthene	563	ug/kg dw	15,000
					Fluoranthene	586	ug/kg dw	880,000
					Phenanthrene	357	ug/kg dw	126,049,825***
					Pyrene	544	ug/kg dw	570,000
				TPH	TPH - GRO (Non-Aqueous)	<RL	NS	NS
				Dry Weight	Dry Weight	93.2	%	NS
HMW-2S	SBI002:HMW2S:S020020:428	8/2/01	0.0'-2.0'	Metals	**Arsenic**	25	mg/kg dw	20
					Barium	58.6	mg/kg dw	5,900
					Chromium	5.3	mg/kg dw	120**
					Lead	38.5	mg/kg dw	230
					Mercury	0.27	mg/kg dw	32
				VOCs	Toluene	30.2	ug/kg dw	240,000
				TPH	TPH - GRO (Non Aqueous)	<RL	NS	NS
					TPH - FTIR Non-aq	<RL	NS	NS
				Dry Weight	Dry Weight	73.6	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
HMW-3S	SBI002:HMW3S:S060070:428	8/1/01	6.0'-7.0'	Metals	Barium	26.6	mg/kg dw	5,900
					Chromium	7.8	mg/kg dw	120**
					Lead	27.8	mg/kg dw	230
					Mercury	0.018	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				Dry Weight	Dry Weight	93	%	NS
	SBI002:HMW3S:S060085:428	8/1/01	6.0'-8.5'	Metals	Barium	8	mg/kg dw	5,900
					Chromium	7.3	mg/kg dw	120**
					Lead	6.1	mg/kg dw	230
				VOCs	All Analytes	<RL	--	--
				Dry Weight	Dry Weight	96.6	%	NS
HMW-4S	SBI002:HMW4S:S000020:428	8/1/01	0.0'-2.0'	Metals	Arsenic	15.8	mg/kg dw	20
					Barium	215	mg/kg dw	5,900
					Chromium	11	mg/kg dw	120**
					Lead	426	mg/kg dw	230
					Mercury	1.1	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				SVOCs	Anthracene	466	ug/kg dw	51,000
					Benzo(a)anthracene	1,120	ug/kg dw	15,000
					Benzo(a)pyrene	913	ug/kg dw	1,500
					Benzo(b)fluoranthene	1,610	ug/kg dw	15,000
					Benzo(k)fluoranthene	531	ug/kg dw	39,000
					Chrysene	1,030	ug/kg dw	25,000
					Fluoranthene	1,850	ug/kg dw	880,000
					Phenanthrene	2,230	ug/kg dw	126,049,825***
					Pyrene	2,620	ug/kg dw	570,000
				TPH	TPH - GRO (Non Aqueous)	<RL	NS	NS
				Dry Weight	Dry Weight	86.1	%	NS
HMW-5S	SBI002:HMW5S:S000020:428	8/1/01	0.0'-2.0'	VOCs	All Analytes	<RL	--	--
				SVOCs	All Analytes	<RL	--	--
				TPH	TPH - FTIR Non-aq	160	mg/kg dw	NS
				Dry Weight	Dry Weight	93.3	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
HMW-6S	SBI002:HMW6S:S040060:505	8/2/01	4.0'-6.0'	Metals	Barium	141	mg/kg dw	5,900
					Chromium	57.8	mg/kg dw	120**
					Lead	77.6	mg/kg dw	230
					Mercury	0.036	mg/kg dw	32
				VOCs	Acetone	205	ug/kg dw	3100
					Ethylbenzene	5.6	ug/kg dw	200000
					p-Isopropyltoluene	13.1	ug/kg dw	21,884,454***
					n-Propylbenzene	6.2	ug/kg dw	704,658***
					Naphthalene	16.1	ug/kg dw	170000
					Toluene	12.7	ug/kg dw	240000
					1,2,4-Trimethylbenzene	51.7	ug/kg dw	215,329***
					1,3,5-Trimethylbenzene	28	ug/kg dw	86,840***
					Xylenes, Total	39.5	ug/kg dw	410,000
				SVOCs	All Analytes	<RL	--	--
				PCBs	All Analytes	<RL	--	--
				TPH	TPH - GRO (Non Aqueous)	<RL	NS	NS
				Dry Weight	Dry Weight	90.6	%	NS
	SBI002:HMW6S:S180200:505	8/2/01	18.0'-20.0'	Metals	Barium	10	mg/kg dw	5,900
					Chromium	6.2	mg/kg dw	120**
					Lead	5.9	mg/kg dw	230
				VOCs	Toluene	6.9	ug/kg dw	240,000
				SVOCs	All Analytes	<RL	--	--
				PCBs	All Analytes	<RL	--	--
				TPH	TPH - GRO (Non Aqueous)	<RL	NS	NS
				Dry Weight	Dry Weight	95	%	NS
HMW-6D	SBI002:HMW6D:S000020:505	8/1/01	0.0'-2.0'	Metals	Arsenic	12.7	mg/kg dw	20
					Barium	299	mg/kg dw	5,900
					Chromium	65.4	mg/kg dw	120**
					Lead	124	mg/kg dw	230
					Mercury	0.151	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				SVOCs	All Analytes	<RL	--	--
				TPH	TPH - GRO (Non Aqueous)	<RL	NS	NS
				Dry Weight	Dry Weight	96.4	%	NS
HMW-7S	SBI002:HMW7S:S000020:428	8/7/01	0.0'-2.0'	Metals	Barium	496	mg/kg dw	5,900
					Chromium	9.6	mg/kg dw	120**
					Lead	**388**	mg/kg dw	230
					Mercury	0.158	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				Dry Weight	Dry Weight	77.8	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
HMW-8D	SBI002:HMW8D:S010020:505	8/9/01	1.0'-2.0'	Metals	Barium	14.3	mg/kg dw	5,900
					Chromium	3.7	mg/kg dw	120**
					Lead	11	mg/kg dw	230
					Mercury	0.055	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				Dry Weight	Dry Weight	95.6	%	NS
HMW-9D	SBI002:HMW-9D:S000020:505	8/15/01	0.0'-2.0'	Metals	Arsenic	4.4	mg/kg dw	20
					Barium	51.3	mg/kg dw	5,900
					Chromium	4.7	mg/kg dw	120**
					Lead	52.7	mg/kg dw	230
					Mercury	0.082	mg/kg dw	32
				VOCs	Tetrachloroethene	50.1	ug/kg dw	640
				Dry Weight	Dry Weight	93.2	%	NS
	SBI002:HMW-9DD:S000020:505	8/15/01	0.0'-2.0'	Metals	Arsenic	4.8	mg/kg dw	20
					Barium	47.3	mg/kg dw	5,900
					Chromium	5	mg/kg dw	120**
					Lead	47.3	mg/kg dw	230
					Mercury	0.082	mg/kg dw	32
				VOCs	Tetrachloroethene	83.9	ug/kg dw	640
				Dry Weight	Dry Weight	94	%	NS
	SBI002:HMW9D:300320:505	8/15/01	30.0'-32.0'	TOC	TOC	0.17	%	NS
HWM-9I	SBI002:HMW9I:S005020:428	8/20/01	0.5'-2.0'	VOCs	Carbon tetrachloride	158	ug/kg dw	290
					Chloroform	45.5	ug/kg dw	1,200
					Tetrachloroethene	**4,740**	ug/kg dw	640
				SVOCs	Benzo(a)anthracene	746	ug/kg dw	15,000
					Benzo(a)pyrene	613	ug/kg dw	1,500
					Benzo(b)fluoranthene	989	ug/kg dw	15,000
					Chrysene	743	ug/kg dw	25,000
					Fluoranthene	1,590	ug/kg dw	880,000
					Phenanthrene	2,020	ug/kg dw	126,049,825***
					Pyrene	1,310	ug/kg dw	570,000
				TPH	TPH - GRO (Non Aqueous)	<RL	NS	NS
				Dry Weight	Dry Weight	88.7	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
HMW-10S	SBI002:HMW10S:S040050:428	8/7/01	4.0'-5.0'	VOCs	Tetrachloroethene	16	ug/kg dw	640
				SVOCs	Benzo(a)anthracene	524	ug/kg dw	15,000
					Benzo(a)pyrene	246	ug/kg dw	1,500
					Benzo(b)fluoranthene	602	ug/kg dw	15,000
					Chrysene	720	ug/kg dw	25,000
					Fluoranthene	615	ug/kg dw	880,000
					Naphthalene	489	ug/kg dw	170,000
					Pyrene	600	ug/kg dw	570,000
				TPH	TPH - DRO Non-Aqueous	931	mg/kg dw	NS
				Dry Weight	Dry Weight	87	%	NS
	SBI002:HMW10S:S100110:428	8/7/01	10.0'-11.0'	VOCs	All Analytes	<RL	--	--
				SVOCs	All Analytes	<RL	--	--
				TPH	TPH - DRO Non-Aqueous	42.4	mg/kg dw	NS
				Dry Weight	Dry Weight	84.6	%	NS
HMW-11D	SBI002:HMW-11D:S020040:505	8/14/01	2.0'-4.0'	Metals	Barium	99.5	mg/kg dw	5,900
					Chromium	11.4	mg/kg dw	120**
					Lead	177	mg/kg dw	230
					Mercury	0.159	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				Dry Weight	Dry Weight	93.1	%	NS
HMW-12D	SBI002:HMW-12D:S000020:505	8/13/01	0.0'-2.0'	Metals	Arsenic	4.9	mg/kg dw	20
					Barium	58	mg/kg dw	5,900
					Chromium	8.4	mg/kg dw	120**
					Lead	58	mg/kg dw	230
					Mercury	0.11	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				Dry Weight	Dry Weight	91.6	%	NS
	SBI002:HMW12D:120140:505	8/13/01	12.0'-14.0'	TOC	TOC	0.047	%	NS
HMW-12S	SBI002:HMW12S:S005020:428	8/14/01	0.5'-2.0'	Metals	Barium	176	mg/kg dw	5,900
					Chromium	6.4	mg/kg dw	120**
					Lead	**241**	mg/kg dw	230
					Mercury	0.089	mg/kg dw	32
				VOCs	Tetrachloroethene	19.6	ug/kg dw	640
				TPH	TPH - GRO (NON Aqueous)	<RL	NS	NS
				Dry Weight	Dry Weight	88.8	%	NS
HMW-13S	SBI002:HMW13S:S060070:428	8/2/01	6.0'-7.0'	VOCs	Toluene	39	ug/kg dw	240,000
				SVOCs	All Analytes	<RL	--	--
				TPH	TPH - DRO Non-Aqueous	<RL	NS	NS
					TPH -FTIR Non-aq	<RL	NS	NS
				Dry Weight	Dry Weight	96.9	%	NS
	SBI002:HMW13S:S140150:428	8/2/01	14.0'-15.0'	VOCs	Acetone	140	ug/kg dw	3,100
					Toluene	8.9	ug/kg dw	240,000
				SVOCs	All Analytes	<RL	--	--
				TPH	TPH - DRO Non-Aqueous	<RL	NS	NS
					TPH -FTIR Non-aq	<RL	NS	NS
				Dry Weight	Dry Weight	81.6	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
HMW-13D	SBI002:HMW13D:S005020:428	8/14/01	0.5'-2.0'	Metals	Arsenic	5,210	ug/kg dw	20,000
					Barium	156,000	ug/kg dw	59,000,000
					Chromium	5,020	ug/kg dw	120,000*
					Lead	**230,000**	ug/kg dw	230,000
					Mercury	0.121	mg/kg dw	32
				VOCs	Tetrachloroethene	65.6	ug/kg dw	640
					Xylenes, Total	7.1	ug/kg dw	410,000
				Dry Weight	Dry Weight	89.3	%	NS
HMW-14S	SBI001:HMW-14S:S010015:412	8/15/01	1.0'-1.5'	VOCs	All Analytes	<RL	--	--
				SVOCs	Benzo(a)anthracene	1,220	ug/kg dw	15,000
					Benzo(a)pyrene	1,390	ug/kg dw	1,500
					Benzo(b)fluoranthene	1,700	ug/kg dw	15,000
					Benzo(k)fluoranthene	626	ug/kg dw	39,000
					Chrysene	1,160	ug/kg dw	25,000
					Fluoranthene	1,790	ug/kg dw	880,000
					Indeno(1,2,3-cd)pyrene	484	ug/kg dw	3,100
					Phenanthrene	509	ug/kg dw	126,049,825***
					Pyrene	1,550	ug/kg dw	570,000
				PCBs	All Analytes	<RL	--	--
				TPH	TPH - FTIR Non-aq	182	mg/kg dw	NS
				Dry Weight	Dry Weight	93.3	%	NS
	SBI001:HMW-14S:S040050:412	8/15/01	4.0'-5.0'	VOCs	All Analytes	<RL	--	--
				SVOCs	Anthracene	396	ug/kg dw	51,000
					Benzo(a)anthracene	1,100	ug/kg dw	15,000
					Benzo(a)pyrene	1,020	ug/kg dw	1,500
					Benzo(b)fluoranthene	1,910	ug/kg dw	15,000
					Benzo(k)fluoranthene	533	ug/kg dw	39,000
					Chrysene	1,060	ug/kg dw	25,000
					Fluoranthene	2,800	ug/kg dw	880,000
					Phenanthrene	1,570	ug/kg dw	126,049,825***
					Pyrene	1,730	ug/kg dw	570,000
				PCBs	All Analytes	<RL	--	--
				TPH	TPH - FTIR Non-aq	1,660	mg/kg dw	NS
				Dry Weight	Dry Weight	90.5	%	NS
	SBI001:HMW-14S:S190210:412	8/15/01	19.0'-21.0'	VOCs	All Analytes	<RL	--	--
				SVOCs	All Analytes	<RL	--	--
				PCBs	All Analytes	<RL	--	--
				TPH	TPH - FTIR Non-aq	<RL	NS	NS
				Dry Weight	Dry Weight	95.6	%	NS
	SBI001:HMW-14S:S210230:412	8/15/01	21.0'-23.0'	VOCs	All Analytes	<RL	--	--
				SVOCs	All Analytes	<RL	--	--
				PCBs	All Analytes	<RL	--	--
				TPH	TPH - FTIR Non-aq	<RL	NS	NS
				Dry Weight	Dry Weight	96.6	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
HMW-14D	SBI001:HMW-14SD:S010015:412	8/15/01	1.0'-1.5'	VOCs	All Analytes	<RL	--	--
				SVOCs	Benzo(a)anthracene	906	ug/kg dw	15,000
					Benzo(a)pyrene	988	ug/kg dw	1,500
					Benzo(b)fluoranthene	1,410	ug/kg dw	15,000
					Benzo(k)fluoranthene	420	ug/kg dw	39,000
					Chrysene	839	ug/kg dw	25,000
					Fluoranthene	1,340	ug/kg dw	880,000
					Phenanthrene	406	ug/kg dw	126,049,825***
					Pyrene	1,240	ug/kg dw	570,000
				PCBs	All Analytes	<RL	--	--
				TPH	TPH - FTIR Non-aq	1,500	mg/kg dw	NS
				Dry Weight	Dry Weight	93.3	%	NS
HMW-15S	SBI002:HMW15S:S040050:428	8/23/01	4.0'-5.0'	VOCs	All Analytes	<RL	--	--
				SVOCs	Acenaphthylene	418	ug/kg dw	7,565,408***
					Anthracene	2,660	ug/kg dw	51,000
					Benzo(a)anthracene	7,880	ug/kg dw	15,000
					Benzo(a)pyrene	**7,610**	ug/kg dw	1,500
					Benzo(b)fluoranthene	10,800	ug/kg dw	15,000
					Benzo(k)fluoranthene	2,990	ug/kg dw	39,000
					Chrysene	7,670	ug/kg dw	25,000
					Dibenzo(a,h)anthracene	410	ug/kg dw	1,500
					Dibenzofuran	450	ug/kg dw	4,716,192***
					Fluoranthene	13,500	ug/kg dw	880,000
					Fluorene	636	ug/kg dw	1,100,000
					Indeno(1,2,3-cd)pyrene	1,180	ug/kg dw	3,100
					Phenanthrene	6,660	ug/kg dw	126,049,825***
					Pyrene	15,500	ug/kg dw	570,000
				TPH	TPH - FTIR Non-aq	534	mg/kg dw	NS
				Dry Weight	Dry Weight	91.7	%	NS
	SBI002:HMW15S:S080090:428	8/23/01	8.0'-9.0'	VOCs	All Analytes	<RL	--	--
				SVOCs	All Analytes	<RL	--	--
				TPH	TPH - FTIR Non-aq	<RL	NS	NS
				Dry Weight	Dry Weight	83.3	%	NS
HMW-16D	SBI002:MW16D:S010020:480	8/22/01	1.0'-2.0'	VOCs	Tetrachloroethene	157	ug/kg dw	640
				SVOCs	Benzo(a)anthracene	829	ug/kg dw	15,000
					Benzo(a)pyrene	721	ug/kg dw	1,500
					Benzo(b)fluoranthene	944	ug/kg dw	15,000
					Chrysene	790	ug/kg dw	25,000
					Fluoranthene	1,450	ug/kg dw	880,000
					Phenanthrene	667	ug/kg dw	126,049,825***
					Pyrene	1,290	ug/kg dw	570,000
				TPH	TPH - DRO Non-Aqueous	408	mg/kg dw	NS
				Dry Weight	Dry Weight	89	%	NS
	SBI002:MW16D:S041055:480	8/22/01	4.1'-5.5'	VOCs	All Analytes	<RL	--	--
				SVOCs	All Analytes	<RL	--	--
				TPH	TPH - DRO Non-Aqueous	<RL	NS	NS
					TPH - FTIR Non-aq	<RL	NS	NS
				Dry Weight	Dry Weight	93.1	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
HMW-17D	SBI002:MW17D:S005020:428	8/27/01	0.5'-2.0'	Metals	Barium	22.1	mg/kg dw	5,900
					Chromium	4.7	mg/kg dw	120**
					Lead	13.4	mg/kg dw	230
					Mercury	0.038	mg/kg dw	32
				VOCs	1,1,1-Trichloroethane	10	ug/kg dw	300
				Dry Weight	Dry Weight	95.2	%	NS
HMW-18S	SBI002:HMW18S:S000010:412	8/14/01	0.0'-1.0'	VOCs	Tetrachloroethene	31.8	ug/kg dw	640
				SVOCs	Anthracene	1,670	ug/kg dw	51,000
					Benzo(a)anthracene	5,510	ug/kg dw	15,000
					Benzo(a)pyrene	**5,260**	ug/kg dw	1,500
					Benzo(b)fluoranthene	7,920	ug/kg dw	15,000
					Benzo(k)fluoranthene	3,110	ug/kg dw	39,000
					Chrysene	5,280	ug/kg dw	25,000
					Fluoranthene	10,300	ug/kg dw	880,000
					Fluorene	477	ug/kg dw	1,100,000
					Indeno(1,2,3-cd)pyrene	820	ug/kg dw	3,100
					Phenanthrene	8,200	ug/kg dw	126,049,825***
					Pyrene	11,800	ug/kg dw	570,000
				TPH	TPH - DRO Non-Aqueous	528	mg/kg dw	NS
					TPH - FTIR Non-aq	395	mg/kg dw	NS
				Dry Weight	Dry Weight	89.6	%	NS
	SBI002:HMW18S:S230250:412	8/14/01	23.0'-25.0'	VOCs	Tetrachloroethene	9.7	ug/kg dw	640
				SVOCs	All Analytes	<RL	--	--
				TPH	TPH - DRO Non-Aqueous	11.8	mg/kg dw	NS
				Dry Weight	Dry Weight	95.4	%	NS
HMW-19S	SBI002:HMW19S:S000020:428	8/8/01	0.0'-2.0'	Metals	Barium	69.7	mg/kg dw	5,900
					Chromium	5.7	mg/kg dw	120**
					Lead	89.4	mg/kg dw	230
					Mercury	1.14	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				SVOCs	Benzo(a)anthracene	821	ug/kg dw	15,000
					Benzo(a)pyrene	779	ug/kg dw	1,500
					Benzo(b)fluoranthene	1,300	ug/kg dw	15,000
					Benzo(k)fluoranthene	414	ug/kg dw	39,000
					Chrysene	909	ug/kg dw	25,000
					Fluoranthene	1,480	ug/kg dw	880,000
					Phenanthrene	1,330	ug/kg dw	126,049,825***
					Pyrene	1,790	ug/kg dw	570,000
				TPH	TPH - FTIR Non-aq	<RL	NS	NS
				Dry Weight	Dry Weight	89.4	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
HMW-19D	SBI002:HMW19D:S080095:428	8/22/01	8.0'-9.5'	Metals	Barium	8.83	mg/kg dw	5,900
					Chromium	2.8	mg/kg dw	120**
				VOCs	All Analytes	<RL	--	--
				Dry Weight	Dry Weight	90.5	%	NS
	SBI002:HMW19D:S120130:428	8/22/01	12.0'-13.0'	Metals	Arsenic	5.7	mg/kg dw	20
					Barium	16.3	mg/kg dw	5,900
					Chromium	5.1	mg/kg dw	120*
					Lead	8	mg/kg dw	230
					Mercury	0.012	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				Dry Weight	Dry Weight	91.5	%	NS
HMW-20S	SBI002:HMW20S:S000020:428	8/6/01	0.0'2.0'	VOCs	All Analytes	<RL	--	--
				SVOCs	All Analytes	<RL	--	--
				TPH	TPH - GRO (Non-Aqueous)	<RL	NS	NS
				Dry Weight	Dry Weight	88.2	%	NS
HMW-21D	SBI002:HMW21D:S005020:428	8/13/01	0.5'-2.0'	VOCs	All Analytes	<RL	--	--
				SVOCs	All Analytes	<RL	--	--
				TPH	TPH - FTIR Non-aq	64	mg/kg dw	NS
				Dry Weight	Dry Weight	94.6	%	NS
HMW-22D	SBI002:HMW22D:S000020:505	8/6/01	0.0'-2.0'	Metals	**Arsenic**	**21.4**	mg/kg dw	20
					Barium	115	mg/kg dw	5,900
					Chromium	10	mg/kg dw	120**
					Lead	74	mg/kg dw	230
					Mercury	0.243	mg/kg dw	32
				Dry Weight	Dry Weight	91.6	%	NS
	SBI002:HMW22D:160180:505	8/6/01	16.0'-18.0'	VOCs	All Analytes	<RL	--	--
				TOC	TOC	0.036	%	NS
HMW-23S	SBI002:HMW23S:S060070:428	8/8/01	6.0'-7.0'	VOCs	All Analytes	<RL	--	--
				SVOCs	All Analytes	<RL	--	--
				TPH	TPH - GRO (Non-Aqueous)	<RL	NS	NS
				Dry Weight	Dry Weight	82.4	%	NS
	SBI002:HMW23S:S100115:428	8/8/01	10.0'-11.5'	VOCs	All Analytes	<RL	--	--
				SVOCs	All Analytes	<RL	--	--
				TPH	TPH - GRO (Non-Aqueous)	<RL	NS	NS
				Dry Weight	Dry Weight	93.3	%	NS
HMW-23D	SBI002:HMW23D:S000020:428	8/17/01	0.0'-2.0'	Metals	Barium	44.5	mg/kg dw	5,900
					Chromium	7.4	mg/kg dw	120**
					Lead	23.3	mg/kg dw	230
					Mercury	0.019	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				SVOCs	All Analytes	<RL	--	--
				TPH	TPH - DRO Non-Aqueous	95.8	mg/kg dw	NS
				Dry Weight	Dry Weight	85.7	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
HMW-24D	SBI002:HMW24D:S005020:428	8/21/01	0.5'-2.0'	Metals	Arsenic	9.2	mg/kg dw	20
					Barium	833	mg/kg dw	5,900
					Chromium	26	mg/kg dw	120**
					Lead	**5,970**	mg/kg dw	230
					Mercury	0.558	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				Dry Weight	Dry Weight	85.2	%	NS
	SBI002:HMW24DD:S005020:428	8/21/01	0.5'-2.0'	Metals	Barium	1,260	mg/kg dw	5,900
					Chromium	30	mg/kg dw	120*
					Lead	**13,600**	mg/kg dw	230
					Mercury	0.821	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				Dry Weight	Dry Weight	85	%	NS
HMW-25S	SBI002:HMW25S:S010025:412	8/10/01	1.0'-2.5'	Metals	Barium	134	mg/kg dw	5,900
					Chromium	8.2	mg/kg dw	120**
					Lead	47.4	mg/kg dw	230
					Mercury	0.208	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				SVOCs	All Analytes	<RL	--	--
				PCBs	All Analytes	<RL	--	--
				TPH	TPH - FTIR Non-aq	<RL	NS	NS
				Dry Weight	Dry Weight	85.7	%	NS
	SBI002:HMW25S:020040:505	8/10/01	2.0'-4.0'	VOCs	All Analytes	<RL	--	--
				SVOCs	All Analytes	<RL	--	--
				PCBs	All Analytes	<RL	--	--
				TPH	TPH - FTIR Non-aq	<RL	NS	NS
				TOC	TOC	0.18	%	NS
	SBI002:HMW25S:S210230:412	8/10/01	21.0'-23.0'	Metals	Barium	5.9	mg/kg dw	5,900
				Dry Weight	Dry Weight	91	%	NS
HMW-26S	SBI002:HMW26S:S015025:412	8/9/01	1.5'-2.5'	Metals	Barium	37	mg/kg dw	5,900
					Chromium	9.2	mg/kg dw	120**
					Lead	21.9	mg/kg dw	230
					Mercury	0.021	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				SVOCs	All Analytes	<RL	--	--
				TPH	TPH - GRO (Non-Aqueous)	<RL	NS	NS
				Dry Weight	Dry Weight	91.6	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
HMW-27S	SBI002:HMW27S:S000015:412	8/13/01	0.0'-1.5'	Metals	Arsenic	11	mg/kg dw	20
					Barium	77.3	mg/kg dw	5,900
					Chromium	15.5	mg/kg dw	120**
					Lead	132	mg/kg dw	230
					Mercury	0.441	mg/kg dw	32
				VOCs	Tetrachloroethene	14.7	ug/kg dw	640
				SVOCs	Anthracene	630	ug/kg dw	51,000
					Benzo(a)anthracene	4,990	ug/kg dw	15,000
					Benzo(a)pyrene	**5,970**	ug/kg dw	1,500
					Benzo(b)fluoranthene	9,290	ug/kg dw	15,000
					Benzo(k)fluoranthene	3,780	ug/kg dw	39,000
					Chrysene	6,550	ug/kg dw	25,000
					Dibenzo(a,h)anthracene	368	ug/kg dw	1,500
					Fluoranthene	11,000	ug/kg dw	880,000
					Indeno(1,2,3-cd)pyrene	1,170	ug/kg dw	3,100
					Phenanthrene	6,000	ug/kg dw	126,049,825***
					Pyrene	10,500	ug/kg dw	570,000
				TPH	TPH - FTIR Non-aq	110	mg/kg dw	NS
				Dry Weight	Dry Weight	89.1	%	NS
HMW-29D	SBI002:HMW29D:040060:505	9/11/01	4.0'-6.0'	TOC	TOC	0.043	%	NS
HMW-32D	SBI002:HMW32D:200220:505	9/6/01	20.0'-22.0'	TOC	TOC	0.053	%	NS
HMW-33D	SBI002:HMW33D:S000020:428	8/9/01	0.0'-2.0'	Metals	Barium	177	mg/kg dw	5,900
					Chromium	9.2	mg/kg dw	120**
					Lead	**2,720**	mg/kg dw	230
					Mercury	30.9	mg/kg dw	32
				VOCs	Naphthalene	63.8	ug/kg dw	170,000
				Dry Weight	Dry Weight	90.6	%	NS
	SBI002:HMW33D:500520:505	8/9/01	50.0'-52.0'	TOC	TOC	0.088	%	NS
HMW-34D	SBI002:HMW34S:S000010:412	8/14/01	0.0'-1.0'	VOCs	All Analytes	<RL	–	–
				SVOCs	Benzo(a)anthracene	353	ug/kg dw	15,000
					Benzo(a)pyrene	340	ug/kg dw	1,500
					Benzo(b)fluoranthene	494	ug/kg dw	15,000
					Chrysene	408	ug/kg dw	25,000
					Phenanthrene	458	ug/kg dw	126,049,825***
					Pyrene	704	ug/kg dw	570,000
				TPH	TPH - DRO Non-Aqueous	30.4	mg/kg dw	NS
				Dry Weight	Dry Weight	94.1	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
HMW-35S	SBI002:HMW35S:S000020:428	8/16/01	0.0'-2.0'	Metals	Barium	56,800	ug/kg dw	59,000,000
					Chromium	6,720	ug/kg dw	120,000**
					Lead	75,900	ug/kg dw	230,000
					Mercury	0.411	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				SVOCs	All Analytes	<RL	--	--
				Dry Weight	Dry Weight	93.3	%	NS
	SBI002:HMW35SD:S02020:428	8/16/01	0.0'-2.0'	Metals	Arsenic	6,080	ug/kg dw	20,000
					Barium	59,700	ug/kg dw	59,000,000
					Chromium	7,720	ug/kg dw	120**
					Lead	97,400	ug/kg dw	230,000
					Mercury	0.394	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				SVOCs	All Analytes	<RL	--	--
				Dry Weight	Dry Weight	93.9	%	NS
SB-1	SBI002:SB1:S100115:428	8/3/01	10.0'-11.5'	VOCs	Acetone	338	ug/kg dw	3,100
					2-Butanone (MEK)	210	ug/kg dw	11,000
					Toluene	21.7	ug/kg dw	240,000
					1,2,4-Trimethylbenzene	11	ug/kg dw	215,329***
					1,3,5-Trimethylbenzene	7.9	ug/kg dw	86,840***
					Xylenes, Total	7.3	ug/kg dw	410,000
				SVOCs	All Analytes	<RL	--	--
				PCBs	**Aroclor 1242**	**5.31**	mg/kg dw	5.3
				TPH	TPH - FTIR Non-aq	8,100	mg/kg dw	NS
				Dry Weight	Dry Weight	85.1	%	NS
	SBI002:SB1:S160170:428	8/3/01	16.0'-17.0'	VOCs	Toluene	21.6	ug/kg dw	240,000
				SVOCs	All Analytes	<RL	--	--
				PCBs	All Analytes	<RL	--	--
				TPH	TPH - FTIR Non-aq	8,100	mg/kg dw	NS
				Dry Weight	Dry Weight	87.4	%	NS
SB-3	SBI002:SB3:S000020:428	8/2/01	0.0'-2.0'	VOCs	Toluene	27.6	ug/kg dw	240000
				SVOCs	Benzo(a)pyrene	208	ug/kg dw	1,500
					Benzo(b)fluoranthene	415	ug/kg dw	15,000
					Pyrene	388	ug/kg dw	570,000
				TPH	TPH - FTIR Non-aq	240	mg/kg dw	NS
				Dry Weight	Dry Weight	88.4	%	NS
SB-4	SBI002:SB4:S010020:428	8/3/01	1.0'-2.0'	Metals	Barium	48.9	mg/kg dw	5,900
					Chromium	11	mg/kg dw	120**
					Lead	18.3	mg/kg dw	230
					Mercury	0.014	mg/kg dw	32
				VOCs	Toluene	67.2	ug/kg dw	240,000
					Xylenes, Total	6.4	ug/kg dw	410,000
				SVOCs	All Analytes	<RL	--	--
				Dry Weight	Dry Weight	87.4	%	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 2 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN SOILS
AREA A

Soil Boring	Sample Identification	Sample Date	Sample Depth	Analyte Type	Compound	Results	Units	RISC Default Closure Level - Commercial/Industrial Land Use
SB-5	SBI002:SB-5:S000015:412	8/8/01	0.0'-1.5'	Metals	**Arsenic**	**57.1**	mg/kg dw	20
					Barium	124	mg/kg dw	5,900
					Chromium	16.2	mg/kg dw	120**
					Lead	122	mg/kg dw	230
					Mercury	0.092	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				SVOCs	All Analytes	<RL	--	--
				TPH	TPH - GRO (Non-Aqueous)	<RL	NS	NS
					FTIR Non-aq	<RL	NS	NS
				Dry Weight	Dry Weight	98.6	%	NS
SB-6	SBI002:SB6:S100110:428	8/6/01	10.0'-11.0'	Metals	Arsenic	3.5	mg/kg dw	20
					Barium	24	mg/kg dw	5,900
					Chromium	5.2	mg/kg dw	120**
					Lead	32.3	mg/kg dw	230
					Mercury	0.096	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				SVOCs	All Analytes	<RL	--	--
				TPH	TPH - DRO Non-Aqueous	25.8	mg/kg dw	NS
				Dry Weight	Dry Weight	93.9	%	NS
	SBI002:SB6:S140150:428	8/6/01	14.0'-15.0'	Metals	Barium	15	mg/kg dw	5,900
					Chromium	4.7	mg/kg dw	120**
					Lead	14	mg/kg dw	230
					Mercury	0.043	mg/kg dw	32
				VOCs	All Analytes	<RL	--	--
				SVOCs	All Analytes	<RL	--	--
				TPH	TPH - DRO Non-Aqueous	15.7	mg/kg dw	NS
				Dry Weight	Dry Weight	90.8	%	NS

Notes:

* - Total concentrations of organics do not exceed 2,000 mg/kg (2,000,000 ug/kg) for any subsurface sample, and 6,000 mg/kg for any surface samples. concentrations of metals do not exceed 10,000 mg/kg for any sample.
** - Assumes hexavalent chromium.
*** - Closure Levels calculated using equations provided in Appendix F of the VRP Resource Guide (July 1996).
- Samples SBI002:SB26A:S020040:505 and SBI002:SB27A:S020040:505 are re-samples from GB-26 and GB-27, respectively. Borings were re-sampled because holding times for initial samples were exceeded for SVOC analyses.
<RL - Results are less than the analytical method reporting limit.
NS - No Cleanup Goal/Closure Level Available.
- Analyte concentration exceeds default RISC commercial/industrial closure level.

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 3

SUMMARY OF DETECTED ANALYTES IN GROUNDWATER
AREA A

Monitoring Well Designation	Sample Identification	Sample Date	Analyte Type	Compound	Results (ug/L)	RISC Default Closure Level - Industrial Land Use (ug/L)	RISC Default Closure Level - Residential Land Use (ug/L)
HMW-1S	SBI002:HMW1S:G091801:523	9/18/01	Metals*	Arsenic	38.6	50	50
				Barium	205	7,200	2,000
				Cadmium	1.2	51	5
				Chromium	8.7	310**	100**
				Lead	**75.4**	42	15
			VOCs	Trichloroethene	2.3	260	5
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - Method 418.1 (Aq.)	<RL	NS	NS
				TPH - GRO (Aq.)	<RL	NS	NS
HMW-1I	SBI002:HMW1I:G091801:523	9/18/01	Metals*	Arsenic	23	50	50
				Barium	94.6	7,200	2,000
				Chromium	8.7	310**	100**
				Lead	**39.4**	42	15
			VOCs	cis-1,2-Dichloroethene	4.3	1,000	70
				Trichloroethene	**16.8**	260	5
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - Method 418.1 (Aq.)	<RL	NS	NS
				TPH - GRO (Aq.)	<RL	NS	NS
HMW-1D	SBI002:HMW1D:G091801:523	9/18/01	Metals*	Barium	36.8	7,200	2,000
				Lead	3.4	42	15
			VOCs	cis-1,2-Dichloroethene	1.8	1,000	70
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - Method 418.1 (Aq.)	<RL	NS	NS
				TPH - GRO (Aq.)	<RL	NS	NS
MW-1S	SBI002:MW1S:G091701:523	9/17/01	Metals*	Barium	53.8	7,200	2,000
				Lead	14.6	42	15
			VOCs	cis-1,2-Dichloroethene	2.7	1,000	70
				Tetrachloroethene	**403**	55	5
				Trichloroethene	4.4	260	5
MW-1D	SBI002:MW1D:G091701:523	9/17/01	Metals*	Barium	62	7,200	2,000
				Lead	1.1	42	15
			VOCs	All Analytes	<RL	--	--

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 3 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN GROUNDWATER
AREA A

Monitoring Well Designation	Sample Identification	Sample Date	Analyte Type	Compound	Results (ug/L)	RISC Default Closure Level - Industrial Land Use (ug/L)	RISC Default Closure Level - Residential Land Use (ug/L)
HMW-2S	SBI002:HMW2S:G091801:523	9/18/01	Metals*	**Arsenic**	**146**	50	50
				Barium	448	7,200	2,000
				Cadmium	4.1	51	5
				Chromium	**163**	310**	100**
				Lead	**531**	42	15***
				Silver	0.7	510	180
			VOCs	cis-1,2-Dichloroethene	1.3	1,000	70
				Trichloroethene	**8**	260	5
			TPH	TPH - Method 418.1 (Aq.)	<RL	NS	NS
				TPH - GRO (Aq.)	<RL	NS	NS
HMW-3S	SBI002:HMW3S:G092001:523	9/20/01	Metals*	Arsenic	18.9	50	50
				Barium	81.4	7,200	2,000
				Chromium	12.7	310**	100**
				Lead	**31.3**	42	15
			VOCs	cis-1,2-Dichloroethene	1.6	1,000	70
				Tetrachloroethene	1.2	55	5
				Trichloroethene	**13.8**	260	5
			TPH	TPH - GRO (Aq.)	<RL	NS	NS
HMW-4S	SBI002:HMW4S:G092001:523	9/20/01	Metals*	Barium	29	7,200	2,000
				Lead	3.4	42	15***
			VOCs	Trichloroethene	4	260	5
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - GRO (Aq.)	<RL	NS	NS
HMW-5S	SBI002:HMW5S:G092001:523	9/20/01	VOCs	cis-1,2-Dichloroethene	1.6	1,000	70
				Tetrachloroethene	1.3	55	5
				Trichloroethene	**14.2**	260	5
			TPH	TPH - Method 418.1 (Aq.)	<RL	NS	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 3 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN GROUNDWATER
AREA A

Monitoring Well Designation	Sample Identification	Sample Date	Analyte Type	Compound	Results (ug/L)	RISC Default Closure Level - Industrial Land Use (ug/L)	RISC Default Closure Level - Residential Land Use (ug/L)
HMW-6S	SBI002:HMW6S:G092001:523	9/20/01	Metals*	**Arsenic**	**54.2**	50	50
				Barium	231	7,200	2,000
				Chromium	47.4	310**	100**
				Lead	**95**	42	15
			VOCs	Trichloroethene	4.1	260	5
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - GRO (Aq.)	<RL	NS	NS
	SBI002:HMW6S:G092001D:523	9/20/01	Metals*	Arsenic	44.2	50	50
				Barium	192	7,200	2,000
				Chromium	39.9	310**	100**
				Lead	**71.8**	42	15
			VOCs	Trichloroethene	4.5	260	5
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - GRO (Aq.)	<RL	NS	NS
HMW-6D	SBI002:HMW6D:G092001:523	9/20/01	Metals*	Barium	39	7,200	2,000
				Lead	1.9	42	15
			VOCs	**Trichloroethene**	**6.7**	260	5
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - GRO (Aq.)	<RL	NS	NS
HMW-7S	SBI002:HMW7S:G091701:523	9/17/01	Metals*	Barium	39	7,200	2,000
				Lead	5.1	42	15
			VOCs	Chloroform	1.3	470	100
				Tetrachloroethene	4.1	55	5
HMW-8S	SBI002:HMW8S:G091701:523	9/17/01	Metals*	Arsenic	15.3	50	50
				Barium	102	7,200	2,000
				Chromium	10.1	310**	100**
				Lead	**45.2**	42	15
			VOCs	**Tetrachloroethene**	**40.7**	55	5

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 3 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN GROUNDWATER
AREA A

Monitoring Well Designation	Sample Identification	Sample Date	Analyte Type	Compound	Results (ug/L)	RISC Default Closure Level - Industrial Land Use (ug/L)	RISC Default Closure Level - Residential Land Use (ug/L)
HMW-8I	SBI002:HMW8I:G091701:523	9/17/01	Metals*	Arsenic	10.5	50	50
				Barium	98.2	7,200	2,000
				Lead	10.2	42	15
			VOCs	cis-1,2-Dichloroethene	1	1,000	70
				1,1,1-Trichloroethane	3.2	3,600	200
HMW-8D	SBI002:HMW8D:G091701:523	9/17/01	Metals*	Barium	81.8	7,200	2,000
				Lead	4.8	42	15
			VOCs	1,1,1-Trichloroethane	3.3	3,600	200
	SBI002:HMW8D:G091701D:523	9/17/01	Metals*	Barium	82.1	7,200	2,000
				Lead	3.4	42	15
MW-8S	SBI002:MW8S:G091701:523	9/17/01	Metals*	Barium	29.7	7,200	2,000
				Lead	8.5	42	15
			VOCs	All Analytes	<RL	--	--
MW-8D	SBI002:MW8D:G091701:523	9/17/01	Metals*	Barium	47.4	7,200	2,000
				Lead	5.7	42	15
			VOCs	All Analytes	<RL	--	--
HMW-9S	SBI002:HMW9S:G091901:523	9/19/01	VOCs	Carbon tetrachloride	1.3	22	5
				Tetrachloroethene	**749**	55	5
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - GRO (Aq.)	<RL	NS	NS
HMW-9I	SBI002:HMW9I:G091901:523	9/19/01	VOCs	**Tetrachloroethene**	**349**	55	5
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - GRO (Aq.)	<RL	NS	NS
HMW-9D	SBI002:HMW9D:G091901:523	9/19/01	Metals*	Barium	82.3	7,200	2,000
				Cadmium	1.6	51	5
				Lead	14.2	42	15
			VOCs	Tetrachloroethene	2.5	55	5
HMW-10S	SBI002:HMW10S:G091801:505	9/18/01	VOCs	cis-1,2-Dichloroethene	4.2	1,000	70
				sec-Butylbenzene	4	NS	NS
				Tetrachloroethene	**31.2**	55	5
				Trichloroethene	**47.8**	260	5
			TPH	TPH - DRO (Aq.)	2,200	NS	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 3 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN GROUNDWATER
AREA A

Monitoring Well Designation	Sample Identification	Sample Date	Analyte Type	Compound	Results (ug/L)	RISC Default Closure Level - Industrial Land Use (ug/L)	RISC Default Closure Level - Residential Land Use (ug/L)
HMW-11S	SBI002:MW11S:G091801:505	9/18/01	VOCs	cis-1,2-Dichloroethene	1.1	1,000	70
				1,1,1-Trichloroethane	1.8	3,600	200
				Trichloroethene	1.1	260	5
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - Method 418.1 (AQ)	<RL	NS	NS
				TPH - DRO (Aq.)	<RL	NS	NS
HMW-11I	SBI002:HMW11I:G091801:505	9/18/01	Metals*	Barium	32.5	7,200	2,000
				Lead	2.5	42	15
			VOCs	sec-Butylbenzene	1.3	NS	NS
				cis-1,2-Dichloroethene	35.5	1,000	70
				trans-1,2-Dichloroethene	5.1	200	100
				n-Propylbenzene	1.2	NS	NS
				Trichloroethene	**11.3**	260	5
	SBI002:HMW11I:G091801D:505	9/18/01	Metals*	Barium	33.5	7,200	2,000
				Lead	2.2	42	15
			VOCs	sec-Butylbenzene	1.4	NS	NS
				cis-1,2-Dichloroethene	34.2	1,000	70
				trans-1,2-Dichloroethene	5.3	200	100
				n-Propylbenzene	1.3	NS	NS
				Trichloroethene	**12.1**	260	5
HMW-11D	SBI002:HMW11D:G091801:505	9/18/01	Metals*	Barium	55.5	7,200	2,000
				Lead	3.6	42	15
			VOCs	**Tetrachloroethene**	**34.2**	55	5
			TPH	TPH - Method 418.1 (Aq.)	<RL	NS	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 3 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN GROUNDWATER
AREA A

Monitoring Well Designation	Sample Identification	Sample Date	Analyte Type	Compound	Results (ug/L)	RISC Default Closure Level - Industrial Land Use (ug/L)	RISC Default Closure Level - Residential Land Use (ug/L)
MW-11D	SBI002:MW11D:G091801:505	9/18/01	VOCs	cis-1,2-Dichloroethene	1.2	1,000	70
				Tetrachloroethene	1.7	55	5
				1,1,1-Trichloroethane	1.4	3,600	200
				Trichloroethene	1.1	260	5
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - DRO (Aq.)	<RL	NS	NS
HMW-12S	SBI002:HMW12S:G091901:523	9/19/01	Metals*	Arsenic	46.7	50	50
				Barium	154	7,200	2,000
				Lead	**19.5**	42	15***
			VOCs	Chloroform	2.2	470	100
				cis-1,2-Dichloroethene	2.4	1,000	70
				trans-1,2-Dichloroethene	5	200	100
				Tetrachloroethene	**52.1**	55	5
				Trichloroethene	**29.6**	260	5
			TPH	TPH - GRO (Aq.)	<RL	NS	NS
HMW-12D	SBI002:HMW12D:G091801:505	9/18/01	Metals*	Barium	62.6	7,200	2,000
				Lead	2.8	42	15
			VOCs	Tetrachloroethene	1.4	55	5
				1,1,1-Trichloroethane	1.6	3,600	200
HMW-13S	SBI002:HMW13S:G091801:523	9/18/01	VOCs	cis-1,2-Dichloroethene	2.8	1,000	70
				Trichloroethene	**19**	260	5
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - Method 418.1 (Aq.)	<RL	NS	NS
				TPH - DRO (Aq.)	<RL	NS	NS
HMW-13D	SBI002:HMW13D:G091901:523	9/19/01	Metals*	Barium	138	7,200	2,000
				Lead	7.7	42	15
			VOCs	cis-1,2-Dichloroethene	8.9	1,000	70
				trans-1,2-Dichloroethene	8.1	200	100
				Tetrachloroethene	**290**	55	5
				Trichloroethene	**386**	260	5

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 3 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN GROUNDWATER
AREA A

Monitoring Well Designation	Sample Identification	Sample Date	Analyte Type	Compound	Results (ug/L)	RISC Default Closure Level - Industrial Land Use (ug/L)	RISC Default Closure Level - Residential Land Use (ug/L)
MW-13S	SBI002:MW13S:G091901:523	9/19/01	Metals*	Barium	57.8	7,200	2,000
				Lead	1.5	42	15
			VOCs	**Tetrachloroethene**	**638**	55	5
MW-13D	SBI002:MW13D:G091901:523	9/19/01	Metals*	Barium	75.2	7,200	2,000
				Lead	4	42	15
			VOCs	**Tetrachloroethene**	**143**	55	5
HMW-14S	SBI002:HMW14S:G091901:523	9/19/01	VOCs	Trichloroethene	2.5	260	5
				Vinyl Chloride	4.1	2	2
			SVOCs	All Analytes	<RL	--	--
			PCBs	All Analytes	<RL	--	--
	SBI002:HMW14S:G091901D:523	9/19/01	VOCs	Trichloroethene	2.6	260	5
				Vinyl Chloride	4	2	2
			PCBs	All Analytes	<RL	--	--
			TPH	TPH - Method 418.1 (Aq.)	<RL	NS	NS
MW-14	SBI002:MW14:G092001:523	9/20/01	Metals*	Barium	44.3	7,200	2,000
				Lead	1.8	42	15
			VOCs	1,1,1-Trichloroethane	3.7	3,600	200
HMW-15S	SBI002:HMW15S:G091901:523	9/19/01	VOCs	**Trichloroethene**	**7.4**	260	5
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - Method 418.1 (Aq.)	<RL	NS	NS
HMW-15D	SBI002:HMW15D:G091901:523	9/19/01	VOCs	cis-1,2-Dichloroethene	2.7	1,000	70
				Trichloroethene	**6.5**	260	5
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - Method 418.1 (Aq.)	<RL	NS	NS
MW-15D	SBI002:MW15D:G091801:505	9/18/01	Metals*	Barium	64.8	7,200	2,000
				Lead	1.7	42	15
			VOCs	sec-Butylbenzene	4.1	NS	NS
				cis-1,2-Dichloroethene	7.6	1,000	70
				trans-1,2-Dichloroethene	1.5	200	100
				n-Hexane	48.8	NS	NS
				n-Propylbenzene	2.4	NS	NS
				Tetrachloroethene	**270**	55	5
				Trichloroethene	**14.8**	260	5
				1,3,5-Trimethylbenzene	1.4	NS	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 3 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN GROUNDWATER
AREA A

Monitoring Well Designation	Sample Identification	Sample Date	Analyte Type	Compound	Results (ug/L)	RISC Default Closure Level - Industrial Land Use (ug/L)	RISC Default Closure Level - Residential Land Use (ug/L)
HMW-16D	SBI002:HMW16D:G091801:505	9/18/01	VOCs	1,1-Dichloroethane	1.2	10,000	990
				cis-1,2-Dichloroethene	2.8	1,000	70
				1,1,1-Trichloroethane	1.2	3,600	200
				Trichloroethene	2.3	260	5
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - Method 418.1 (Aq.)	<RL	NS	NS
				TPH - DRO (Aq.)	<RL	NS	NS
HMW-17D	SBI002:HMW17D:G091701:523	9/17/01	Metals*	Barium	66.3	7,200	2,000
				Lead	3	42	15
			VOCs	cis-1,2-Dichloroethene	1.2	1,000	70
				1,1,1-Trichloroethane	1.9	3,600	200
HMW-18S	SBI002:HMW18S:G091901:523	9/19/01	VOCs	cis-1,2-Dichloroethene	3	1,000	70
				trans-1,2-Dichloroethene	1.9	200	100
				Tetrachloroethene	**36.4**	55	5
				Trichloroethene	**13.1**	260	5
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - Method 418.1 (Aq.)	<RL	NS	NS
				TPH - DRO (Aq.)	<RL	NS	NS
HMW-19S	SBI002:19S:G091801:505	9/18/01	Metals*	Arsenic	2,140	50	50
				Barium	**2,140**	7,200	2,000
				Cadmium	2	51	5
				Chromium	27.6	310**	100**
				Lead	**255**	42	15
				Mercury	0.4	31	2
			VOCs	**Tetrachloroethene**	**185**	55	5
				1,1,1-Trichloroethane	1.8	3,600	200
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - Method 418.1 (Aq.)	<RL	NS	NS
	SBI002:19S:G091801D:505	9/18/01	Metals*	**Arsenic**	**2,860**	50	50
				Barium	**3,100**	7,200	2,000
				Cadmium	3.3	51	5
				Chromium	40	310**	100**
				Lead	**359**	42	15
				Mercury	0.6	31	2
				Selenium	6	510	50
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - Method 418.1 (Aq.)	<RL	NS	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 3 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN GROUNDWATER
AREA A

Monitoring Well Designation	Sample Identification	Sample Date	Analyte Type	Compound	Results (ug/L)	RISC Default Closure Level - Industrial Land Use (ug/L)	RISC Default Closure Level - Residential Land Use (ug/L)
HMW-19D	SBI002:HMW19D:G091801:505	9/18/01	Metals*	Barium	56.1	7,200	2,000
				Lead	1.4	42	15
			VOCs	**Tetrachloroethene**	**46.9**	55	5
HMW-20S	SBI002:HMW20S:G092001:503	9/20/01	VOCs	All Analytes	<RL	--	--
			TPH	TPH - GRO (Aq.)	<RL	NS	NS
HMW-21D	SBI002:HMW21D:G091901:523	9/17/01	Metals*	Barium	76.3	7,200	2,000
				Lead	3	42	15
			VOCs	1,1,1-Trichloroethane	4.4	3,600	200
			TPH	TPH - Method 418.1 (Aq.)	<RL	NS	NS
HMW-22D	SBI002:HMW22D:G091701:523	9/17/01	Metals*	Barium	76.3	7,200	2,000
				Lead	3	42	15
			VOCs	All Analytes	<RL	--	--
HMW-22I	SBI002:HMW22I:G091701:523	9/17/01	Metals*	Arsenic	7.7	50	50
				Barium	61.8	7,200	2,000
				Lead	5.8	42	15
			VOCs	1,1,1-Trichloroethane	1.2	3,600	200
HMW-23S	SBI002:HMW23S:G091801:505	9/18/01	VOCs	Ethylbenzene	4.8	10,000	700
				Isopropylbenzene (Cumene)	78.3	NS	NS
				p-Isopropyltoluene	430	NS	NS
				Naphthalene	**371**	2,000	8
				n-Propylbenzene	151	1,020***	76.8***
				1,2,4-Trimethylbenzene	**7,740**	5,110***	16.4***
				1,3,5-Trimethylbenzene	2,360	5,110***	16.4***
				Xylenes	146	180,000	10,000
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - GRO (Aq.)	<RL	NS	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 3 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN GROUNDWATER
AREA A

Monitoring Well Designation	Sample Identification	Sample Date	Analyte Type	Compound	Results (ug/L)	RISC Default Closure Level - Industrial Land Use (ug/L)	RISC Default Closure Level - Residential Land Use (ug/L)
HMW-23D	SBI002:HMW23D:G091801:505	9/18/01	Metals*	Arsenic	13.8	50	50
				Barium	192	7,200	2,000
				Chromium	22.3	310**	100**
				Lead	**60.1**	42	15
			VOCs	1,1,1-Trichloroethane	3.7	3,600	200
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - DRO (Aq.)	<RL	NS	NS
				TPH - GRO (Aq.)	<RL	NS	NS
MW-23D	SBI002:MW23D:G091801:505	9/18/01	VOCs	1,1,1-Trichloroethane	3.7	3,600	200
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - GRO (Aqueous)	<RL	NS	NS
MW-23S	SBI002:MW23S:G091801:505	9/18/01	VOCs	**Naphthalene**	**417**	2,000	8
				1,1,1-Trichloroethane	2.3	3,600	200
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - GRO (Aq.)	36,200	NS	NS
HMW-24S	SBI002:HMW24D:G092001:523	9/20/01	Metals*	Barium	55.6	7,200	2,000
				Lead	1.7	42	15
			VOCs	1,1,1-Trichloroethane	3.7	3,600	200
MW-24D	SBI002:MW24D:G091801:505	9/18/01	Metals*	Arsenic	10	50	50
				Barium	72.3	7,200	2,000
				Lead	**110**	42	25
			VOCs	**Tetrachloroethene**	**8.8**	55	5
				1,1,1-Trichloroethane	3.2	3,600	200
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - DRO (Aq.)	<RL	NS	NS
				TPH - GRO (Aq.)	<RL	NS	NS
HMW-25S	SBI002:HMW25S:G091901:523	9/19/01	Metals*	**Arsenic**	**647**	50	50
				Barium	**7,030**	7,200	2,000
				Chromium	**224**	310**	100**
				Lead	**1,410**	42	15
				Mercury	**2.3**	31	2
			VOCs	1,1,1-Trichloroethane	2.4	3,600	200
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - GRO (Aq.)	<RL	NS	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 3 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN GROUNDWATER
AREA A

Monitoring Well Designation	Sample Identification	Sample Date	Analyte Type	Compound	Results (ug/L)	RISC Default Closure Level - Industrial Land Use (ug/L)	RISC Default Closure Level - Residential Land Use (ug/L)
MW-25S	SBI002:MW25S:G091701:523	9/17/01	Metals*	Arsenic	5.6	50	50
				Barium	189	7,200	2,000
				Chromium	89.9	310**	100**
				Lead	**20.9**	42	15
			VOCs	Tetrachloroethene	4.7	55	5
				1,1,1-Trichloroethane	1.3	3,600	200
MW-25D	SBI002:MW25D:G091701:523	9/17/01	Metals*	Barium	64.7	7,200	2,000
				Chromium	30.4	310**	100**
				Lead	3.8	42	15
			VOCs	Tetrachloroethene	2.2	55	5
				1,1,1-Trichloroethane	2.7	3,600	200
HMW-26S	SBI002:HMW26S:G091901:523	9/19/01	Metals*	**Arsenic**	**112**	50	50
				Barium	240	7,200	2,000
				Cadmium	1	51	5
				Chromium	33.2	310**	100**
				Lead	**127**	42	15
			VOCs	sec-Butylbenzene	2	NS	NS
				p-Isopropyltoluene	1.2	NS	NS
			TPH	TPH - GRO (Aq.)	<RL	NS	NS
HMW-27S	SBI002:HMW27S:G091901:523	9/19/01	Metals*	**Arsenic**	**144**	50	50
				Barium	783	7,200	2,000
				Cadmium	3.3	51	5
				Chromium	40	310**	100**
				Lead	**240**	42	15
				Mercury	0.3	31	2
			VOCs	**Tetrachloroethene**	**136**	55	5
				1,1,1-Trichloroethane	2.2	3,600	200
				Trichloroethene	3.2	260	5
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - GRO (Aq.)	<RL	NS	NS
				TPH - Method 418.1 (Aq.)	<RL	NS	NS
HMW-28S	SBI002:HMW28S:G091401:505	9/14/01	Metals*	Barium	72.5	7,200	2,000
			VOCs	cis-1,2-Dichloroethene	2.6	1,000	70
				Tetrachloroethene	1	55	5
				Trichloroethene	**15.1**	260	5
			TPH	TPH - Method 418.1 (Aq.)	<RL	NS	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 3 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN GROUNDWATER
AREA A

Monitoring Well Designation	Sample Identification	Sample Date	Analyte Type	Compound	Results (ug/L)	RISC Default Closure Level - Industrial Land Use (ug/L)	RISC Default Closure Level - Residential Land Use (ug/L)
HMW-28D	SBI002:HMW28D:G091401:505	9/14/01	Metals*	Barium	37.5	7,200	2,000
				Lead	8.3	42	15
			VOCs	cis-1,2-Dichloroethene	2	1,000	70
				Tetrachloroethene	1.4	55	5
				1,1,1-Trichloroethane	1.8	3,600	200
				Trichloroethene	**51.4**	260	5
			TPH	TPH - Method 418.1 (Aq.)	<RL	NS	NS
MW-28S	SBI002:MW28S:G091801:505	9/18/01	Metals*	Arsenic	11.1	50	50
				Barium	163	7,200	2,000
				Lead	**17**	42	15
			VOCs	Tetrachloroethene	2.9	55	5
MW-28D	SBI002:MW28D:G091801:505	9/18/01	Metals*	Arsenic	11.2	50	50
				Barium	62.8	7,200	2,000
				Lead	**17**	42	15
			VOCs	**Tetrachloroethene**	**12.8**	55	5
HMW-29I	SBI002:HMW29I:G091401:505	9/14/01	Metals*	Arsenic	11.5	50	50
				Barium	58.5	7,200	2,000
				Lead	**20.8**	42	15
			VOCs	sec-Butylbenzene	1.8	NS	NS
				cis-1,2-Dichloroethene	2.3	1,000	70
				Isopropylbenzene (Cumene)	1.8	NS	NS
				n-Propylbenzene	2.1	NS	NS
				Trichloroethene	**13.9**	260	5
			SVOCs	Fluorene	18	2,000	310
			TPH	TPH - Method 418.1 (Aq.)	3,600	NS	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 3 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN GROUNDWATER
AREA A

Monitoring Well Designation	Sample Identification	Sample Date	Analyte Type	Compound	Results (ug/L)	RISC Default Closure Level - Industrial Land Use (ug/L)	RISC Default Closure Level - Residential Land Use (ug/L)
HMW-29D	SBI002:HMW29D:G091401:505	9/14/01	Metals*	Barium	48.3	7,200	2,000
				Lead	2.2	42	15
			VOCs	cis-1,2-Dichloroethene	3.7	1,000	70
				Isopropylbenzene (Cumene)	2.8	NS	NS
				n-Propylbenzene	3.4	NS	NS
				Trichloroethene	**10.5**	260	5
			TPH	TPH - Method 418.1 (Aq.)	7,500	NS	NS
HMW-30I	SBI002:HMW30I:G091401:505	9/14/01	Metals*	Barium	59.9	7,200	2,000
				Lead	9	42	15
			VOCs	sec-Butylbenzene	3.4	NS	NS
				1,1-Dichloroethane	1.3	10,000	990
				cis-1,2-Dichloroethene	1.4	1,000	70
				n-Hexane	44.8	NS	NS
				Isopropylbenzene (Cumene)	1	NS	NS
				p-Isopropyltoluene	3.2	NS	NS
				n-Propylbenzene	3.8	NS	NS
				Trichloroethene	1.2	260	5
				1,2,4-Trimethylbenzene	2.6	NS	NS
				1,3,5-Trimethylbenzene	2.6	NS	NS
				Xylenes	1.5	180,000	10,000
			TPH	TPH - Method 418.1 (Aq.)	400	NS	NS
MW-30D	SBI002.MW30D:G092001:523	9/20/01	VOCs	All Analytes	<RL	--	--
HMW-30D	SBI002:HMW30D:G091401:505	9/14/01	Metals*	Barium	47.3	7,200	2,000
				Lead	2.5	42	15***
			VOCs	sec-Butylbenzene	1.4	NS	NS
				1,1-Dichloroethane	1.4	10,000	990
				cis-1,2-Dichloroethene	4.2	1,000	70
				n-Hexane	12.5	NS	NS
				p-Isopropyltoluene	1	NS	NS
				1,1,1-Trichloroethane	1.1	3,600	200
				Trichloroethene	**10.8**	260	5
			TPH	TPH - Method 418.1 (Aq.)	300	NS	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 3 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN GROUNDWATER
AREA A

Monitoring Well Designation	Sample Identification	Sample Date	Analyte Type	Compound	Results (ug/L)	RISC Default Closure Level - Industrial Land Use (ug/L)	RISC Default Closure Level - Residential Land Use (ug/L)
HMW-31S	SBI002:HMW31S:G091701:523	9/17/01	Metals*	**Arsenic**	**121**	50	50
				Barium	1020	7,200	2,000
				Cadmium	6.8	51	5
				Chromium	55.3	310**	100**
				Lead	**387**	42	15
				Mercury	0.5	31	2
			VOCs	**Tetrachloroethene**	**11.8**	55	5
				1,1,1-Trichloroethane	1.4	3,600	200
				Trichloroethene	2	260	5
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - Method 418.1 (Aq.)	<RL	NS	NS
HMW-31I	SBI002:HMW31I:G091701:523	9/17/01	Metals*	Barium	70.6	7,200	2,000
				Lead	7.9	42	15
			VOCs	n-Butylbenzene	10.3	NS	NS
				sec-Butylbenzene	9.8	NS	NS
				n-Hexane	68	NS	NS
				Isopropylbenzene (Cumene)	3.2	NS	NS
				p-Isopropyltoluene	5.1	NS	NS
				n-Propylbenzene	4.1	NS	NS
				Vinyl Chloride	1.5	2	2
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - Method 418.1 (Aq.)	1,400	NS	NS
	SBI002:HMW31I:G091701D:523	9/17/01	Metals*	Barium	73.2	7,200	2,000
				Lead	8.8	42	15
			VOCs	n-Butylbenzene	10.3	NS	NS
				sec-Butylbenzene	9.9	NS	NS
				n-Hexane	83.6	NS	NS
				Isopropylbenzene (Cumene)	3	NS	NS
				p-Isopropyltoluene	5.2	NS	NS
				n-Propylbenzene	4	NS	NS
				Vinyl Chloride	1.3	2	2
			SVOCs	All Analytes	<RL	--	--

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 3 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN GROUNDWATER
AREA A

Monitoring Well Designation	Sample Identification	Sample Date	Analyte Type	Compound	Results (ug/L)	RISC Default Closure Level - Industrial Land Use (ug/L)	RISC Default Closure Level - Residential Land Use (ug/L)
HMW-31D	SBI002:HMW31D:G091701:523	9/17/01	Metals*	Barium	85.2	7,200	2,000
				Lead	5.2	42	15
			VOCs	1,1-Dichloroethane	1.3	10,000	990
				cis-1,2-Dichloroethene	1.6	1,000	70
				n-Hexane	78.2	NS	NS
				Isopropylbenzene (Cumene)	3.6	NS	NS
				Tetrachloroethene	1	55	5
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - Method 418.1 (Aq.)	13,000	NS	NS
HMW-32I	SBI002:HMW32I:G091401:505	9/14/01	Metals*	Arsenic	9.4	50	50
				Barium	108	7,200	2,000
				Lead	**29.2**	42	15
			VOCs	sec-Butylbenzene	9.3	NS	NS
				cis-1,2-Dichloroethene	7	1,000	70
				trans-1,2-Dichloroethene	9.1	200	100
				n-Hexane	114	NS	NA
				p-Isopropyltoluene	2.3	NS	NS
				n-Propylbenzene	1.9	NS	NS
				Tetrachloroethene	**363**	55	5
				Trichloroethene	**98.8**	260	5
			TPH	TPH - Method 418.1 (AQ)	700	NA	NA
HMW-32D	SBI002:HMW32D:G091401:505	9/14/01	Metals*	Barium	98.2	7,200	2,000
				Lead	10.1	42	15***
			VOCs	Acetone	21.4	10,000	770
				sec-Butylbenzene	10.8	NS	NS
				cis-1,2-Dichloroethene	33.3	1,000	70
				trans-1,2-Dichloroethene	3.5	200	100
				n-Hexane	23.3	NS	NA
				p-Isopropyltoluene	2.5	NS	NS
				n-Propylbenzene	1.5	NS	NS
				Tetrachloroethene	**35.9**	55	5
				Trichloroethene	**18.2**	260	5
			TPH	TPH - Method 418.1 (Aq.)	800	NS	NS

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 3 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN GROUNDWATER
AREA A

Monitoring Well Designation	Sample Identification	Sample Date	Analyte Type	Compound	Results (ug/L)	RISC Default Closure Level - Industrial Land Use (ug/L)	RISC Default Closure Level - Residential Land Use (ug/L)
HMW-33S	SBI002:HMW33S:G091901:523	9/19/01	Metals*	Arsenic	5.3	50	50
				Barium	100	7,200	2,000
				Lead	**132**	42	15
			VOCs	All Analytes	<RL	--	--
HMW-33D	SBI002:HMW33D:G091901:523	9/19/01	Metals*	Arsenic	11.1	50	50
				Barium	116	7,200	2,000
				Chromium	8.8	310**	100**
				Lead	12.9	42	15
			VOCs	1,1,1-Trichloroethane	4	3,600	200
HMW-34S	SBI002:HMW34S:G091901:523	9/19/01	VOCs	cis-1,2-Dichloroethene	1.1	1,000	70
				Trichloroethene	4.5	260	5
			SVOCs	All Analytes	<RL	--	--
			TPH	TPH - Method 418.1 (Aq.)	<RL	NS	NS
				TPH - DRO (Aq.)	<RL	NS	NS
HMW-35S	SBI002:HMW35S:G091701:523	9/17/01	Metals*	Barium	47.1	7,200	2,000
				Lead	2.8	42	15***
			VOCs	cis-1,2-Dichloroethene	1.5	1,000	70
				Trichloroethene	**7.4**	260	5
SB-1	SBI002:SB1:G092001:523	9/20/01	VOCs	**Trichloroethene**	**7.3**	260	5
			TPH	TPH - Method 418.1 (Aq.)	<RL	NS	NS
HP-1#	ZHG001:HP1s:G051401:412[a.]	5/14/01	VOCs	cis-1,2-Dichloroethene	4	1,000	70
				trans-1,2-Dichloroethene	4.2	200	100
				Tetrachloroethene	**165**	55	5
				Trichloroethene	**87.7**	260	5
	ZHG001:HP1d:G051401:412[b.]	5/14/01	VOCs	cis-1,2-Dichloroethene	3.5	1,000	70
				trans-1,2-Dichloroethene	4.6	200	100
				Tetrachloroethene	**53.8**	55	5
				Trichloroethene	**87.8**	260	5
	ZHG001:HP1dD:G051401:412[b.]	5/14/01	VOCs	cis-1,2-Dichloroethene	3.3	1,000	70
				trans-1,2-Dichloroethene	4.2	200	100
				n-Hexane	13.4	NS	NA
				Tetrachloroethene	**64.3**	55	5
				Trichloroethene	**92.2**	260	5

TABLE CONTINUES

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 3 (Cont'd)

SUMMARY OF DETECTED ANALYTES IN GROUNDWATER
AREA A

Monitoring Well Designation	Sample Identification	Sample Date	Analyte Type	Compound	Results (ug/L)	RISC Default Closure Level - Industrial Land Use (ug/L)	RISC Default Closure Level - Residential Land Use (ug/L)
HP-2#	ZHG001:HP2s:G051401:412[c.]	5/14/01	VOCs	n-Butylbenzene	2	NS	NS
				sec-Butylbenzene	1.4	NS	NS
				cis-1,2-Dichloroethene	10.4	1,000	70
				trans-1,2-Dichloroethene	4.1	200	100
				n-Hexane	21.2	NS	NA
				n-Propylbenzene	1.4	NS	NS
				Tetrachloroethene	**13.7**	55	5
				Trichloroethene	2.4	260	5
	ZHG001:HP2d:G051401:412[d.]	5/14/01	VOCs	n-Butylbenzene	10.4	NS	NS
				sec-Butylbenzene	10	NS	NS
				cis-1,2-Dichloroethene	15.7	1,000	70
				trans-1,2-Dichloroethene	2.6	200	100
				n-Hexane	189	NS	NA
				Isopropylbenzene (Cumene)	4.2	NS	NS
				n-Propylbenzene	15.2	NS	NS
				p-Isopropyltoluene	7	NS	NS
				1,2,4-Trimethylbenzene	1.3	NS	NS
				1,3,5-Trimethylbenzene	2	NS	NS

Notes:

* - Total metals.

** - Assumes hexavalent chromium.

NS - No standard available.

*** - Cleanup goals derived using equations in

- Analyte concentration exceeds default RISC commercial/industrial & residential Closure Levels.

- Analyte concentration exceeds default RISC residential closure level.

\# - Direct-push (hydropunch) sampling location, completed before initiation of the Initial Phase II ESA.

a. - Direct-push water sample collected from a depth interval of 26'-30'.

b. - Direct-push water sample collected from a depth interval of 36'-40'.

c. - Direct-push water sample collected from a depth interval of 26'-30'.

d. - Direct-push water sample collected from a depth interval of 36'-40'.

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND INDIANA

TABLE 4

SUMMARY OF GEOTECHNICAL DATA
AREA A

Lab Record Number	Boring Number	Sample Number	Depth (ft.)	Description	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	Silt %	Clay %	LL	PL	USCS
01-405	HMW-8D	SS-10	18.0-20.0	BROWN POORLY GRADED SAND, TRACE FINES	0.0	0.0	1.0	27.9	68.1	3.0		NC	NC	SP
01-400	HMW-9D	SS-16	30.0-32.0	GREY POORLY GRADED SAND, TRACE GRAVEL, FINES	0.0	6.6	5.6	50.5	36.3	1.0		NC	NC	SP
01-407	HMW-11D	SS-5	14.0-16.0	BROWN POORLY GRADED SAND, TRACE GRAVEL, FINES	0.0	1.6	2.0	26.3	68.6	1.5		NC	NC	SP
01-409	HMW-12D	SS-7	12.0-14.0	BROWN POORLY GRADED SAND WITH GRAVEL, TRACE FINES	0.0	19.1	16.3	31.2	30.3	3.1		NC	NC	SP
01-402	HMW-13D	SS-17	32.0-33.0	BROWN POORLY GRADED SAND WITH GRAVEL, TRACE FINES	9.9	18.6	11.1	28.5	30.3	1.6		NC	NC	SP
01-403	HMW-19S	SS-2	2.0-4.0	BROWN WELL-GRADED SAND, LITTLE GRAVEL, TRACE SILT, CLAY	6.2	5.9	5.3	24.6	46.5	7.7	3.8	NC	NC	SW-SM
01-396	HMW-21D	SS-3	4.0-6.0	BROWN POORLY GRADED SAND, TRACE FINES, GRAVEL	0.0	0.1	0.6	10.8	86.6	1.9		NC	NC	SP
01-408	HMW-22D	SS-9	16.0-18.0	BROWN POORLY GRADED SAND WITH GRAVEL, TRACE FINES	0.0	16.2	7.4	43.3	31.1	2.0		NC	NC	SP
01-406	HMW-23S	SS-8	14.0-15.0	BROWN POORLY GRADED SAND, TRACE FINES, GRAVEL	0.0	0.8	2.3	36.8	56.8	3.3		NC	NC	SP
01-398	HMW-25S	SS-2	2.0-4.0	BROWN SILTY, CLAYEY SAND, LITTLE GRAVEL	0.0	13.8	10.1	22.6	36.7	7.4	9.4	22.0	15.0	SC-SM
01-397	HMW-29D	SS-3	4.0-6.0	BROWN POORLY GRADED SAND, TRACE FINES, GRAVEL	0.0	3.9	7.9	51.0	32.6	4.6		NC	NC	SP
01-399	HMW-29D	SS-8	14.0-16.0	BROWN POORLY GRADED SAND WITH GRAVEL, TRACE FINES	0.0	23.9	18.6	42.7	11.6	3.2		NC	NC	SP
01-404	HMW-32D	SS-11	20.0-22.0	BROWN POORLY GRADED SAND, TRACE GRAVEL, FINES	0.0	8.3	8.0	59.1	22.5	2.1		NC	NC	SP
01-401	HMW-33D	SS-29	50.0-52.0	BROWN SILTY SAND, TRACE GRAVEL, CLAY	0.0	5.4	6.6	30.3	43.9	11.4	2.4	NC	NC	SM

NOTE: NC - Analysis not completed due to lack of fines.

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 5

SUMMARY OF SOIL SAMPLES EXCEEDING RISC COMMERCIAL/INDUSTRIAL DEFAULT CLOSURE LEVELS OR OTHER QUALITATIVE RISK GOALS
AREA A

Soil Boring	Location	Suspected Source	Sample Depth	Compound	Results	Default Closure Level	Units	Exceeded RISC Exposure Media or Pathway Closure Level
GB-3	Former Railroad Spur, Northwest portion of the Underground Pipe & Valve Property	Spills from Prior Parts Degreasing Operations	0.5'-2.0'	Lead	306	230	mg/kg dw	Migration to Groundwater
GB-10	Former Railroad Spur, Outside and South of the South-central Portion of the South Bend Lathe Building	Railroad Ties	0.0'-2.0'	Benzo(a)pyrene	10,900	1,500	ug/kg dw	Direct Contact Exposure
				Benzo(b)flouranthene	16,000	15,000	ug/kg dw	Direct Contact Exposure
				Indeno(1,2,3-cd)pyrene	3,160	3,100	ug/kg dw	Migration to Groundwater
				Cadium	89.2	77	mg/kg dw	Migration to Groundwater
GB-11	Oil Staining Area, Outside and South of the South-central Portion of the South Bend Lathe Property	Probable Cutting Oils	0.0'-1.5'	Lead	628	230	mg/kg dw	Migration to Groundwater
				Benzo(a)pyrene	1,610	1,500	ug/kg dw	Direct Contact Exposure
GB-12	Oil Staining Area, Outside and South of the South-central Portion of the South Bend Lathe Property	Probable Cutting Oils	0.0'-2.0'	Chorium	177	120	mg/kg dw	Migration to Groundwater
				Benzo(a)pyrene	2,650	1,500	ug/kg dw	Direct Contact Exposure
GB-15	Former Railroad Spur, Outside and East of the Northern Portion of Underground Pipe & Valve	Railroad Ties	0.0'-1.0'	Arsenic	27.6	20	mg/kg dw	Direct Contact Exposure
				Lead	391	230	mg/kg dw	Migration to Groundwater
GB-16	Former Railroad, Outside and East of the Central Portion of Underground Pipe &Valve	Railroad Ties	0.0'-0.5'	Benzo(a)pyrene	3,030	1,500	ug/kg dw	Direct Contact Exposure
GB-17	Former Railroad Spur, Outside and east of the Southern Portion of Underground Pipe & Valve	Railroad Ties	0.0'-1.5'	Arsenic	26	20	mg/kg dw	Direct Contact Exposure
				Lead	337	230	mg/kg dw	Migration to Groundwater
GB-19	Former Railroad Spur, Outside and southeast of the Southern Portion of Underground Pipe & Valve	Railroad Ties	0.0'-1.0'	Arsenic	34	20	mg/kg dw	Direct Contact Exposure and Migration to Groundwater
				Lead	429	230	mg/kg dw	Migration to Groundwater
GB-24	Former Railroad Spur, Outside and West of Allied Products Corp. Building 86	Railroad Ties	0.5'-2.0'	Arsenic	35.9	20	ug/kg dw	Direct Contact Exposure and Migration to Groundwater

Table Continues

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 5 (cont'd)

SUMMARY OF SOIL SAMPLES EXCEEDING RISC COMMERCIAL/INDUSTRIAL DEFAULT CLOSURE LEVELS OR OTHER QUALITATIVE RISK GOALS
AREA A

Soil Boring	Location	Suspected Source	Sample Depth	Compound	Results	Defaullt Closure Level	Units	Exceeded RISC Exposure Media or Pathway Closure Level
GB-29	Former Railroad Spur, Outside and Southwest of Allied Products Corp. Building 80	Railroad Ties	0.5'-1.5'	Arsenic	41.5	20	mg/kg dw	Direct Contact Exposure and Migration to Groundwater
				Benzo(a)pyrene	2,620	1,500	ug/kg dw	Direct Contact
GB-31	Former Railroad Spur, Outside and West of Allied Products Corp. Building 79	Railroad Ties	0.0'-1.0'	Lead	429	230	mg/kg dw	Migration to Groundwater
				Benzo(a)pyrene	8,900	1,500	ug/kg dw	Direct Contact Exposure
GB-32	Former Railroad Spur, Outside and South of the Allied Product Corp. Building 86	Railroad Ties	0.0'-1.5'	Benzo(a)pyrene	1,570	1,500	ug/kg dw	Direct Contact Exposure
GB-33	Former Railroad Spur, Outside and east of the Southern Portion of Allied Product Corp. Building 83	Railroad Ties	0.0'-1.0'	Lead	397	230	mg/kg dw	Migration to Groundwater
GB-34	Former Railroad Spur, Outside and East of Allied Products Corp. Building 83	Railroad Ties	0.0'-1.5'	Benzo(a)anthracene	29,200	15,000	ug/kg dw	Direct Contact Exposure
				Benzo(a)pyrene	30,900	1,500	ug/kg dw	Direct Contact Exposure and Migration to Groundwater
				Benzo(b)flouranthane	48,600	15,000	ug/kg dw	Direct Contact Exposure
				Chrysene	36,900	25,000	ug/kg dw	Migration to Groundwater
				Dibenzo(a,h)anthracene	2,530	1,500	ug/kg dw	Direct Contact Exposure
				Indeno(1,2,3-cd)pyrene	8,260	3,100	ug/kg dw	Migration to Groundwater
				Arsenic	34	20	mg/kg dw	Direct Contact Exposure and Migration to Groundwater
GB-35	Former Rairoad Spur, Outside and North of Allied Product Corp. Building 86	Railroad Ties	0.0'-1.5'	Lead	315	230	mg/kg dw	Migration to Groundwater
				Benzo(a)pyrene	1,920	1,500	ug/kg dw	Direct Contact Exposure
GS-2	Probable Spent Foundry Sand and Misc. Debris, Inside theSoutheast Portion of Underground Pipe & Valve	Spent Foundry Sand	Grab	Lead	240	230	mg/kg dw	Migration to Groundwater
				Benzo(a)pyrene	2,820	1,500	ug/kg dw	Direct Contact Exposure
GS-3	Probable Spent Foundry Sand and Misc. Debris, Inside theSoutheast Portion of Underground Pipe & Valve	Spent Foundry Sand	Grab	Arsenic	33.3	20	mg/kg dw	Direct Contact Exposure and Migration to Groundwater
				Lead	259	230	mg/kg dw	Migration to Groundwater

Table Continues

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 5 (cont'd)

SUMMARY OF SOIL SAMPLES EXCEEDING RISC COMMERCIAL/INDUSTRIAL DEFAULT CLOSURE LEVELS OR OTHER QUALITATIVE RISK GOALS
AREA A

Soil Boring	Location	Suspected Source	Sample Depth	Compound	Results	Default Closure Level	Units	Exceeded RISC Exposure Medial or Pathway Closure Level
HA-1	Former Retention Basin, Outside and Souhwest of Underground Pipe & Valve Building	Proabable Fugitive Dust	0.0'-0.5'	Lead	599	230	mg/kg dw	Migration to Groudwater
HA-2	Former Retention Basin, Outside and Souhwest of Underground Pipe & Valve	Probable Fugitive Dust	0.0'-1.0'	Lead	449	230	mg/kg dw	Migration to Groudwater
HA-3	Former Railroad Spur, Outside and South of Underground Pipe & Valve	Railroad Ties	0.0'-1.0'	Arsenic	114	20	mg/kg dw	Direct Contact Exposure and Migration to Groundwater
				Lead	278	230	mg/kg dw	Direct Contact Exposure
				Benzo(a)pyrene	3,100	1,500	ug/kg dw	Direct Contact Exposure
HMW-2S	Former Railroad Spur, Outside and North of Underground Pipe & Valve	Railroad Ties	0.5'-2.0'	Arsenic	25	20	mg/kg dw	Direct Contact Exposure
HMW-4S	Potential Drywell, Outside and East of the Central Portion of the Huckins Building	Probable Fugitive Dust	0.0'-2.0'	Lead	426	230	mg/kg dw	Migration to Groundwater
HMW-7S	Hydraulic Control, Outside and West of the Central Portion of Building 86	Probable Fugitive Dust	0.0'-2.0'	Lead	388	230	mg/kg dw	Migration to Groudwater
HMW-9I	Southern Portion of Allied Products Corp. Building 142	Spills from Prior Parts Degreasing Operations	0.5'-2.0'	Tetrachloroethene	4,740	640	ug/kg dw	Migration to Groundwater[1]
HNW-12S	Former Press Pits, Inside in the Central Portion of Allied Product Corp. Building 80	Probable Fugitive Dust	0.5'-2.0'	Lead	241	230	mg/kg dw	Migration to Groundwater
HMW-13D	Former Press Pits, Inside in the Northern Portion of Allied Product Corp. Building 80	Probable Fugitive Dust	0.5-2.0'	Lead	230,000	230,000	ug/kg dw	Migration to Groundwater
HMW-15S	Oil Staining Area, Outside and South of the South-central Portion of the South Bend Lathe Property	Probable Cutting Oils	4.0'-5.0'	Benzo(a)pyrene	7,610	1,500	ug/kg dw	Direct Contact Exposure

Table Continues

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 5 (cont'd)

SUMMARY OF SOIL SAMPLES EXCEEDING RISC COMMERCIAL/INDUSTRIAL DEFAULT CLOSURE LEVELS OR OTHER QUALITATIVE RISK GOALS
AREA A

Soil Boring	Location	Suspected Source	Sample Depth	Compound	Results	Default Closure Level	Units	Exceeded RISC Exposure Media of Pathway Closure Level
HMW-18S	Former Degreasing Operation, Outside and South of the Eastern Portion of the South Bend Lathe Porperty	Spills from Prior Parts Degreasing Operations	0.0'-1.0'	Benzo(a)pyrene	5,260	1,500	ug/kg dw	Direct Contact Exposure
HMW-22D	Former Railroad Spur, Outside and South of Allied Product Corp. Building 83	Railroad Ties	0.0'-2.0'	Arsenic	21.4	20	mg/kg dw	Direct Contact Exposure
HMW-24D	East and Outside of the Northern Portion of Allied Products Corp. Building 83	Potential Paint Disposal - Otherwise Unknown	0.5'-2.0'	Lead	13,600	230	mg/kg dw	Construction Worker and Direct Contact Exposure and Migration to Groundwater
HMW-27S	Former Railroad Spur, Outside and East of the South Bend Lathe Building	Railroad Ties	0.0'-1.5'	Benzo(a)pyrene	5,970	1,500	ug/kg dw	Direct Contact Exposure
HMW-33D	South-central Portion of Allied Products Corp. Building 83	Potential Paint Disposal - Otherwise Unknown	0.0'-2.0'	Lead	2,720	230	mg/kg dw	Construction Worker and Direct Contact Exposure and Migration to Groundwater
SB-1	Former UST Location, Outside and North of the Huckins Tool & Die Building	Probable Used Oils	10.0'-11.5'	PCBs	5.31	5.3	mg/kg dw	Direct Contact Exposure
SB-5	Former Retention Basin, Outside and Southwest of Underground Pipe & Valve	Railroad Ties	0.0'-1.5'	Arsenic	57.1	20	mg/kg dw	Direct Contact Exposure and Migration to Groundwater

Note:

1. - Based on Hull's experience modeling volatilization to indoor air in soils similar to those seen at the Site, the concentration of tetrachloroethene detected in a surface soil sample at HMW-9I may result in also unacceptable risk.

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 6

SUMMARY OF GROUNDWATER NEAR OR BEYOND THE POINT OF COMPLIANCE EXCEEDING RISC COMMERCIAL/INDUSTRIAL DEFAULT CLOSURE LEVELS AREA A

Soil Boring	Location	Suspected Source	Sample Date	Compound	Results (ug/L)	Cleanup Goal (ug/L)
HMW-23S	Near Northeast Corner of Allied Products Corp Building 82, ~140 ft. West of Point of Compliance	Releases from fuel storage or transfer (1,2,4-Trimethylbenzene is a constituent of petroleum fuels - particularly gasoline)	9/18/01	1,2,4-Trimethylbenzene	7,740	5,110[1]
HMW-25S	East of Allied Products Corp Building 78, ~250 ft. West of Point of Compliance	Potential change in redox conditions within or near the "oil zone" may allow mobilization of arsenic in groundwater. Other potential sources include paints, railroad ties or past wood treating operations during lumber yard operations.	9/19/01	Arsenic	647	50
		Potential releases from leaded fuel storage or transfer. Potential releases from used oil storage or spills. Potential use in paints.	9/19/01	Lead	1,410	42
HMW-26S	Immediately West of Guard Shack on South Bend Lathe Property, ~160 ft. West of Point of Compliance	Potential change in redox conditions within or near the "oil zone" may allow mobilization of arsenic in groundwater. Other potential sources include paints, railroad ties or past wood treating operations during lumber yard operations.	9/19/01	Arsenic	112	50
		Potential releases from leaded fuel storage or transfer. Potential releases from used oil storage or spills. Potential use in paints.	9/19/01	Lead	127	42
HMW-27S	Between South Bend Lathe Building and Former Engineering Building, ~260 ft. West and ~280 ft. South of Point of Compliance	Potential change in redox conditions within or near the "oil zone" may allow mobilization of arsenic in groundwater. Other potential sources include paints, railroad ties or past wood treating operations during lumber yard operations.	9/19/01	Arsenic	144	50
		Potential releases from leaded fuel storage or transfer. Potential releases from used oil storage or spills. Potential use in paints.	9/19/01	Lead	240	42
		Downgradient of former degreasing operations in southeast portion of South Bend Lathe building. Downgradient of probably source areas on Allied Products Corp. property (beneath buildings 86 and 142). Potential contribution from off-Site sources.	9/19/01	Tetrachloroethene	136	55

Table Continues

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF SOUTH BEND, INDIANA

TABLE 6 (Cont'd)

SUMMARY OF GROUNDWATER NEAR OR BEYOND THE POINT OF COMPLIANCE EXCEEDING RISC COMMERCIAL/INDUSTRIAL DEFAULT CLOSURE LEVELS AREA A

Soil Boring	Location	Suspected Source	Sample Date	Compound	Results (ug/L)	Cleanup Goal (ug/L)
HMW-31S	North of Sample Street on County Jail Property, ~ 90 ft. Outside (north) of Point of Compliance	Potential change in redox conditions within or near the "oil zone" may allow mobilization of arsenic in groundwater. Other potential sources include paints, railroad ties or past wood treating operations during lumber yard operations.	9/17/01	Arsenic	121	50
		Potential releases from leaded fuel storage or transfer. Potential releases from used oil storage or spills. Potential use in paints.	9/17/01	Lead	387	42
HMW-32I	North of Sample Street on County Jail Property, ~ 80 ft. Outside (north) of Point of Compliance	Downgradient of former degreasing operations in southeast portion of South Bend Lathe building. Downgradient of probably source areas on Allied Products Corp. property (beneath buildings 86 and 142). Potential contribution from off-Site sources.	9/14/01	Tetrachloroethene	363	55
HMW-33S	In South-central Portion of Allied Products Corp. Building 83, ~210 ft. West of Point of Compliance	Potential releases from leaded fuel storage or transfer. Potential releases from used oil storage or spills. Potential use in paints.	9/19/01	Lead	132	42
HP-1[3.]	Near Northeast Corner of Engineering Building, ~ Five ft. South of Point of Compliance	Downgradient of former degreasing operations in southeast portion of South Bend Lathe building. Downgradient of probably source areas on Allied Products Corp. property (beneath buildings 86 and 142). Potential contribution from off-Site sources.	5/14/01	Tetrachloroethene	165	55
		Downgradient of former degreasing operations in southeast portion of South Bend Lathe building. Downgradient of probably source areas on Allied Products Corp. property (beneath buildings 86 and 142). Potential contribution from off-Site sources.	5/14/01	Tetrachloroethene	64.3	55

Notes:

1. - Cleanup goals derived using equations in the VRP Resource Guide (Appendix F), July 1996.
2. - Direct-push (hydropunch) sampling location, completed before initiation of the Initial Phase II ESA. Sample containing 165 ug/L tetrachloroethene was collected from depth interval of 26'-30'. Sample containing 64 ug/L tetrachloroethen was collected from depth interval of 36'-40'.

SBI002.100.0001.DWG
12/06/01 BKRALL

TAKEN FROM U.S.G.S. 7.5 MIN. QUAD MAP
SOUTH BEND EAST, INDIANA - 1958
SOUTH BEND WEST, INDIANA - 1969

0 1/2 MILE 1 MILE

1000 0 1000 2000 3000 4000 5000 FEET

1 0.5 0 1 KILOMETER

QUADRANGLE LOCATION

Hull & Associates, Inc.
TOLEDO, OHIO

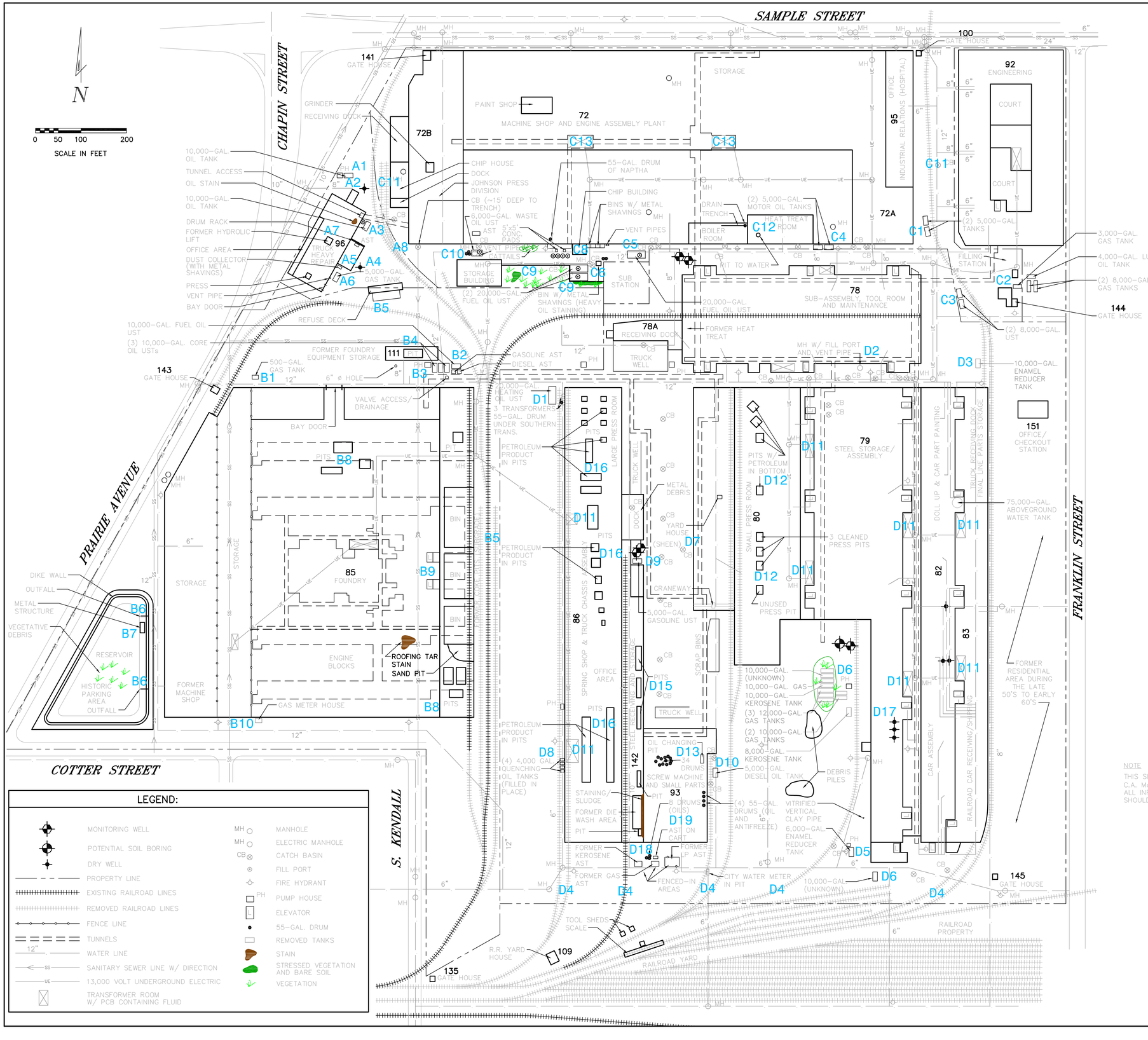
INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT

FIGURE 1
AREA A PROPERTIES

CITY OF SOUTH BEND, ST. JOSEPH CO., INDIANA

DATE: FEBRUARY 2002

SBI002



LEGEND:

- MONITORING WELL
- POTENTIAL SOIL BORING
- DRY WELL
- PROPERTY LINE
- EXISTING RAILROAD LINES
- REMOVED RAILROAD LINES
- FENCE LINE
- TUNNELS
- WATER LINE
- SANITARY SEWER LINE W/ DIRECTION
- 13,000 VOLT UNDERGROUND ELECTRIC
- TRANSFORMER ROOM W/ PCB CONTAINING FLUID
- MANHOLE
- ELECTRIC MANHOLE
- CATCH BASIN
- FILL PORT
- FIRE HYDRANT
- PUMP HOUSE
- ELEVATOR
- 55-GAL. DRUM
- REMOVED TANKS
- STAIN
- STRESSED VEGETATION AND BARE SOIL
- VEGETATION

(REC)	(REC) RECOGNIZED ENVIRONMENTAL CONDITION ITEM
HUCKINS TOOL & DIE PROPERTY (PROPERTY A)	
A1	10,000-GALLON UST REPORTEDLY STORED OIL WAS LOCATED ON THE NORTH PORTION OF THE HUCKINS PROPERTY
A2	DRYWELL LOCATED NORTH OF THE HUCKINS PROPERTY
A3	10,000-GALLON UST REPORTEDLY STORED OIL WAS LOCATED NEAR THE EXTERIOR NORTHEAST CORNER OF THE HUCKINS PROPERTY
A4	DRYWELL LOCATED EAST OF THE EAST BUILDING ADDITION
A5	DUST COLLECTOR AND METAL SHAVINGS LOCATED AT THE EXTERIOR SOUTHWEST CORNER OF THE EAST BUILDING ADDITION
A6	5,000-GALLON UST REPORTEDLY STORED GASOLINE IS LOCATED IN THE SOUTH PORTION OF THE BUILDING
A7	FORMER HYDRAULIC LIFT LOCATED CENTRALLY IN THE HUCKINS BUILDING
A8	FORMER RAILS LOCATED ON THE EAST PORTION OF THE PROPERTY
UNDERGROUND PIPE & VALVE PROPERTY (PROPERTY B)	
B1	500-GALLON UST REPORTEDLY STORED GAS, LOCATED NORTH OF THE WEST PORTION OF THE MAIN BUILDING
B2	10,000 GALLON UST REPORTEDLY STORED FUEL OIL, LOCATED NORTH OF THE EAST PORTION OF THE MAIN BUILDING
B3	THREE 10,000-GALLON CORE OIL TANKS LOCATED NORTH OF THE EAST PORTION OF THE MAIN BUILDING
B4	A PIT WITH STEEL-PLATE COVER LOCATED NORTHWEST OF THE FORMER PUMP HOUSE
B5	FORMER RAILS LOCATED ON THE EAST AND NORTH PORTIONS OF THE PROPERTY
B6	TWO OUTFALLS FROM THE DIRECTION OF THE FACILITY TO THE RESERVOIR LOCATED ON THE SOUTHWEST PORTION OF THE PROPERTY
B7	HALF-BURRIED METAL STRUCTURE (POTENTIAL TANK) LOCATED IN THE EAST WALL OF THE RESERVOIR
B8	NUMEROUS PITS LOCATED INSIDE THE FOUNDRY FILLED WITH WOOD AND METAL DEBRIS
B9	BINS WITH SAND AND POTENTIAL HISTORIC COKE PITS LOCATED AT THE EASTERN PORTION OF THE U P & V BUILDING
B10	FOUR HISTORIC ASTs LOCATED AT THE SOUTH END OF THE BUILDING
SOUTH BEND LATHE PROPERTY (PROPERTY C)	
C1	TWO 5,000-GALLON USTs WITH UNKNOWN CONTENTS LOCATED EAST OF THE SOUTHERN PORTION OF THE BUILDING
C2	3,000-GALLON GAS TANK LOCATED SOUTH OF THE ENGINEERING BUILDING
C3	TWO 8,000-GALLON USTs OF UNKNOWN CONTENTS LOCATED SOUTH OF THE ENGINEERING BUILDING
C4	TWO 5,000 GALLON USTs REPORTEDLY CONTAINING MOTOR OIL, LOCATED SOUTH OF THE EASTERN PORTION OF THE BUILDING
C5	20,000-GALLON UST REPORTEDLY CONTAINING FUEL OIL, LOCATED NORTH OF THE AEP PROPERTY
C6	TWO 20,000-GALLON USTs REPORTEDLY CONTAINING FUEL OIL, LOCATED WEST OF THE AEP PROPERTY
C7	HEAVY OIL STAINING BY THE TRASH BIN CONTAINING METAL SHAVINGS AND ASSOCIATED CATCH BASIN
C8	OIL STAINING BY THE WOOD BINS LOCATED EAST OF THE CHIP HOUSE ON THE SOUTH SIDE OF THE MAIN BUILDING AND ASSOCIATED CATCH BASIN
C9	AREAS OF STRESSED VEGETATION AND BARE SOIL LOCATED BETWEEN THE AEP PROPERTY AND THE METAL STORAGE BUILDING
C10	6,000-GALLON UST REPORTEDLY CONTAINING WASTE OIL, LOCATED SOUTH OF THE WEST PORTION OF THE BUILDING
C11	FORMER RAILS LOCATED ON THE WEST AND EAST PORTIONS OF THE PROPERTY
C12	PIT LOCATED IN THE HEAT TREAT ROAM LOCATED IN THE SOUTH PORTION OF THE MAIN BUILDING
C13	POTENTIAL RELEASES FROM THE PCB-CONTAINING TRANSFORMERS LOCATED IN THE BUILDING
ALLIED CORPORATION PROPERTY (PROPERTY D)	
D1	20,000-GALLON UST REPORTEDLY CONTAINING HEATING OIL LOCATED NEAR THE NORTHWEST CORNER OF BUILDING 78
D2	POTENTIAL UST OF UNKNOWN SIZE AND CONTENTS LOCATED SOUTH OF BUILDING 78 APPROX. 130 FEET WEST OF THE SOUTHEAST CORNER OF THE BUILDING
D3	10,000-GALLON ENAMEL REDUCER TANK (REMOVED), LOCATED ON THE NORTHEAST PORTION OF THE PROPERTY
D4	FORMER AND CURRENT RAILS LOCATED ON THE PROPERTY
D5	6,000-GALLON ENAMEL REDUCER TANK, LOCATED WEST OF THE SOUTH END OF BUILDING 79
D6	TANK FARM FORMERLY COMPRISED TEN USTs REPORTEDLY CONTAINING GASOLINE AND KEROSENE
D7	CATCH BASIN WITH AN OILY SHEEN LOCATED WEST OF BUILDING 80
D8	FOUR 4,000-GALLON USTs REPORTEDLY CONTAINING TCE AND FUEL OIL LOCATED WEST OF BUILDING 86
D9	5,000-GALLON UST REPORTEDLY CONTAINING GASOLINE, LOCATED EAST OF THE CENTRAL PORTION OF BUILDING 86
D10	5,000-GALLON UST REPORTEDLY CONTAINING DIESEL FUEL, LOCATED EAST OF BUILDING 93
D11	POTENTIAL RELEASES FROM PCB-CONTAINING TRANSFORMERS
D12	PRESS PITS WITH PETROLEUM PRODUCT LOCATED INSIDE BUILDING 80
D13	OIL CHANGE PIT LOCATED NEAR THE NORTHEAST CORNER OF BUILDING 93
D14	FORMER DIE WASH AREA LOCATED AT THE SOUTH END OF BUILDING 80
D15	PRESS PITS WITH PETROLEUM PRODUCT LOCATED INSIDE BUILDING 142
D16	PRESS PITS WITH PETROLEUM PRODUCT LOCATED INSIDE BUILDING 86
D17	THREE POTENTIAL DRYWELLS LOCATED IN THE SOUTHERN PORTION OF BUILDING 79
D18	POTENTIAL RELEASES FORM ASTs AND 55-GALLON DRUMS LOCATED SOUTH OF BUILDING 93
D19	POTENTIAL RELEASES FROM SOLVENT ASTs HISTORICALLY LOCATED AT THE SOUTH END OF BUILDING 93

NOTE

THIS SITE MAP WAS CREATED FROM DRAWINGS PROVIDED BY C. RIGHTLEY, C.A. McCARRISON (DRAWING #56652, 6/48), AND THE SIDWELL COMPANY. ALL INFORMATION REPRESENTED ON THIS DRAWING IS APPROXIMATE AND SHOULD BE USED FOR GENERAL PURPOSES ONLY.

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REGISTERED ENGINEER

DATE

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT FOR AREA A

OWNER: CITY OF SOUTH BEND DEPARTMENT OF COMMUNITY AND ECONOMIC DEVELOPMENT SOUTH BEND, INDIANA

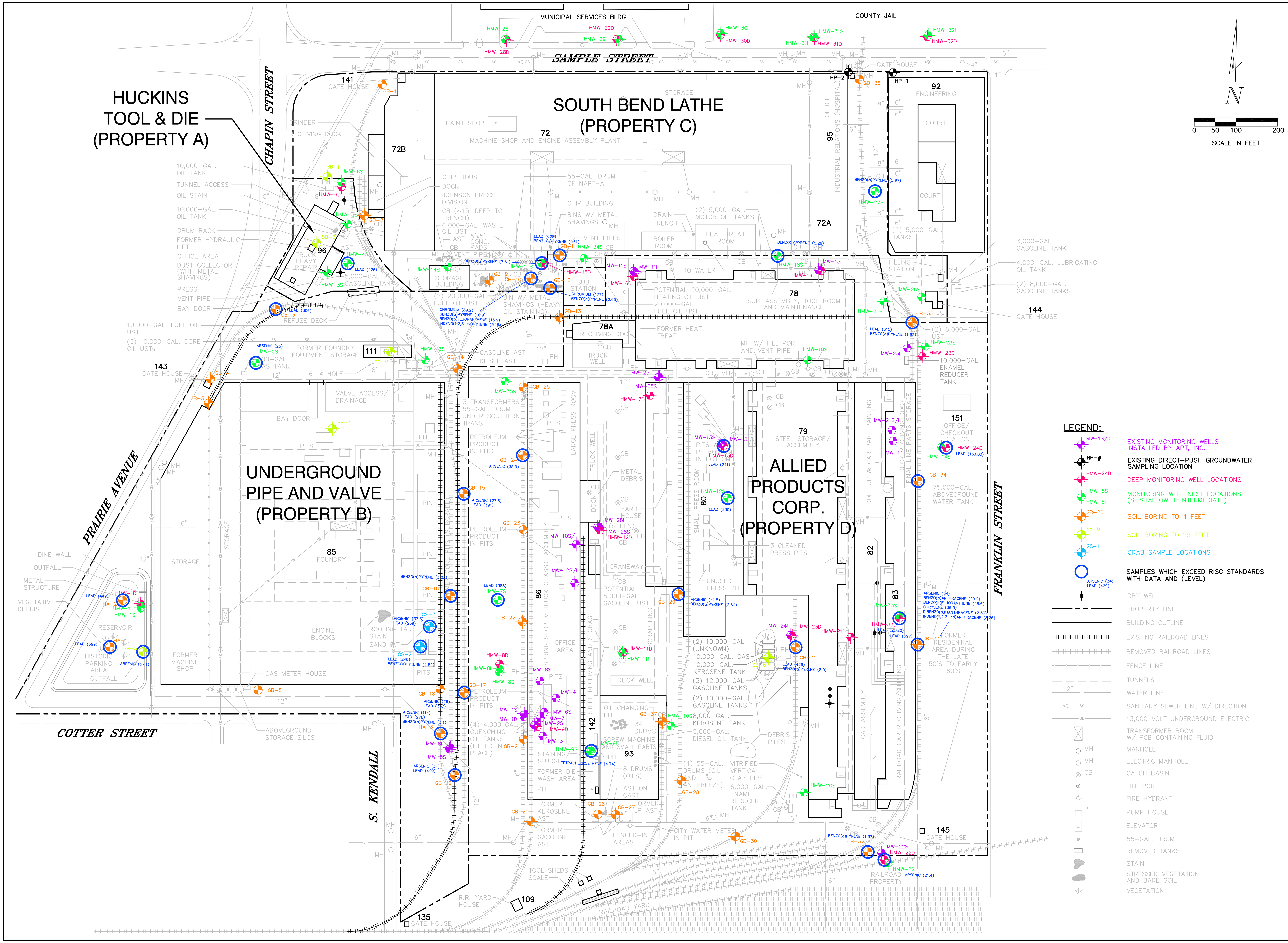
MARK	DATE	DESCRIPTION

PROJECT NO.:	SBI002
CAD DWG FILE:	SBI002.100.0014
PLOT DATE:	2/18/02
LAYOUT BY:	TB
DRAWN BY:	GAC
CHECKED BY:	LT
SCALE:	1"=100'
SUBMITTAL DATE:	DECEMBER 2001

SHEET TITLE:

FIGURE 2
RECOGNIZED ENVIRONMENTAL CONDITIONS PLAN

SHEET OF



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INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT

REGISTERED ENGINEER | DATE

OWNER:

MARK | DATE | DESCRIPTION

PROJECT NO.:	SBI002
CAD DWG FILE:	SBI002.100.0021
PLOT DATE:	2/13/02
LAYOUT BY:	TB
DRAWN BY:	DB
CHECKED BY:	LT
SCALE:	1"=100'
SUBMITTAL DATE:	

SHEET TITLE:

FIGURE 4

SOIL CONCENTRATION EXCEEDING RISC COMMERCIAL/INDUSTRIAL DEFAULT CLOSURE LEVELS

SHEET 1 OF 1

MUNICIPAL SERVICES BLDG

COUNTY JAIL

SAMPLE STREET

HUCKINS TOOL & DIE (PROPERTY A)

CHAPIN STREET

SOUTH BEND LATHE (PROPERTY C)

PRAIRIE AVENUE

UNDERGROUND PIPE AND VALVE (PROPERTY B)

ALLIED PRODUCTS CORP. (PROPERTY D)

FRANKLIN STREET

COTTER STREET

S. KENDALL

N

0 50 100 200

SCALE IN FEET

LEGEND:

- MW-1S/D — EXISTING MONITORING WELLS INSTALLED BY APT, INC.
- HP-# — EXISTING DIRECT-PUSH GROUNDWATER SAMPLING LOCATION
- HMW-24D — DEEP MONITORING WELL LOCATIONS
- HMW-8S / HMW-8I — MONITORING WELL NEST LOCATIONS (S=SHALLOW, I=INTERMEDIATE)
- GB-20 — SOIL BORING TO 4 FEET
- SB-5 — SOIL BORING TO 25 FEET
- CS-1 — GRAB SAMPLE LOCATIONS
- DRY WELL
- PROPERTY LINE
- BUILDING OUTLINE
- EXISTING RAILROAD LINES
- REMOVED RAILROAD LINES
- LOCATION WHERE GROUNDWATER EXCEEDS COMMERCIAL/INDUSTRIAL LEVELS
- LOCATION WHERE GROUNDWATER EXCEEDS RESIDENTIAL LEVELS

Hull & Associates, Inc.
ENGINEERS - GEOLOGISTS - SCIENTISTS - PLANNERS
4700 DUKE DRIVE
SUITE 172
MASON, OHIO 45040
PHONE: (513) 459-9677
FAX: (513) 459-9869
www.hullinc.com

REGISTERED ENGINEER

DATE

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT FOR AREA A

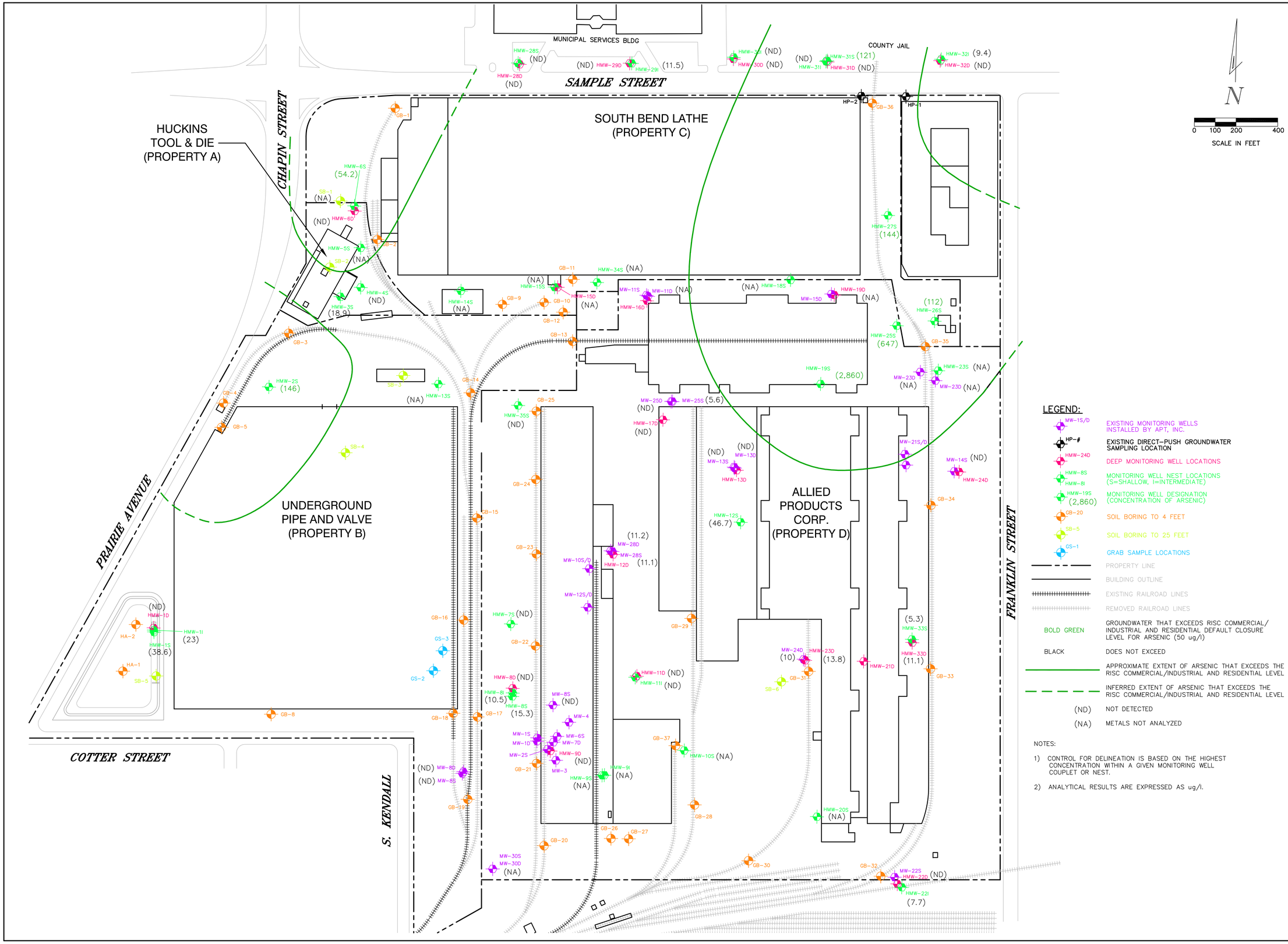
OWNER: CITY OF SOUTH BEND DEPARTMENT OF COMMUNITY AND ECONOMIC DEVELOPMENT SOUTH BEND, INDIANA

MARK	DATE	DESCRIPTION

PROJECT NO.:	SBI002
CAD DWG FILE:	SBI002.100.0013
PLOT DATE:	2/19/02
LAYOUT BY:	TB
DRAWN BY:	GAC
CHECKED BY:	LT
SCALE:	1"=100'
SUBMITTAL DATE:	DECEMBER 2001

SHEET TITLE:

PLATE 5
EXTENT OF COCs IN GROUNDWATER EXCEEDING RISC COMMERCIAL/INDUSTRIAL AND RESIDENTIAL DEFAULT CLOSURE LEVELS



LEGEND:

- MW-1S/D — EXISTING MONITORING WELLS INSTALLED BY APT, INC.
- HP-# — EXISTING DIRECT-PUSH GROUNDWATER SAMPLING LOCATION
- HMW-24D — DEEP MONITORING WELL LOCATIONS
- HMW-8S / HMW-8I — MONITORING WELL NEST LOCATIONS (S=SHALLOW, I=INTERMEDIATE)
- HMW-19S (2,860) — MONITORING WELL DESIGNATION (CONCENTRATION OF ARSENIC)
- GB-20 — SOIL BORING TO 4 FEET
- SB-5 — SOIL BORING TO 25 FEET
- GS-1 — GRAB SAMPLE LOCATIONS
- PROPERTY LINE
- BUILDING OUTLINE
- EXISTING RAILROAD LINES
- REMOVED RAILROAD LINES
- BOLD GREEN — GROUNDWATER THAT EXCEEDS RISC COMMERCIAL/INDUSTRIAL AND RESIDENTIAL DEFAULT CLOSURE LEVEL FOR ARSENIC (50 ug/l)
- BLACK — DOES NOT EXCEED
- APPROXIMATE EXTENT OF ARSENIC THAT EXCEEDS THE RISC COMMERCIAL/INDUSTRIAL AND RESIDENTIAL LEVEL
- INFERRED EXTENT OF ARSENIC THAT EXCEEDS THE RISC COMMERCIAL/INDUSTRIAL AND RESIDENTIAL LEVEL
- (ND) — NOT DETECTED
- (NA) — METALS NOT ANALYZED

NOTES:

1) CONTROL FOR DELINEATION IS BASED ON THE HIGHEST CONCENTRATION WITHIN A GIVEN MONITORING WELL COUPLET OR NEST.

2) ANALYTICAL RESULTS ARE EXPRESSED AS ug/l.

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www.hullinc.com

REGISTERED ENGINEER

DATE

PHASE II ENVIRONMENTAL SITE ASSESSMENT

INITIAL

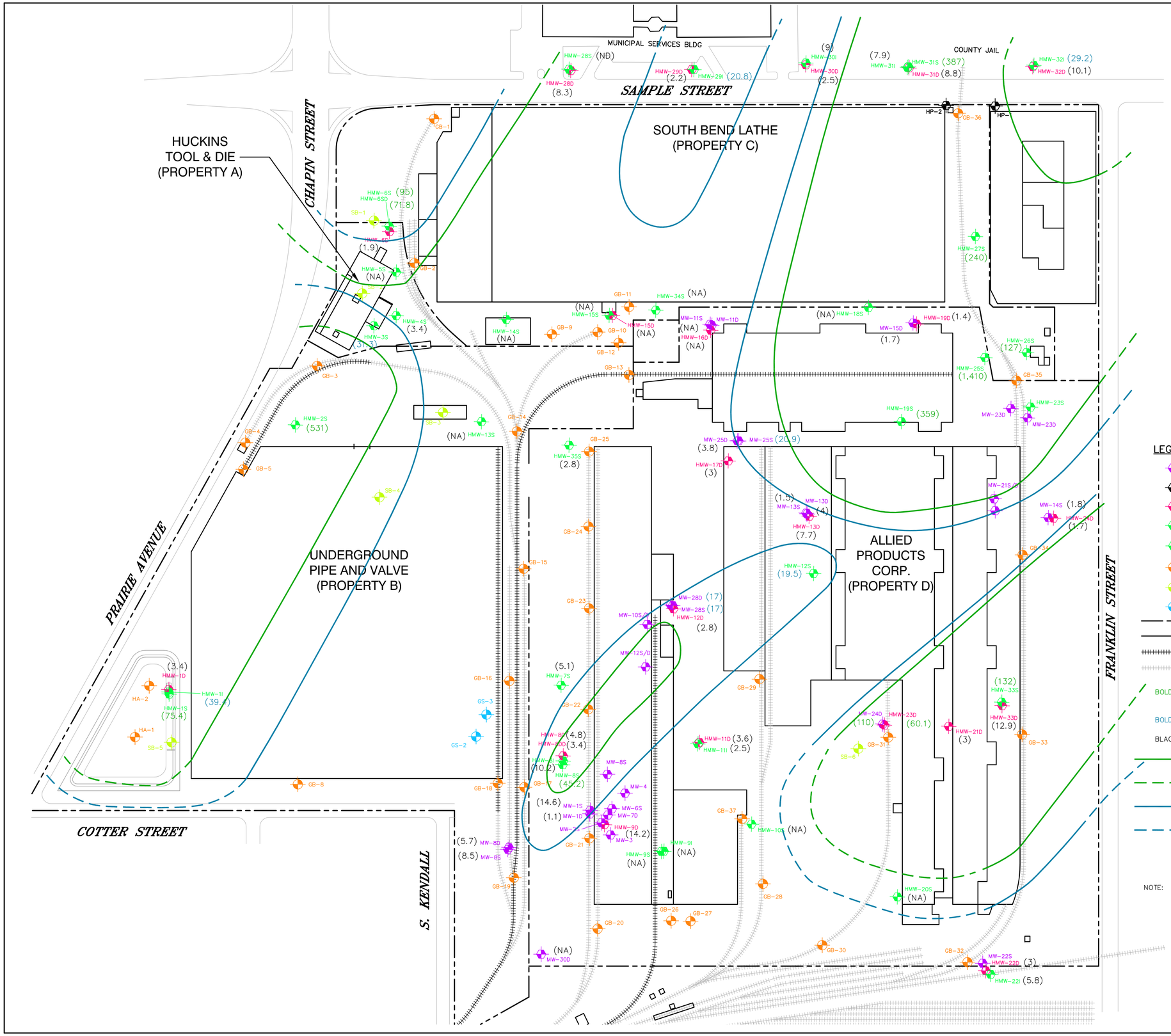
OWNER:

MARK	DATE	DESCRIPTION

PROJECT NO.:	SBI002
CAD DWG FILE:	SBI002.100.0017
PLOT DATE:	2/20/02
LAYOUT BY:	TB
DRAWN BY:	GAC
CHECKED BY:	LT
SCALE:	1"=200'
SUBMITTAL DATE:	FEBRUARY 2002

SHEET TITLE:

FIGURE 6
DISTRIBUTION OF ARSENIC IN GROUNDWATER EXCEEDING RISC COMMERCIAL/ INDUSTRIAL AND RESIDENTIAL DEFAULT CLOSURE LEVELS



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FAX: (513) 459-9869
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REGISTERED ENGINEER

DATE

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT

OWNER:

DESCRIPTION	DATE	MARK

PROJECT NO.:	SBI002
CAD DWG FILE:	SBI002.100.0018
PLOT DATE:	2/20/02
LAYOUT BY:	TB
DRAWN BY:	GAC
CHECKED BY:	LT
SCALE:	1"=200'
SUBMITTAL DATE:	FEBRUARY 2002

SHEET TITLE:

FIGURE 7
DISTRIBUTION OF LEAD IN GROUNDWATER EXCEEDING RISC COMMERCIAL/ INDUSTRIAL AND RESIDENTIAL DEFAULT CLOSURE LEVELS

MUNICIPAL SERVICES BLDG

COUNTY JAIL

SAMPLE STREET

CHAPIN STREET

HUCKINS TOOL & DIE (PROPERTY A)

SOUTH BEND LATHE (PROPERTY C)

UNDERGROUND PIPE AND VALVE (PROPERTY B)

ALLIED PRODUCTS CORP. (PROPERTY D)

PRAIRIE AVENUE

FRANKLIN STREET

COTTER STREET

S. KENDALL

N

0 50 100 200

SCALE IN FEET

LEGEND:

- MW-1S/D — EXISTING MONITORING WELLS INSTALLED BY APT, INC.
- HP-# — EXISTING DIRECT-PUSH GROUNDWATER SAMPLING LOCATION
- HMW-24D — DEEP MONITORING WELL LOCATIONS
- HMW-8S / HMW-8I — MONITORING WELL NEST LOCATIONS (S=SHALLOW, I=INTERMEDIATE)
- HMW-19S (185) — MONITORING WELL DESIGNATION (CONCENTRATION OF TETRACHLOROETHENE)
- GB-20 — SOIL BORING TO 4 FEET
- SB-5 — SOIL BORING TO 25 FEET
- GS-1 — GRAB SAMPLE LOCATIONS
- PROPERTY LINE
- BUILDING OUTLINE
- EXISTING RAILROAD LINES
- REMOVED RAILROAD LINES
- BOLD GREEN — GROUNDWATER THAT EXCEEDS RISC COMMERCIAL/INDUSTRIAL DEFAULT CLOSURE LEVELS (55ug/l)
- BOLD BLUE — GROUNDWATER THAT EXCEEDS RISC RESIDENTIAL DEFAULT CLOSURE LEVELS (5 ug/l)
- BLACK — DOES NOT EXCEED
- APPROXIMATE EXTENT OF TETRACHLOROETHENE THAT EXCEEDS THE RISC COMMERCIAL/INDUSTRIAL LEVEL
- INFERRED EXTENT OF TETRACHLOROETHENE THAT EXCEEDS THE RISC COMMERCIAL/INDUSTRIAL LEVEL
- APPROXIMATE EXTENT OF TETRACHLOROETHENE THAT EXCEEDS THE RISC RESIDENTIAL LEVEL
- INFERRED EXTENT OF TETRACHLOROETHENE THAT EXCEEDS THE RISC RESIDENTIAL LEVEL
- (ND) — NOT DETECTED

NOTES:

1) CONTROL FOR DELINEATION IS BASED ON THE HIGHEST CONCENTRATION WITHIN A GIVEN MONITORING WELL COUPLET OR NEST.

2) ANALYTICAL RESULTS ARE EXPRESSED AS ug/l.

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www.hullinc.com

REGISTERED ENGINEER

DATE

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT

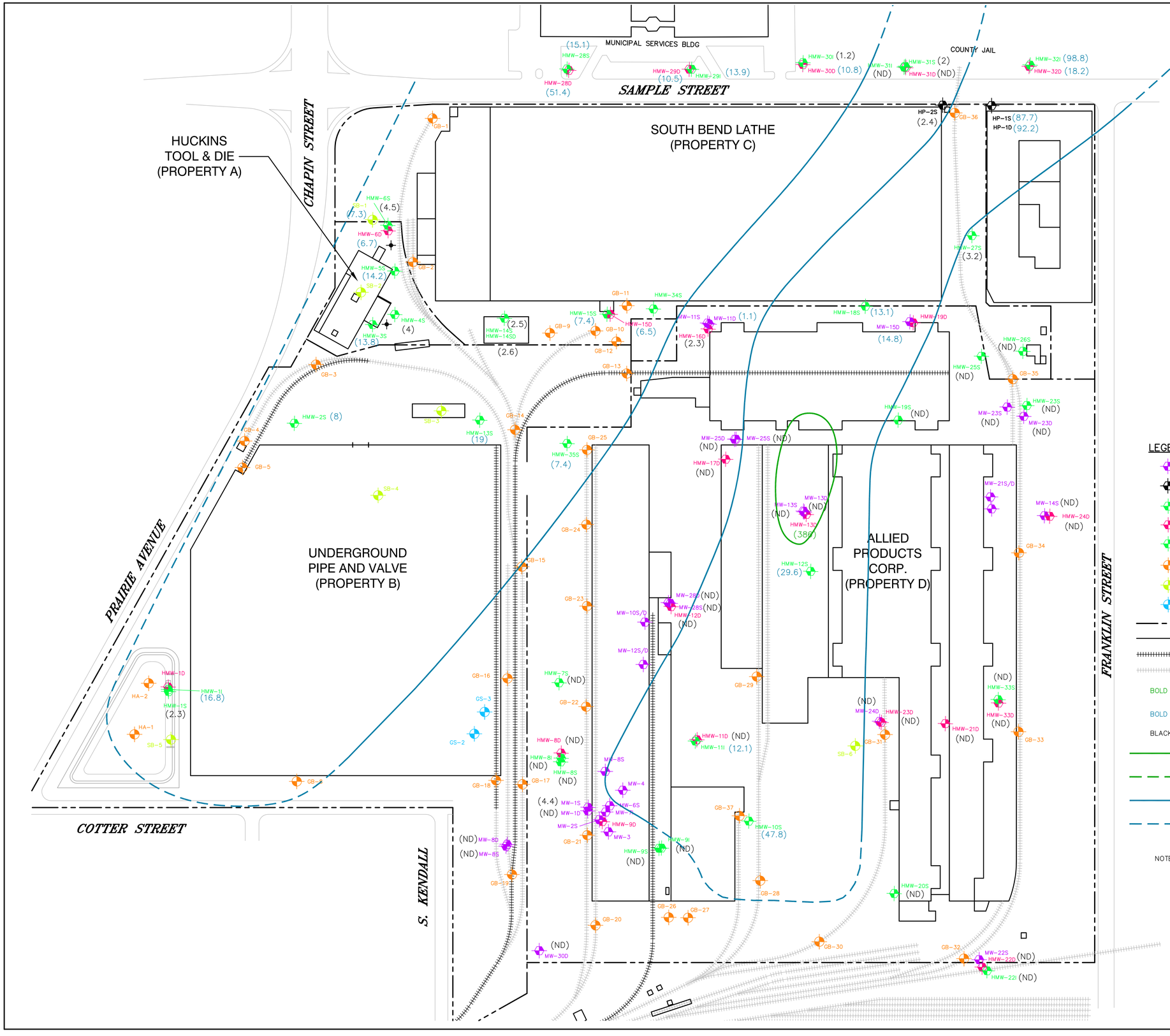
OWNER:

MARK	DATE	DESCRIPTION

PROJECT NO.:	SBI002
CAD DWG FILE:	SBI002.100.0019
PLOT DATE:	2/20/02
LAYOUT BY:	TB
DRAWN BY:	GAC
CHECKED BY:	LT
SCALE:	1"=100'
SUBMITTAL DATE:	FEBRUARY 2002

SHEET TITLE:

FIGURE 8
DISTRIBUTION OF TETRACHLOROETHENE IN GROUNDWATER EXCEEDING RISC COMMERCIAL/INDUSTRIAL AND RESIDENTIAL DEFAULT CLOSURE LEVELS



LEGEND:

- MW-1S/D — EXISTING MONITORING WELLS INSTALLED BY APT, INC.
- HP-# — EXISTING DIRECT-PUSH GROUNDWATER SAMPLING LOCATION
- HMW-12S (29.6) — MONITORING WELL DESIGNATION WITH TRICHLOROETHENE CONCENTRATION
- HMW-24D — DEEP MONITORING WELL LOCATIONS
- HMW-8S / HMW-8I — MONITORING WELL NEST LOCATIONS (S=SHALLOW, I=INTERMEDIATE)
- GB-20 — SOIL BORING TO 4 FEET
- SB-5 — SOIL BORING TO 25 FEET
- GS-1 — GRAB SAMPLE LOCATIONS
- PROPERTY LINE
- BUILDING OUTLINE
- EXISTING RAILROAD LINES
- REMOVED RAILROAD LINES
- BOLD GREEN — GROUNDWATER THAT EXCEEDS RISC COMMMERCIAL/ INDUSTRIAL DEFAULT CLOSURE LEVELS (260 ug/l)
- BOLD BLUE — GROUNDWATER THAT EXCEEDS RISC RESIDENTIAL DEFAULT CLOSURE LEVELS (5 ug/l)
- BLACK — DOES NOT EXCEED
- APPROXIMATE EXTENT OF TRICHLOROETHENE THAT EXCEEDS THE RISC COMMERCIAL/INDUSTRIAL LEVEL
- INFERRED EXTENT OF TRICHLOROETHENE THAT EXCEEDS THE RISC COMMERCIAL/INDUSTRIAL LEVEL
- APPROXIMATE EXTENT OF TRICHLOROETHENE THAT EXCEEDS THE RISC RESIDENTIAL LEVEL
- INFERRED EXTENT OF TRICHLOROETHENE THAT EXCEEDS THE RISC RESIDENTIAL LEVEL

NOTE: CONTROL FOR DELINEATION IS BASED ON THE HIGHEST CONCENTRATION WITHIN A GIVEN MONITORING WELL COUPLET OR NEST.

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www.hullinc.com

REGISTERED ENGINEER

DATE

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT

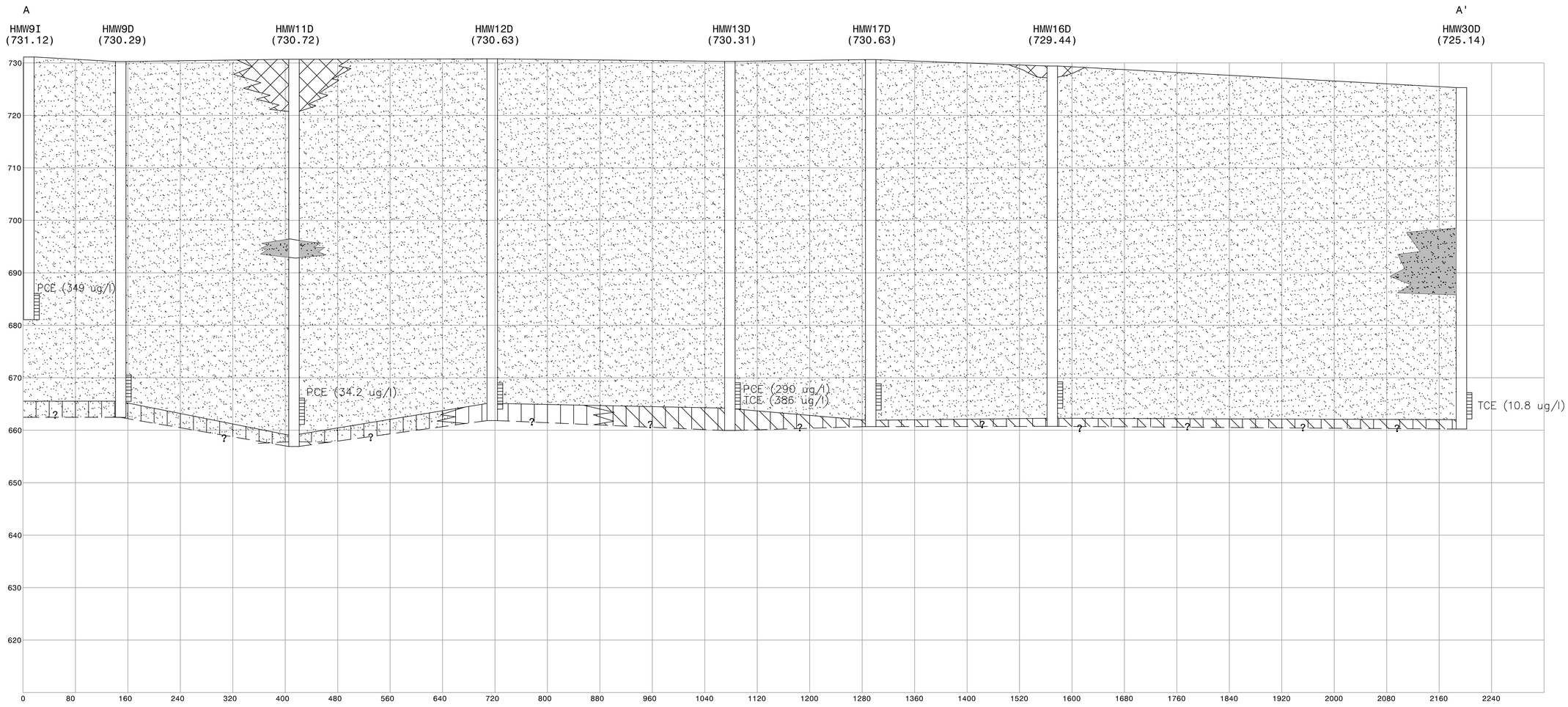
OWNER:

MARK	DATE	DESCRIPTION

PROJECT NO.:	SBI002
CAD DWG FILE:	SBI002.100.0020
PLOT DATE:	2/20/02
LAYOUT BY:	TB
DRAWN BY:	GAC
CHECKED BY:	LT
SCALE:	1"=100'
SUBMITTAL DATE:	FEBRUARY 2002

SHEET TITLE:

FIGURE 9
DISTRIBUTION OF TRICHLOROETHENE IN GROUNDWATER EXCEEDING RISC COMMERCIAL/ INDUSTRIAL AND RESIDENTIAL DEFAULT CLOSURE LEVELS



SCALE:
1" = 10' VERTICAL
1" = 80' HORIZONTAL

SCREENED INTERVAL

POTENTIOMETRIC SURFACE AND

Pb (30 ug/l)	LEAD (CONCENTRATION)
As (30 ug/l)	ARSENIC (CONCENTRATION)
PCE (30 ug/l)	TETRACHLOROETHENE (CONCENTRATION)
TCE (30 ug/l)	TRICHLOROETHENE (CONCENTRATION)

LEGEND

FILL: FINE TO COARSE SAND WITH MINOR AMOUNTS OF GRAVEL, SILT, CLAY, BRICKS, CONCRETE AND/OR ASPHALT FRAGMENTS

SAND: FINE TO COARSE SAND WITH MINOR AMOUNTS OF GRAVEL, SILT AND/OR CLAY

SILT: SILT WITH MINOR AMOUNTS OF CLAY, SAND, AND/OR GRAVEL

SANDY SILT: SILT WITH FINE TO COARSE SAND AND MINOR AMOUNTS OF CLAY AND/OR GRAVEL

SILTY SAND: FINE TO COARSE SAND WITH SILT AND MINOR AMOUNTS OF CLAY AND/OR GRAVEL

CLAYEY SILT: SILT WITH CLAY AND MINOR AMOUNTS OF FINE TO MEDIUM SAND AND/OR GRAVEL

SILTY CLAY: CLAY WITH SILT AND MINOR AMOUNTS OF FINE TO MEDIUM SAND, AND/OR GRAVEL

SANDY CLAY: CLAY WITH SAND AND MINOR AMOUNTS OF CLAY AND/OR GRAVEL

SAND: SAND WITH BLACK STAINING

Hull & Associates, Inc.
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3401 GLENDALE AVENUE
SUITE 300
TOLEDO, OHIO 43614
PHONE: (419) 385-2018
FAX: (419) 385-5487
www.hullinc.com

REGISTERED ENGINEER

DATE

INITIAL PHASE II ENVIRONMENTAL
SITE ASSESSMENT FOR AREA A

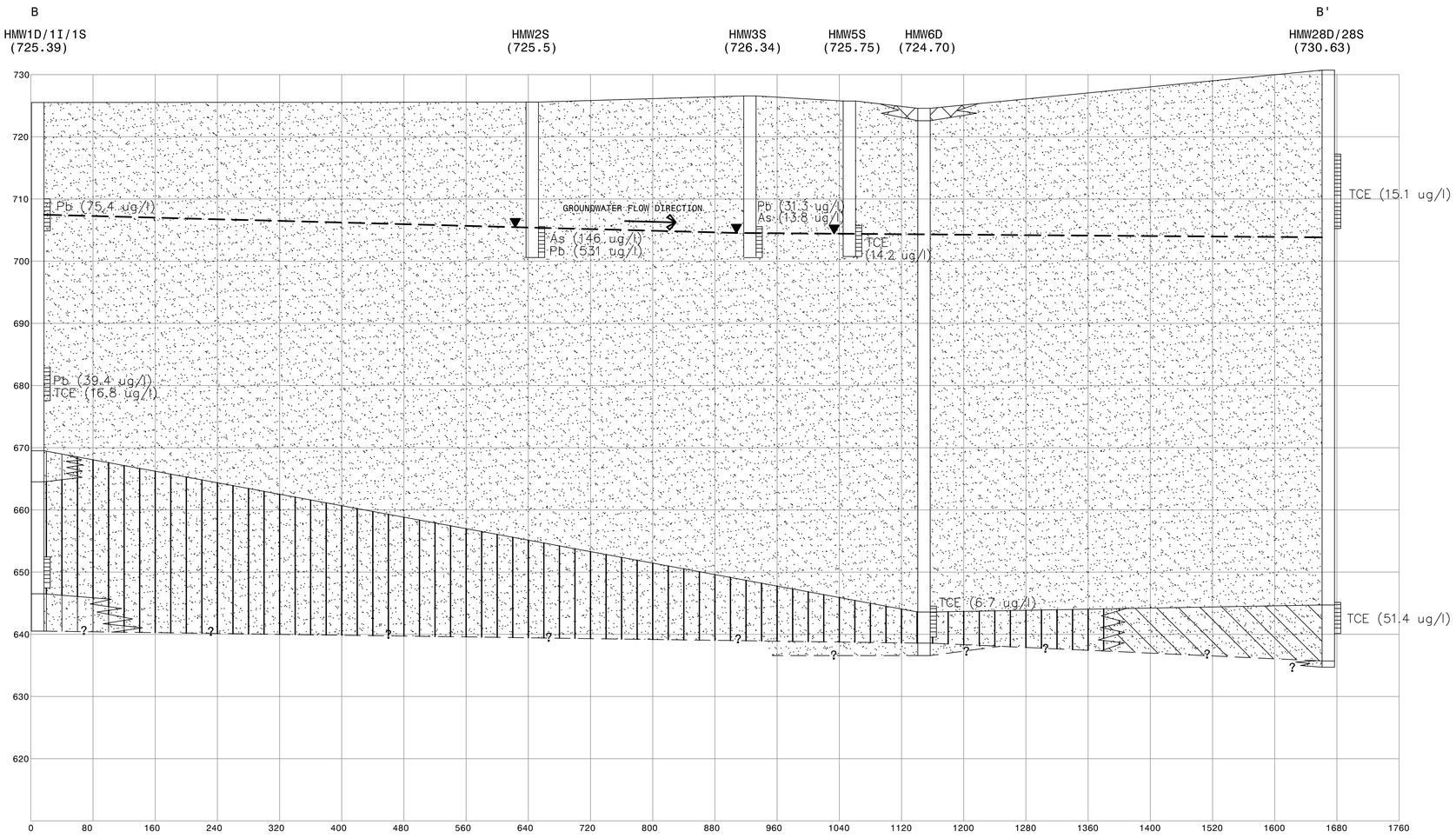
OWNER:
CITY OF SOUTH BEND DEPARTMENT OF
COMMUNITY AND ECONOMIC DEVELOPMENT
SOUTH BEND, INDIANA

MARK	DATE	DESCRIPTION

PROJECT NO.:	SBI002
CAD DWG FILE:	SBI002.100.0008
PLOT DATE:	12/6/01
LAYOUT BY:	MY
DRAWN BY:	BK
CHECKED BY:	
SCALE:	AS NOTED
SUBMITTAL DATE:	FEBRUARY 2002

SHEET TITLE:

FIGURE 10
GEOLOGIC
CROSS SECTION
A - A'



SCALE:
1" = 10' VERTICAL
1" = 80' HORIZONTAL

SCREENED INTERVAL

POTENTIOMETRIC SURFACE AND

Pb (30 ug/l)	LEAD (CONCENTRATION)
As (30 ug/l)	ARSENIC (CONCENTRATION)
PCE (30 ug/l)	TETRACHLOROETHENE (CONCENTRATION)
TCE (30 ug/l)	TRICHLOROETHENE (CONCENTRATION)

LEGEND

FILL: FINE TO COARSE SAND WITH MINOR AMOUNTS OF GRAVEL, SILT, CLAY, BRICKS, CONCRETE AND/OR ASPHALT FRAGMENTS

SAND: FINE TO COARSE SAND WITH MINOR AMOUNTS OF GRAVEL, SILT AND/OR CLAY

SILT: SILT WITH MINOR AMOUNTS OF CLAY, SAND, AND/OR GRAVEL

SANDY SILT: SILT WITH FINE TO COARSE SAND AND MINOR AMOUNTS OF CLAY AND/OR GRAVEL

SILTY SAND: FINE TO COARSE SAND WITH SILT AND MINOR AMOUNTS OF CLAY AND/OR GRAVEL

CLAYEY SILT: SILT WITH CLAY AND MINOR AMOUNTS OF FINE TO MEDIUM SAND AND/OR GRAVEL

SILTY CLAY: CLAY WITH SILT AND MINOR AMOUNTS OF FINE TO MEDIUM SAND, AND/OR GRAVEL

SANDY CLAY: CLAY WITH SAND AND MINOR AMOUNTS OF CLAY AND/OR GRAVEL

SAND: SAND WITH BLACK STAINING

Hull & Associates, Inc.
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3401 GLENDALE AVENUE
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TOLEDO, OHIO 43614
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FAX: (419) 385-5467
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REGISTERED ENGINEER

DATE

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT FOR AREA A

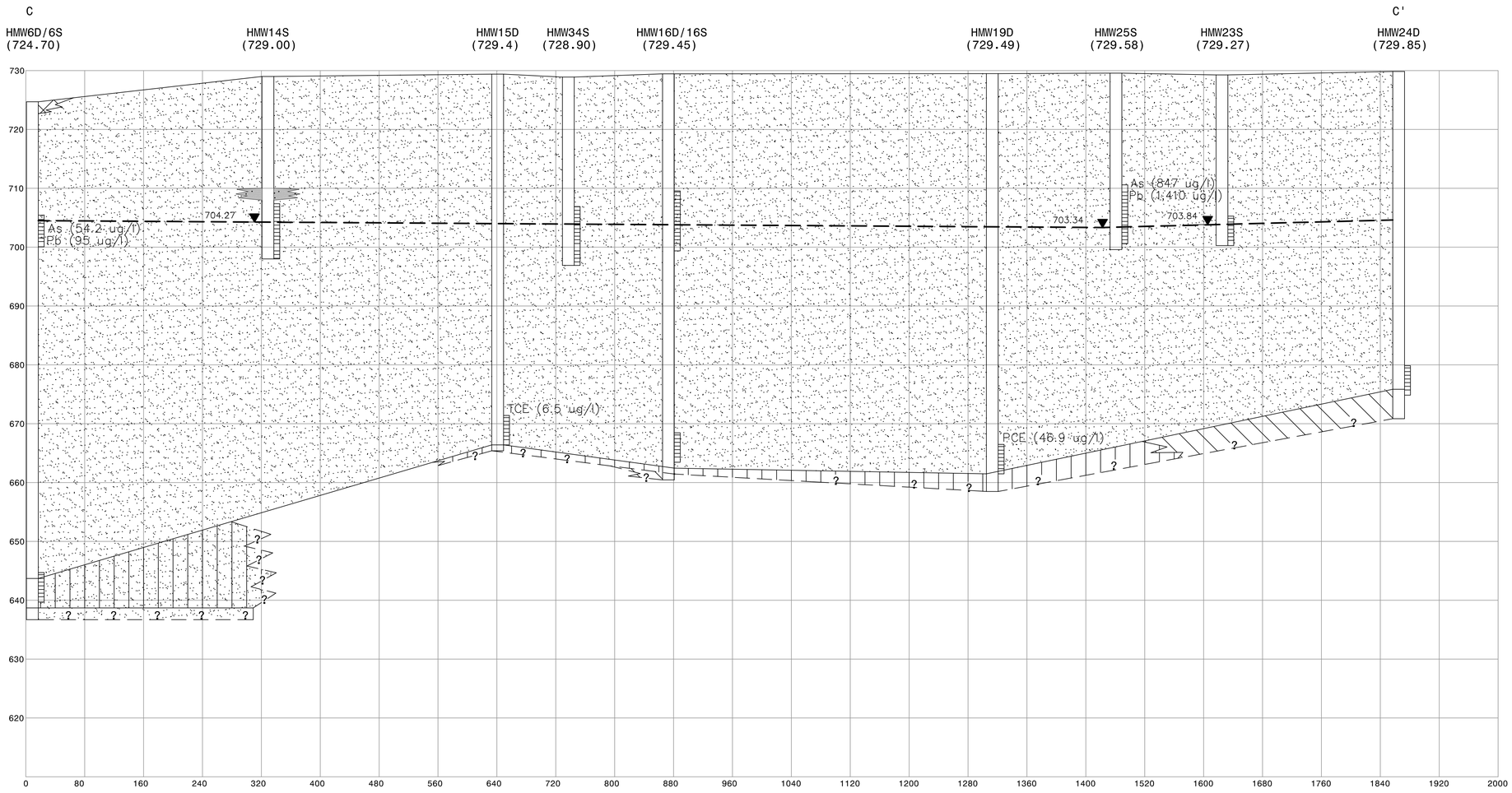
OWNER:
CITY OF SOUTH BEND DEPARTMENT OF COMMUNITY AND ECONOMIC DEVELOPMENT
SOUTH BEND, INDIANA

MARK	DATE	DESCRIPTION

PROJECT NO.:	SBI002
CAD DWG FILE:	SBI002.100.0009
PLOT DATE:	12/6/01
LAYOUT BY:	MY
DRAWN BY:	BK
CHECKED BY:	
SCALE:	AS NOTED
SUBMITTAL DATE:	FEBRUARY 2002

SHEET TITLE:

PLATE 11
GEOLOGIC
CROSS SECTION
B - B'



SCALE:
1" = 10' VERTICAL
1" = 80' HORIZONTAL

SCREENED INTERVAL

POTENTIOMETRIC SURFACE AND

Pb (30 ug/l)	LEAD (CONCENTRATION)
As (30 ug/l)	ARSENIC (CONCENTRATION)
PCE (30 ug/l)	TETRACHLOROETHENE (CONCENTRATION)
TCE (30 ug/l)	TRICHLOROETHENE (CONCENTRATION)

LEGEND

FILL: FINE TO COARSE SAND WITH MINOR AMOUNTS OF GRAVEL, SILT, CLAY, BRICKS, CONCRETE AND/OR ASPHALT FRAGMENTS

SAND: FINE TO COARSE SAND WITH MINOR AMOUNTS OF GRAVEL, SILT AND/OR CLAY

SILT: SILT WITH MINOR AMOUNTS OF CLAY, SAND, AND/OR GRAVEL

SANDY SILT: SILT WITH FINE TO COARSE SAND AND MINOR AMOUNTS OF CLAY AND/OR GRAVEL

SILTY SAND: FINE TO COARSE SAND WITH SILT AND MINOR AMOUNTS OF CLAY AND/OR GRAVEL

CLAYEY SILT: SILT WITH CLAY AND MINOR AMOUNTS OF FINE TO MEDIUM SAND AND/OR GRAVEL

SILTY CLAY: CLAY WITH SILT AND MINOR AMOUNTS OF FINE TO MEDIUM SAND, AND/OR GRAVEL

SANDY CLAY: CLAY WITH SAND AND MINOR AMOUNTS OF CLAY AND/OR GRAVEL

SAND: SAND WITH BLACK STAINING

Hull & Associates, Inc.
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REGISTERED ENGINEER

DATE

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT FOR AREA A

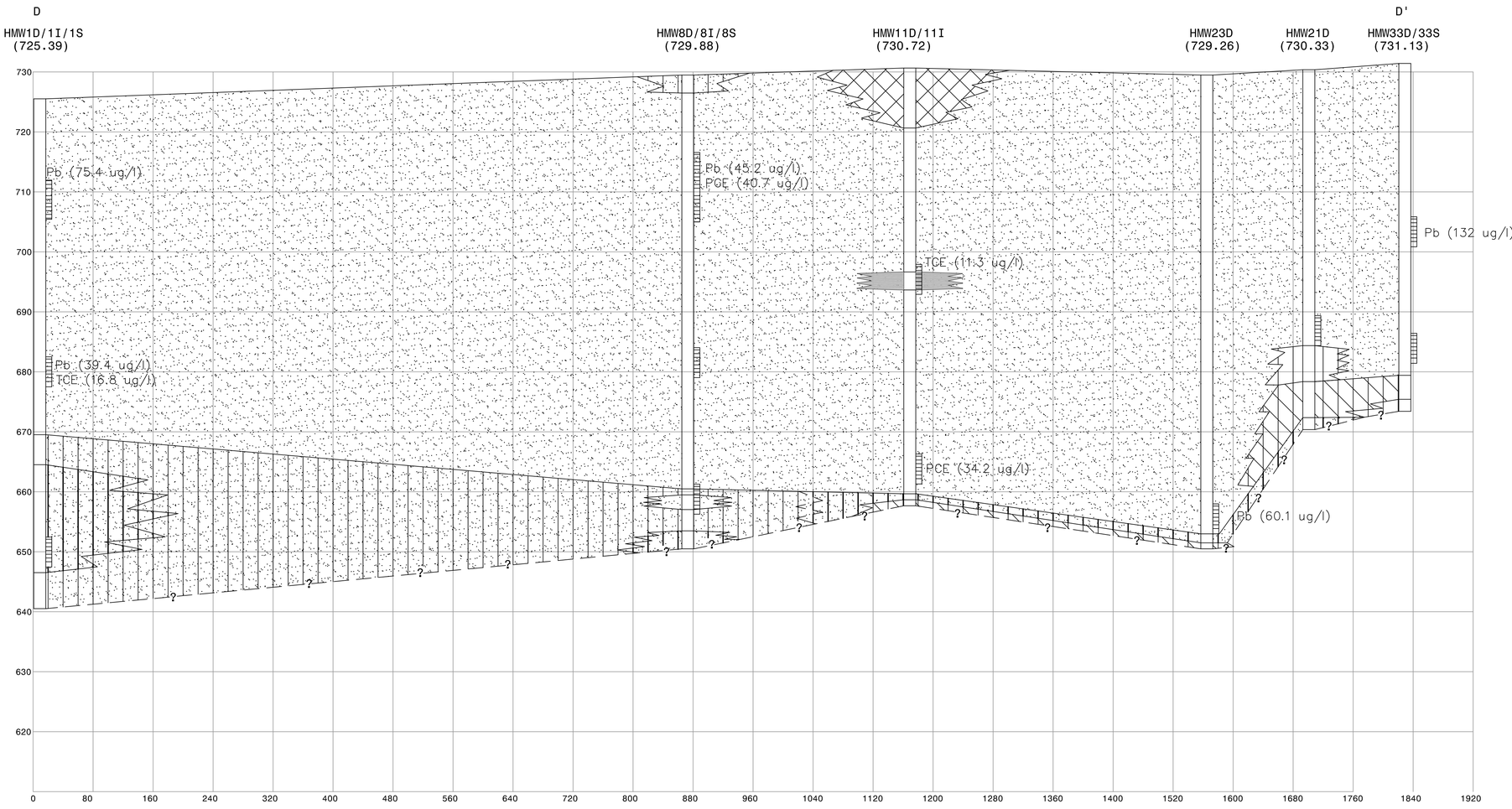
OWNER:
CITY OF SOUTH BEND DEPARTMENT OF COMMUNITY AND ECONOMIC DEVELOPMENT
SOUTH BEND, INDIANA

MARK	DATE	DESCRIPTION

PROJECT NO.:	SBI002
CAD DWG FILE:	SBI002.100.0010
PLOT DATE:	12/6/01
LAYOUT BY:	MY
DRAWN BY:	GAC
CHECKED BY:	
SCALE:	AS NOTED
SUBMITTAL DATE:	FEBRUARY 2002

SHEET TITLE:

PLATE 12
GEOLOGIC
CROSS SECTION
C - C'



SCALE:
1" = 10' VERTICAL
1" = 80' HORIZONTAL

SCREENED INTERVAL

POTENTIOMETRIC SURFACE AND

Pb (30 ug/l)	LEAD (CONCENTRATION)
As (30 ug/l)	ARSENIC (CONCENTRATION)
PCE (30 ug/l)	TETRACHLOROETHENE (CONCENTRATION)
TCE (30 ug/l)	TRICHLOROETHENE (CONCENTRATION)

LEGEND

FILL: FINE TO COARSE SAND WITH MINOR AMOUNTS OF GRAVEL, SILT, CLAY, BRICKS, CONCRETE AND/OR ASPHALT FRAGMENTS

SAND: FINE TO COARSE SAND WITH MINOR AMOUNTS OF GRAVEL, SILT AND/OR CLAY

SILT: SILT WITH MINOR AMOUNTS OF CLAY, SAND, AND/OR GRAVEL

SANDY SILT: SILT WITH FINE TO COARSE SAND AND MINOR AMOUNTS OF CLAY AND/OR GRAVEL

SILTY SAND: FINE TO COARSE SAND WITH SILT AND MINOR AMOUNTS OF CLAY AND/OR GRAVEL

CLAYEY SILT: SILT WITH CLAY AND MINOR AMOUNTS OF FINE TO MEDIUM SAND AND/OR GRAVEL

SILTY CLAY: CLAY WITH SILT AND MINOR AMOUNTS OF FINE TO MEDIUM SAND, AND/OR GRAVEL

SANDY CLAY: CLAY WITH SAND AND MINOR AMOUNTS OF CLAY AND/OR GRAVEL

SAND: SAND WITH BLACK STAINING

Hull & Associates, Inc.
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TOLEDO, OHIO 43614
PHONE: (419) 385-2018
FAX: (419) 385-5487
www.hullinc.com

REGISTERED ENGINEER

DATE

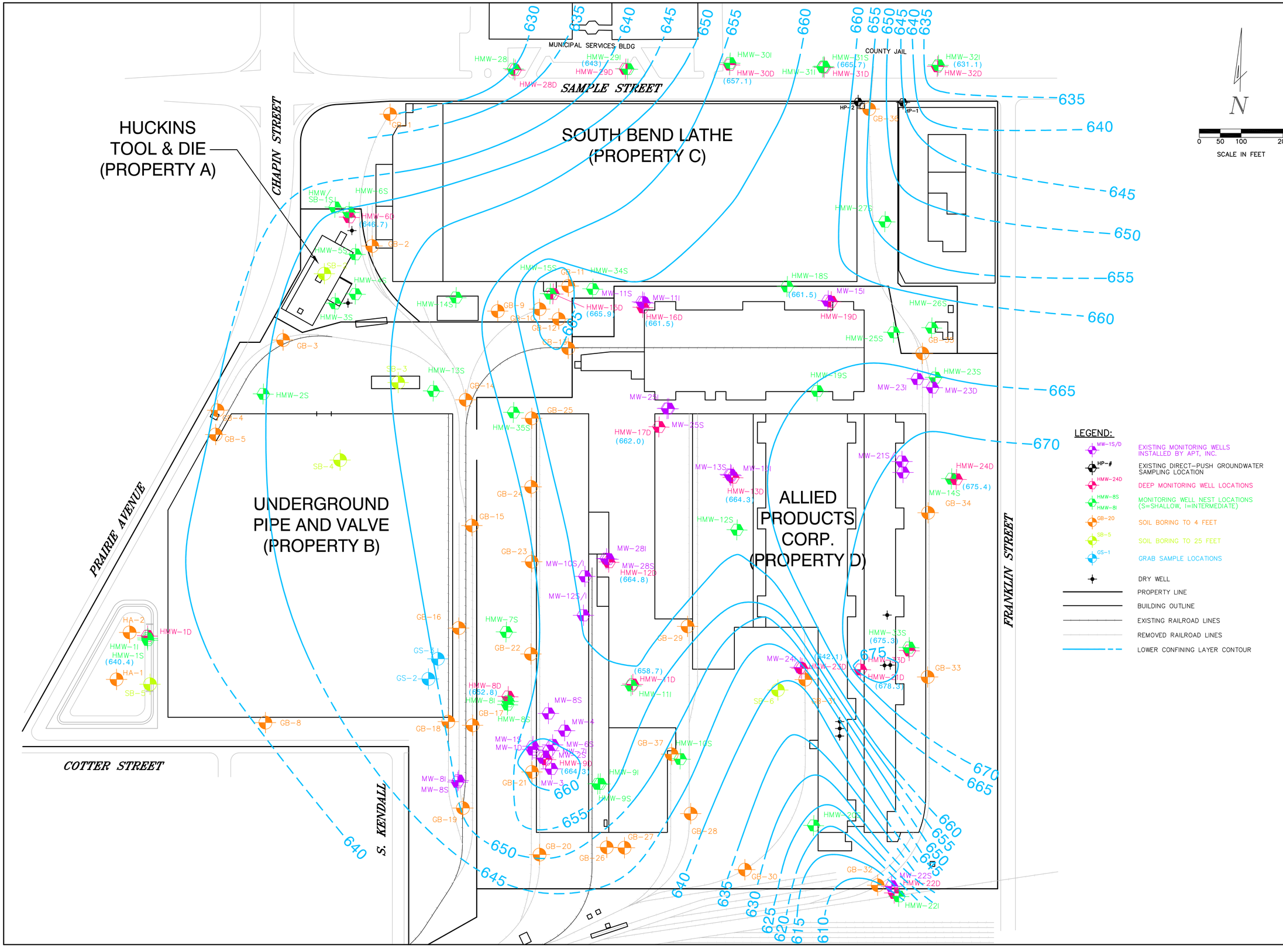
INITIAL PHASE II ENVIRONMENTAL
SITE ASSESSMENT FOR AREA A

OWNER:
CITY OF SOUTH BEND DEPARTMENT OF
COMMUNITY AND ECONOMIC DEVELOPMENT
SOUTH BEND, INDIANA

MARK	DATE	DESCRIPTION

PROJECT NO.:	SBI002
CAD DWG FILE:	SBI002.100.0011
PLOT DATE:	12/6/01
LAYOUT BY:	MY
DRAWN BY:	BK
CHECKED BY:	
SCALE:	AS NOTED
SUBMITTAL DATE:	FEBRUARY 2002

SHEET TITLE:
PLATE 13
GEOLOGIC
CROSS SECTION
D - D'



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REGISTERED ENGINEER

DATE

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT FOR AREA A

OWNER: CITY OF SOUTH BEND DEPARTMENT OF COMMUNITY AND ECONOMIC DEVELOPMENT SOUTH BEND, INDIANA

MARK	DATE	DESCRIPTION

PROJECT NO.:	SBI002
CAD DWG FILE:	SBI002.100.0012
PLOT DATE:	2/18/02
LAYOUT BY:	TB
DRAWN BY:	BK
CHECKED BY:	LT
SCALE:	1"=100'
SUBMITTAL DATE:	FEBRUARY 2002

SHEET TITLE:

PLATE 14
TOP OF LOWER CONFINING LAYER

SHEET OF

HUCKINS TOOL & DIE (PROPERTY A)

SOUTH BEND LATHE (PROPERTY C)

UNDERGROUND PIPE AND VALVE (PROPERTY B)

ALLIED PRODUCTS CORP. (PROPERTY D)

MUNICIPAL SERVICES BLDG

COUNTY JAIL

CHAPIN STREET

SAMPLE STREET

PRAIRIE AVENUE

COTTER STREET

S. KENDALL

FRANKLIN STREET

N

0 50 100 200

SCALE IN FEET

LEGEND:

- MW-1S/D — EXISTING MONITORING WELLS INSTALLED BY APT, INC.
- HP-# — EXISTING DIRECT-PUSH GROUNDWATER SAMPLING LOCATION
- HMW-24D — DEEP MONITORING WELL LOCATIONS
- HMW-8S / HMW-8I — MONITORING WELL NEST LOCATIONS (S=SHALLOW, I=INTERMEDIATE)
- GB-20 — SOIL BORING TO 4 FEET
- SB-5 — SOIL BORING TO 25 FEET
- GS-1 — GRAB SAMPLE LOCATIONS
- DRY WELL
- PROPERTY LINE
- BUILDING OUTLINE
- EXISTING RAILROAD LINES
- REMOVED RAILROAD LINES
- POTENTIOMETRIC SURFACE CONTOUR
- GROUNDWATER FLOW DIRECTION

WELL ID.	GROUNDWATER ELEVATION
HMW/SB-1S	704.09
HMW-1S	706.75
HMW-1S	706.71
HMW-2S	705.4
HMW-3S	704.57
HMW-4S	704.44
HMW-5S	704.25
HMW-6S	704.1
HMW-7S	706.08
HMW-8S	706.71
MW-8S	707.35
HMW-9S	706.8
HMW-10S	706.45
MW-11S	703.72
HMW-12S	705.01
HMW-13S	705
MW-13S	704.69
MW-14S	704.56
HMW-14S	704.27
HMW-15S	703.98
HMW-18S	703.26
HMW-19S	703.65
HMW-20S	706.54
MW-23S	703.5
HMW-23S	703.84
MW-25S	704.4
HMW-25S	703.34
HMW-26S	703.28
HMW-27S	702.65
MW-28S	705.02
HMW-28S	702.89
HMW-31S	701.96
HMW-33S	705.28
HMW-34S	703.86
HMW-35S	704.85

Hull & Associates, Inc.
ENGINEERS - GEOLOGISTS - SCIENTISTS - PLANNERS
4700 DUKE DRIVE
SUITE 172
MASON, OHIO 45040
PHONE: (513) 459-9677
FAX: (513) 459-9869
www.hullinc.com

REGISTERED ENGINEER

DATE

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT FOR AREA A

OWNER: CITY OF SOUTH BEND DEPARTMENT OF COMMUNITY AND ECONOMIC DEVELOPMENT SOUTH BEND, INDIANA

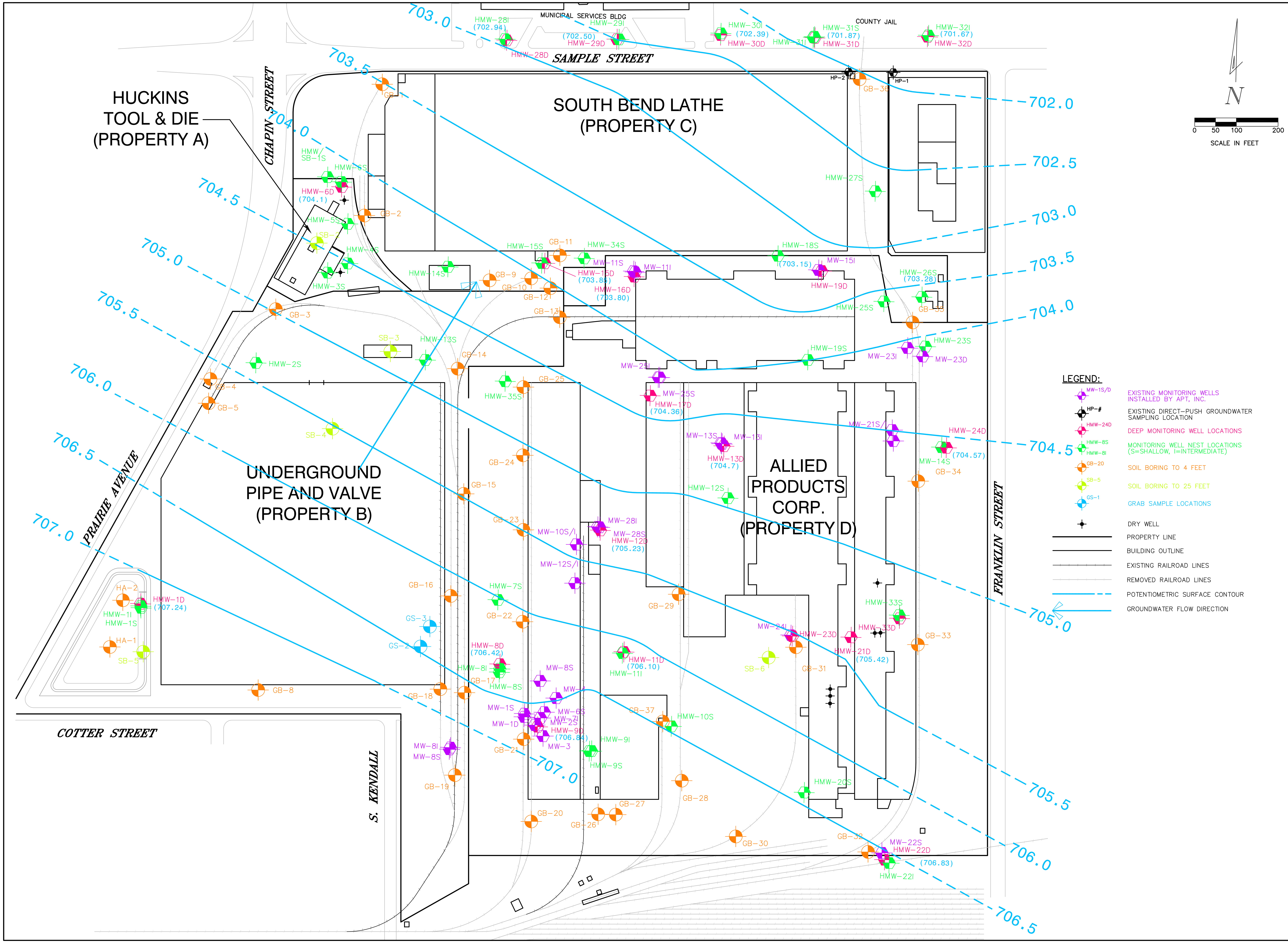
MARK	DATE	DESCRIPTION

PROJECT NO.:	SBI002
CAD DWG FILE:	SBI002.100.0007
PLOT DATE:	2/18/02
LAYOUT BY:	TB
DRAWN BY:	BK
CHECKED BY:	LT
SCALE:	1"=100'
SUBMITTAL DATE:	FEBRUARY 2002

SHEET TITLE:

PLATE 15
POTENTIOMETRIC SURFACE FOR THE UPPER PORTION OF THE AQUIFER

SHEET OF



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www.hullinc.com

REGISTERED ENGINEER
DATE

INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT FOR AREA A

OWNER: CITY OF SOUTH BEND DEPARTMENT OF COMMUNITY AND ECONOMIC DEVELOPMENT SOUTH BEND, INDIANA

MARK	DATE	DESCRIPTION

PROJECT NO.:	SBI002
CAD DWG FILE:	SBI002.100.0015
PLOT DATE:	2/18/02
LAYOUT BY:	TB
DRAWN BY:	BK
CHECKED BY:	LT
SCALE:	1"-100'
SUBMITTAL DATE:	FEBRUARY 2002

SHEET TITLE:

PLATE 16
POTENTIOMETRIC SURFACE FOR THE LOWER PORTION OF THE AQUIFER

SHEET OF

APPENDIX A

Soil Boring Logs and Well Construction Diagrams

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 07/31/01
Date Completed	: 07/31/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Hand Auger
Sampling Method	:
Total Depth (ft.)	: 4.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HA-1

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0								Topsoil, rootlets	
		SS-1	0.0-0.5	2.6						
		SS-1	0.5-1.0						Dark brown SAND, rootlets	
1	-1	SS-2	1.0-1.3	5.1					Same as above	
		SS-2	1.3-1.5						Brown SAND, some gravel, dry	
		SS-3	1.5-2.3	4.7					Brown SAND, coarse, moist, trace gravel	
2	-2								Same as above	
		SS-4	2.3-2.8	4.1						
		SS-5	2.8-3.3	4.0					Same as above	
3	-3									
		SS-6	3.3-4.0	3.5					Same as above	
4									End of boring at 4'	

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Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 07/31/01
Date Completed	: 07/31/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Hand Auger
Sampling Method	:
Total Depth (ft.)	: 4.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HA-2

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0								Dark brown SAND with gravel, rootlets, glass	
		SS-1	0.0-0.7	2.7					Brown SAND with gravel, rootlets	
		SS-2	0.7-1.3	4.5						
1	-1									
		SS-3	1.3-1.7	4.7					Same as above (no rootlets)	
		SS-4	1.7-2.2	6.4					Light brown SAND, some gravel	
2	-2									
		SS-5	2.2-2.7	8.1					Light brown coarse SAND, trace gravel, moist	
		SS-6	2.7-3.3	7.8					Same as above	
3	-3									
		SS-7	3.3-4.0	6.8					Same as above	
4									End of boring at 4'	

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Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 07/31/01
Date Completed	: 07/31/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Hand Auger
Sampling Method	:
Total Depth (ft.)	: 1.4'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HA-3

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: ⊠ Sampled Int. ■ Lab Sample

Water Levels: ▼ Static ▽ During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0	SS-1	0.0-0.9	0.0					Dark brown SAND with cinder, rootlets, dry	
1	-1	SS-2	0.9-1.4	3.3					Same as above but cinders are in smaller pieces; rootlets are less prevelant	
									Refusal at 1.4' (rock) End of boring at 1.4'	
2										

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Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 07/31/01
Date Completed	: 07/31/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Hand Auger
Sampling Method	:
Total Depth (ft.)	: 2.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HA-4

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0	SS-1	0.0-0.8	2.2					Dark brown SAND with cinder, rootlets, dry	
		SS-2	0.8-1.4	5.2					Same as above with less rootlets	
1	-1	SS-3	1.4-2.0	5.1					Cinder fill	
2									End of boring at 2.0'	

Hull & associates, inc.

South Bend Area A
UP&V Reservoir
South Bend, IN

SBI002

Date Started	: 08/23/01
Date Completed	: 08/23/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Split Spoon / GeoProbe
Sampling Method	:
Total Depth (ft.)	: 4.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING SB-26A

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0								Concrete to 9"	
		SS-1 0.0-2.0	24/24	3.2						
1	-1								Brown clayey SAND, moist	
2	-2	SS-2 2.0-4.0	24/18	6.8					Same as above	
3	-3								Brown fine to medium SAND, trace silt	
4									End of boring at 4.0'	

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Hull & associates, inc.

South Bend Area A
UP&V Reservoir
South Bend, IN

SBI002

Date Started	: 08/23/01
Date Completed	: 08/23/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Split Spoon / GeoProbe
Sampling Method	:
Total Depth (ft.)	: 4.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING SB-27A

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: ⊠ Sampled Int. ■ Lab Sample

Water Levels: ▼ Static ▽ During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0	SS-1 0.0-2.0	24/24	4.1					Crushed LIMESTONE and slag gravel	
1	-1									
2	-2	SS-2 2.0-4.0	24/24	6.5					Dark brown clayey FILL, few gravel, few sand, brick fragments, cloth noted	
3	-3									
4									End of boring at 4.0'	

Hull & associates, inc.

South Bend Area A
UP&V Reservoir
South Bend, IN

SBI002

Date Started	: 07/31/01
Date Completed	: 07/31/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 85.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-1D

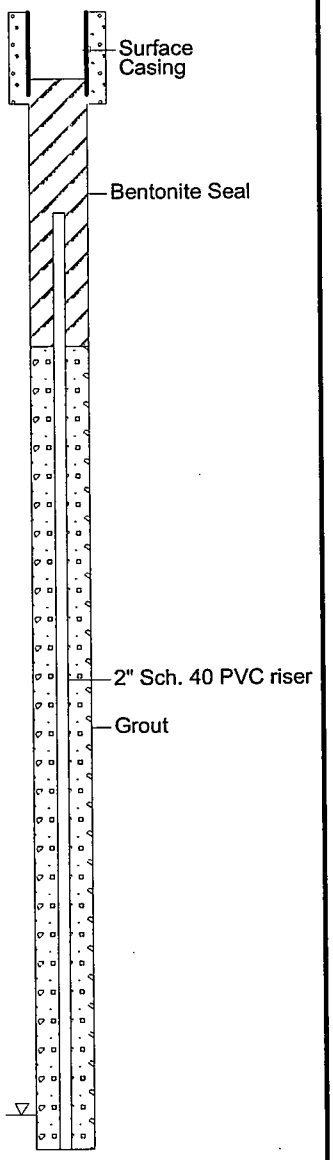
G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: Photo vac 100ppm ISO
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. (⊠); Lab Sample (■)

Water Levels: Static (▼); During Drilling (▽)

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
0	0	HA-1/ 0.0-2.0		2.3				Black organic rich medium to fine SAND, trace silt, trace gravel, dry, rootlets throughout
1	-1							
2	-2	HA-2/ 2.0-4.0		4.8				Brown medium to coarse SAND, trace gravel, moist, loose
3	-3							
4	-4	SS-3 4.0-6.0	24/10	4.9	1-5-1			Used tile probe from 4 to 5, begin s/s at 4.0'
5	-5							Same as above, trace silt
6	-6	SS-4 6.0-8.0	24/12	3.3	2-3-1			Same as above
7	-7							
8	-8	SS-5 8.0-10.0	24/18	6.0	2-2-3			Same as above, less silt
9	-9							
10	-10	SS-6 10.0-12.0	24/12	6.4	3-9-9			Same as above
11	-11							
12	-12	SS-7 12.0-14.0	24/14	4.8	4-14-11			Same as above
13	-13							
14	-14	SS-8 14.0-16.0	24-12	3.1	4-20-11			Same as above
15	-15							
16	-16	SS-9 16.0-18.0	24/24	4.7	9-26-12			Same as above, wet, more gravel, more coarse sand
17								

Well: HMW-1D
Elev.:



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Hull & associates, inc.

South Bend Area A
UP&V Reservoir
South Bend, IN

SBI002

Date Started	: 07/31/01
Date Completed	: 07/31/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 85.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-1D

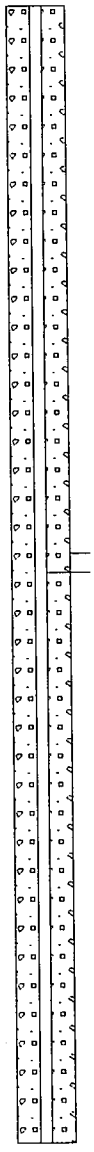
G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: Photo vac 100ppm ISO
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Well: HMW-1D
Elev.:

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
17	-17							
18	-18	SS-10 18.0-20.0	24/12	2.8	9-24-6			Same as above
19	-19							
20	-20	SS-11 20.0-22.0	24/12	6.1	3-10-7			Same as above
21	-21							
22	-22	SS-12 22.0-24.0	24/12	5.9	4-10-8			Same as above
23	-23							
24	-24	SS-13 24.0-26.0	24/12	5.0	5-18-13			Same as above, less gravel, less coarse sand
25	-25							
26	-26	SS-14 26.0-28.0	24/12	4.1	2-14-2			Same as above
27	-27							
28	-28	SS-15 28.0-30.0	24/16	3.0	4-16-13			Same as above
29	-29							
30	-30	SS-16 30.0-32.0	24/14	8.4	5-18-15			Same as above, hit rock in end of spoon
31	-31							
32	-32	SS-17 32.0-34.0	24/12	5.1	9-48-30			Same as above
33	-33							
34								



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Hull & associates, inc.

South Bend Area A
UP&V Reservoir
South Bend, IN

SBI002

Date Started	: 07/31/01
Date Completed	: 07/31/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 85.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-1D

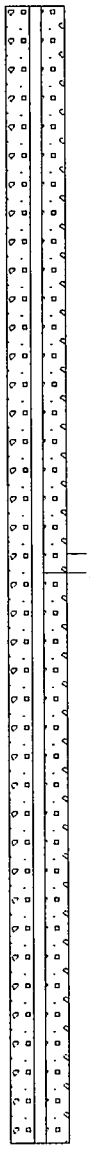
G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: Photo vac 100ppm ISO
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Well: HMW-1D
Elev.:

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	DESCRIPTION
34	-34	SS-18 34.0-36.0	24/18	7.1	7-38-29	Same as above, more gravel
35	-35					
36	-36	SS-19 36.0-37.0	24/0 12/6	7.1 5.8	15-50-27	No recovery, resampled at 36 to 37'
37	-37	SS-20 37.0-39.0	24/12	5.5	8-34-25	Same as above, increase to a few gravel, more coarse sand
38	-38					
39	-39	SS-21 39.0-41.0	24/12	0	21-40-27	Same as above, back to trace of gravel
40	-40					
41	-41	SS-22 41.0-43.0	24/12	1.9	29-66-27	Same as above
42	-42					
43	-43	SS-23 43.0-45.0	24/18	3.5	15-51-27	Same as above
44	-44					
45	-45	SS-24 45.0-47.0	24/12	1.7	18-85-50	Same as above
46	-46					
47	-47	SS-25 47.0-49.0	24/22	1.8	14-66-40	Same as above, less gravel
48	-48					Brown fine SAND, trace silt, wet
49	-49	SS-26 49.0-51.0	24/16	1.1	7-39-27	Same as above, sluff in 1st feet
50	-50					
51						



Hull & associates, inc.

South Bend Area A
UP&V Reservoir
South Bend, IN

SBI002

Date Started	: 07/31/01
Date Completed	: 07/31/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 85.0'
S. Water Level Date	:
S. Water Level (ft.)	:

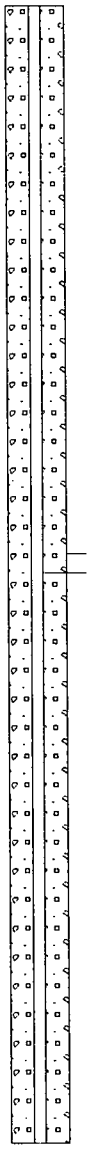
LOG OF BORING HMW-1D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: Photo vac 100ppm ISO
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
51	-51	SS-27 51.0-53.0	24/22	2.3	5-46-44			Brown coarse to medium SAND, trace silt, wet
52	-52							Brown fine SAND, trace silt, wet
53	-53	SS-28 53.0-55.0	24/14	3.0	5-29-21			Same as above, trace medium sand and gravel
54	-54							
55	-55	SS-29 55.0-57.0	24/22	4.0	7-26-28			Same as above, no coarse sand or gravel
56	-56							
57	-57	SS-30 57.0-59.0	24/12	3.7	3-9-11			Grey fine silty SAND, wet Same as above, sluff 1st 8"
58	-58							
59	-59	SS-31 59.0-61.0	24/24	1.3	8-26-16			Same as above, 12" shoe ss
60	-60							
61	-61	SS-32 61.0-63.0	24/24	9.1	13-31-21			Grey fine sandy SILT, wet, 1st 6" sluff
62	-62							
63	-63	SS-33 63.0-65.0	24/24	7.8	29-45-26			Same as above, increase silt with depth
64	-64							
65	-65	SS-34 65.0-67.0	24/10	9.2	35-50			Same as above
66	-66							
67	-67	SS-35 67.0-69.0	24/24	6.5	15-46-27			Interbeded with clay at end of spoon Same as above, interbeded clayey silt
68								

Well: HMW-1D
Elev.:



Hull & associates, inc.

South Bend Area A
UP&V Reservoir
South Bend, IN

SBI002

Date Started	: 07/31/01
Date Completed	: 07/31/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 85.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-1D

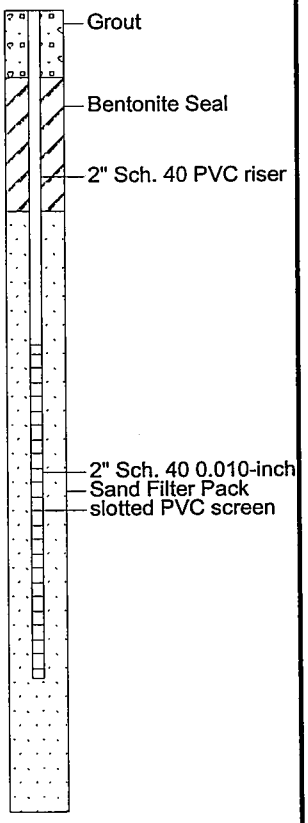
G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: Photo vac 100ppm ISO
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
68	-68							
69	-69	SS-36 69.0-71.0	24/24	8.2	11-30-19			Same as above, trace gravel
70	-70							
71	-71	SS-37 71.0-73.0	24/24	3.1	11-48-26			Same as above
72	-72							
73	-73	SS-38 73.0-75.0	24/24	6.4	8-34-27			Same as above, more gravel
74	-74							
75	-75	SS-39 75.0-77.0	24/24	8.9	6-18-14			Same as above, no clay, less gravel
76	-76							
77	-77	SS-40 77.0-79.0	24/24	5.8	4-15-13			Same as above
78	-78							
79	-79	SS-41 79.0-81.0	24/24	3.5	7-17-13			Grey silty fine SAND, wet, trace gravel
80	-80							Same as above
81	-81	SS-42 81.0-83.0	24/18	3.9	23-31-50			Same as above
82	-82							Brown and grey layering
83	-83	SS-43 83.0-85.0	24/24	3.6	14-34-23			Same as above, no layering less silt
84	-84							Same as above, brown and grey layering
85								End of boring at 85'

Well: HMW-1D
Elev.:



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11-30-2001

Hull & associates, inc.

South Bend Area A
UP&V Reservoir
South Bend, IN

SBI002

Date Started	: 08/02/01
Date Completed	: 08/02/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 24.0'
S. Water Level Date	:
S. Water Level (ft.)	:

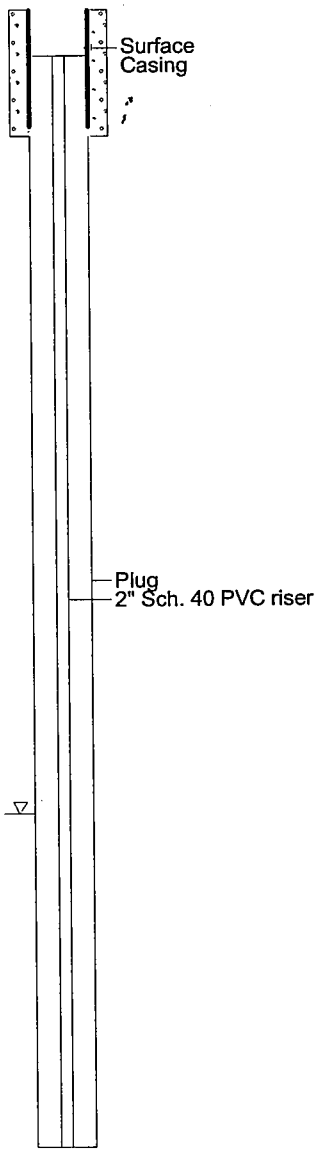
LOG OF BORING HMW-6S

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
0	0	SS-1 0.0-2.0	24/12	7.1	7-27-8			Black organic rich medium to fine sand FILL, few silt, trace gravel, dry, slag fragments noted
1	-1							
2	-2		24/0	8.9	1-4-3			
3	-3							No recovery, no catch, black staining on spoon
4	-4	SS-3 4.0-6.0	24/10	14.5	1-4-3			Black stained medium to coarse SAND, trace gravel, trace silt
5	-5							
6	-6	SS-4 6.0-8.0	24/12	11.9	1-4-4			Same as above
7	-7							
8	-8	SS-5 8.0-10.0	24/12	5.4	2-5-3			Same as above, wet
9	-9							
10	-10	SS-6 10.0-12.0	24/12	10.5	2-6-7			Same as above
11	-11							Brown medium to coarse SAND, trace silt, trace gravel
12								

Well: HMW-6S
Elev.:



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11-30-2001

Hull & associates, inc.

South Bend Area A
UP&V Reservoir
South Bend, IN

SBI002

Date Started	: 08/02/01
Date Completed	: 08/02/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 24.0'
S. Water Level Date	:
S. Water Level (ft.)	:

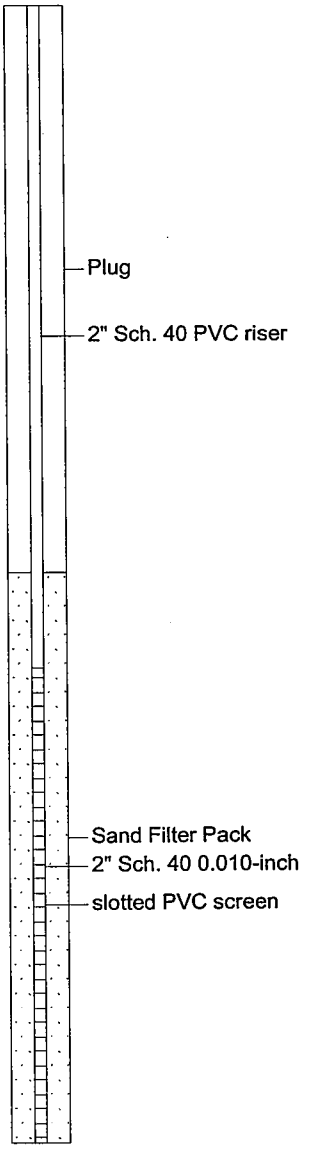
LOG OF BORING HMW-6S

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	DESCRIPTION
12	-12		24/2		7-18-12	
13	-13					Same as above, increase gravel, moist
14	-14	SS-7 14.0-16.0	24-10	9.2	6-13-10	Same as above, few gravel, more coarse sand
15	-15					
16	-16	SS-8 16.0-18.0	24/10	8.6	4-15-12	Same as above, less staining
17	-17					
18	-18	SS-9 18.0-20.0	24/10	2.5	4-17-9	Same as above, wet at end of spoon, no staining
19	-19					
20	-20	SS-10 20.0-22.0	24/12	8.4	6-15-10	Same as above, wet
21	-21					
22	-22	SS-11 22.0-24.0	24/12	9.4	4-12-9	Same as above, wet, black staining noted
23	-23					
24						End of boring at 24'

Well: HMW-6S
Elev.:



Hull & associates, inc.

South Bend Area A
UP&V Reservoir
South Bend, IN

SBI002

Date Started	: 08/02/01
Date Completed	: 08/02/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 88.0'
S. Water Level Date	:
S. Water Level (ft.)	:

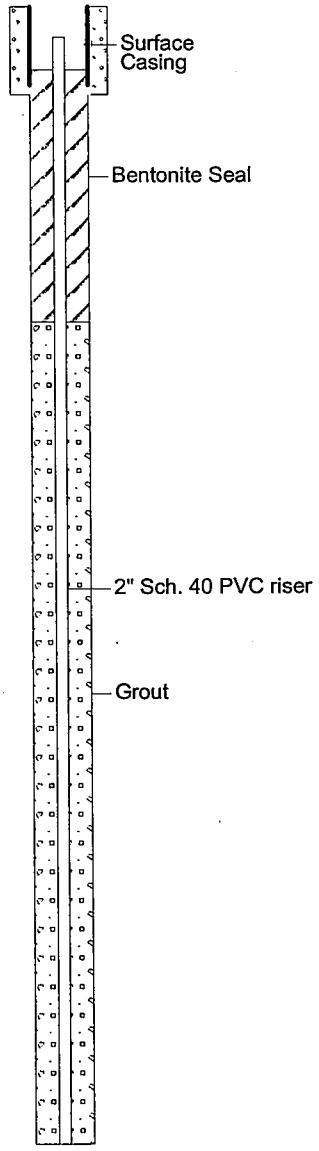
LOG OF BORING HMW-6D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
0	0	HA-1/ 0.0-2.0		1.6				Black organic rich medium to fine sand FILL, trace silt, trace gravel, dry, slag fragments noted
1	-1							
2	-2	HA-2/ 2.0-4.0		4.1				
3	-3							Brown medium to coarse SAND, trace gravel, trace silt, moist
4	-4	SS-3 4.0-6.0	24/14	3.4	4-9-4			Same as above
5	-5							
6	-6	SS-4 6.0-8.0	24/12	6.4	3-7-3			Same as above, black colored banding
7	-7							
8	-8	SS-5 8.0-10.0	24/18	3.4	5-10-5			Same as above
9	-9							
10	-10	SS-6 10.0-12.0	24/18	5.3	3-5-3			Same as above
11	-11							
12	-12	SS-7 12.0-14.0	24/14	2.8	7-29-15			Same as above, more coarse SAND, more gravel
13	-13							
14	-14	SS-8 14.0-16.0	24/10	5.6	17-61-20			Same as above, increase to a few gravel
15	-15							
16	-16	SS-9 16.0-18.0	24/12	8.8	13-28-16			Same as above
17	-17							
18								

Well: HMW-6D
Elev.:



Hull & associates, inc.

South Bend Area A
UP&V Reservoir
South Bend, IN

SBI002

Date Started	: 08/02/01
Date Completed	: 08/02/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 88.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-6D

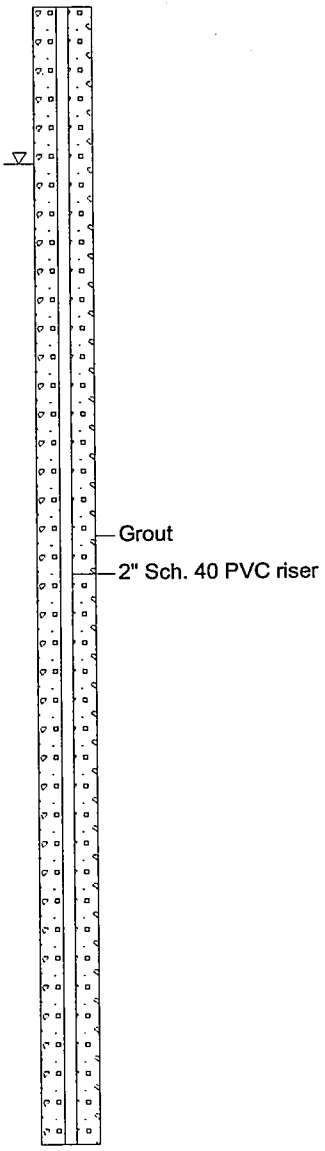
G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
18	-18	SS-10 18.0-20.0	24/12	9.5	16-35-15			Same as above
19	-19							
20	-20	SS-11 20.0-22.0	24/16	1.3	10-26-15			Same as above, wet
21	-21							
22	-22	SS-12 22.0-24.0	24/12	0.3	8-37-17			Same as above, black staining at 21.5', 2" thick Same as above, increase medium grain SAND
23	-23							
24	-24	SS-13 24.0-26.0	24/8	0.0	11-28-17			Same as above
25	-25							
26	-26	SS-14 26.0-28.0	24/14	2.4	10-27-11			Same as above
27	-27							
28	-28	SS-15 28.0-30.0	24/10	0.9	5-15-9			Same as above
29	-29							
30	-30	SS-16 30.0-32.0	24/12	1.3	23-52-28			Same as above, increase silt (still trace)
31	-31							
32	-32	SS-17 32.0-34.0	24/16	2.3	7-27-31			Same as above, fine to medium grain SAND, trace gravel, trace silt, wet
33	-33							
34	-34	SS-18 34.0-36.0	24/12	0.0	13-39-31			Same as above, large stone in end of spoon
35	-35							
36								

Well: HMW-6D
Elev.:



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Hull & associates, inc.

South Bend Area A
UP&V Reservoir
South Bend, IN

SBI002

Date Started	: 08/02/01
Date Completed	: 08/02/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 88.0'
S. Water Level Date	:
S. Water Level (ft.)	:

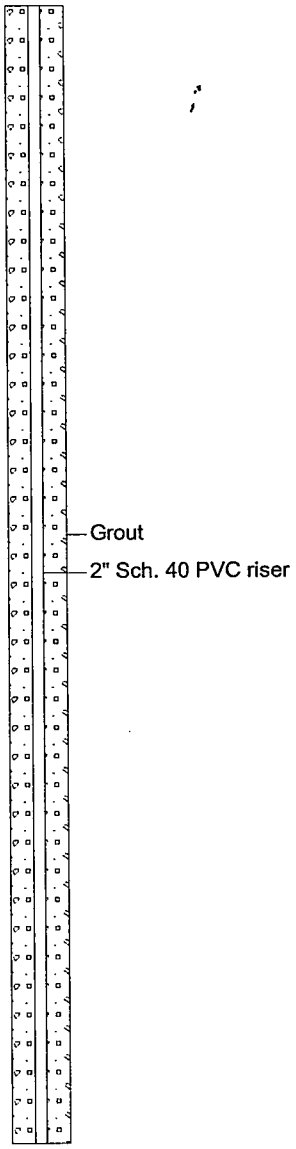
LOG OF BORING HMW-6D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
36	-36	SS-19 36.0-38.0	23/14	1.4	36-61-50			Same as above, increase silt, larger size gravel, becoming very dense
37	-37							
38	-38	SS-20 38.0-40.0	24/16	1.7	15-54-40			Same as above
39	-39							
40	-40	SS-21 40.0-42.0	24/16	0.0	29-78-50			Same as above, very dense
41	-41							
42	-42	SS-22 42.0-44.0	24/8	0.7	15-54-39			Same as above, less gravel (Note: Had to move rig, possibly hit large rock and it caused augers to offset 2 to 3", Didn't move boring)
43	-43							
44	-44	SS-23 44.0-46.0	23/12	0.1	28-88-50			Same as above, less silt
45	-45							
46	-46	SS-24 46.0-48.0	24/4	0.0	15-88-4			Same as above
47	-47							
48	-48	SS-24 48.0-50.0	11/10	0.0	38-50			Same as above
49	-49							
50	-50		23/0		9-63-50			
51	-51							Trace of gravel in spoon, no recovery
52	-52	SS-25 52.0-54.0	23/12	1.6	15-67-50			Same as above, medium to fine SAND, trace silt, trace gravel
53	-53							
54								

Well: HMW-6D
Elev.:



Hull & associates, inc.

South Bend Area A
UP&V Reservoir
South Bend, IN

SBI002

Date Started	: 08/02/01
Date Completed	: 08/02/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 88.0'
S. Water Level Date	:
S. Water Level (ft.)	:

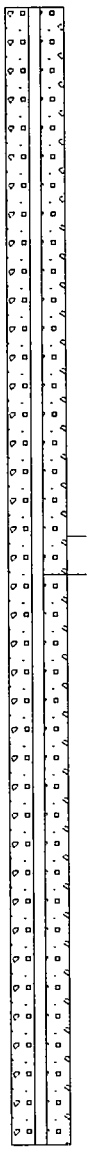
LOG OF BORING HMW-6D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
54	-54		23/0		25-71-50			No recovery, resampling same interval, no recovery on 2nd attempt
55	-55							
56	-56	SS-26 56.0-58.0	23/14	1.3	18-54-50			Same as above, black staining at 57.5
57	-57							
58	-58	SS-27 58.0-60.0	17/14	1.6	13-28-50			Same as above
59	-59							
60	-60	SS-28 60.0-62.0	24/12	2.1	15-52-38			Same as above
61	-61							
62	-62	SS-29 62.0-64.0	17/0		18-36-50			No Recovery
63	-63							
64	-64	SS-30 64.0-66.0	16/10	8.4	17-32-50			Same as above, less gravel
65	-65							
66	-66	SS-31 66.0-68.0	17/14	0.5	7-32-50			Same as above, more gravel
67	-67							
68	-68		15/15		27-25-50			1" of brown clayey SILT, very stiff in spoon, dry
69	-69							14" of sluff 1" clayey SILT at end
70	-70	SS-32 70.0-72.0	21/18	4.1	6-38-50			Brown medium to carse SAND, trace gravel, trace silt, wet
71	-71							
72								

Well: HMW-6D
Elev.:



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Hull & associates, inc.

South Bend Area A
UP&V Reservoir
South Bend, IN
SBI002

Date Started	: 08/02/01
Date Completed	: 08/02/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 88.0'
S. Water Level Date	:
S. Water Level (ft.)	:

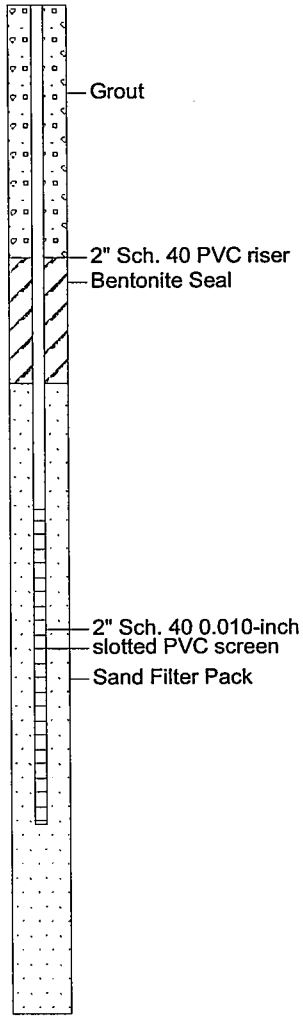
LOG OF BORING HMW-6D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
72	-72	SS-33 72.0-74.0	21/16	2.5	13-48-50			Same as above
73	-73							
74	-74	SS-34 74.0-76.0	12/12		38-120			Same as above, less gravel
75	-75							
76	-76	SS-35 76.0-78.0	21/21	1.1	18-63-50			Same as above, no gravel
77	-77							
78	-78	SS-36 78.0-80.0	15/15	7.5	18-72-50			Brown silty CLAY, few sand and gravel, 1" thick in end of spoon No recovery on first attempt, took 109 to go 6"
79	-79							
80	-80	SS-37 80.0-82.0	12/12	4.2	34-100			Brown medium to fine SAND, trace gravel, wet, very dense Same as above, no gravel, increase fines
81	-81							
82	-82		24/0		12-89			Brown fine to very fine silty SAND, wet, no recovery
83	-83							
84	-84	SS-38 84.0-86.0	24/4	0	1-9-20			Same as above, 1" silt seem at end of spoon
85	-85							
86	-86	SS-39 86.0-88.0	24/12	0	23-9			Brown fine to medium grain SAND, trace gravel, trace silt
87	-87							
88	-88							End of boring at 88.0'
89	-89							
90								

Well: HMW-6D
Elev.:



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Hull & associates, inc.

South Bend Area A
UP&V Reservoir
South Bend, IN

SBI002

Date Started	: 08/09/01
Date Completed	: 08/09/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 78.0'
S. Water Level Date	:
S. Water Level (ft.)	:

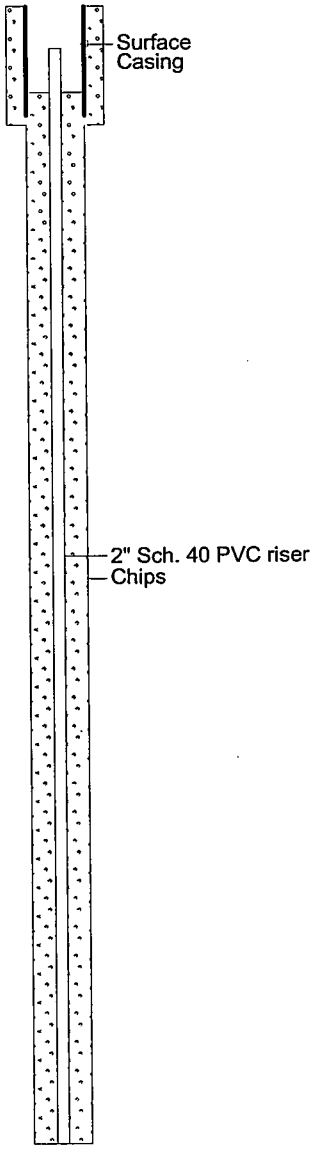
LOG OF BORING HMW-8D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
0	0							Concrete
1	-1	HA-1/ 1.0-2.0		1.8				
2	-2	HA-2/ 2.0-4.0		2.3				Brown silty medium to carse SAND, trace gravel moist
3	-3							Light brown medium to carse SAND, trace gravel moist
4	-4	SS-3 4.0-6.0	24/14	0.9	4-17-8			Same as above
5	-5							
6	-6	SS-4 6.0-8.0	24/18	2.1	4-9-5			Same as above, less gravel
7	-7							
8	-8	SS-5 8.0-10.0	24/22	5.6	3-6-4			Same as above
9	-9							
10	-10	SS-6 10.0-12.0	24/16	0.6	2-6-4			Same as above, increase gravel
11	-11							
12	-12	SS-7 12.0-14.0	24/14	2.9	4-19-16			Same as above
13								

Well: HMW-8D
Elev.:



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11-30-2001

Hull & associates, inc.

South Bend Area A
UP&V Reservoir
South Bend, IN

SBI002

Date Started	: 08/09/01
Date Completed	: 08/09/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 78.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-8D

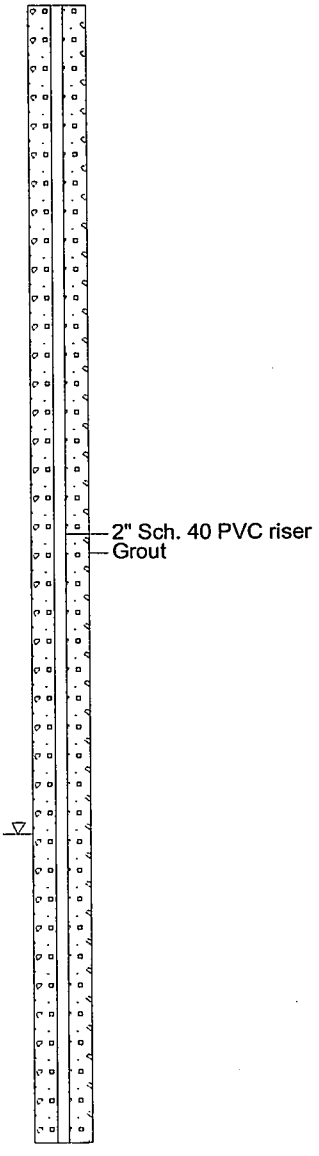
G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
13	-13							
14	-14	SS-8 14.0-16.0	24/14	2.4	4-21-13			Same as above, no gravel
15	-15							
16	-16	SS-9 16.0-18.0	24/20	2.1	4-47-31			Same as above
17	-17							
18	-18	SS-10 18.0-20.0	24/24	0.8	11-29-17			Same as above, trace gravel
19	-19							
20	-20	SS-11 20.0-22.0	24/20	0.0	11-31-17			Same as above
21	-21							
22	-22	SS-12 22.0-24.0	24/18	0.0	8-16-12			Same as above, wet
23	-23							
24	-24	SS-13 24.0-26.0	24/20	0.0	4-22-21			Same as above
25	-25							
26								

Well: HMW-8D
Elev.:



Hull & associates, inc.

South Bend Area A
UP&V Reservoir
South Bend, IN

SBI002

Date Started	: 08/09/01
Date Completed	: 08/09/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 78.0'
S. Water Level Date	:
S. Water Level (ft.)	:

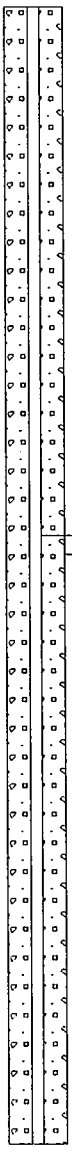
LOG OF BORING HMW-8D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
26	-26	SS-14 26.0-28.0	24/24	0.0	5-15-13			Same as above
27	-27							
28	-28	SS-15 28.0-30.0	24/22	0.0	4-19-19			Same as above, more coarse, less gravel
29	-29							
30	-30	SS-16 30.0-32.0	24/22	0.0	4-18-13			Same as above, less coarse, more fines
31	-31							
32	-32	SS-17 32.0-34.0	24/20	0.0	4-16-17			Same as above
33	-33							
34	-34	SS-18 34.0-36.0	24/22	0.0	5-24-25			Same as above, increase gravel with depth
35	-35							
36	-36	SS-19 36.0-38.0	24/20	0.0	2-15-13			Same as above, less fines, more coarse
37	-37							
38	-38	SS-20 38.0-40.0	24/10	0.0	13-31-19			Same as above
39								

Well: HMW-8D
Elev.:



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11-30-2001

Hull & associates, inc.

South Bend Area A
UP&V Reservoir
South Bend, IN

SBI002

Date Started	: 08/09/01
Date Completed	: 08/09/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 78.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-8D

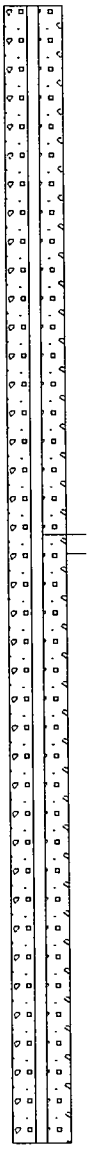
G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Well: HMW-8D
Elev.:

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	DESCRIPTION
39	-39					
40	-40	SS-21 40.0-42.0	24/10	0.0	16-29-16	Same as above, less gravel
41	-41					
42	-42	SS-22 42.0-44.0	24/16	0.0	11-39-23	Same as above, increase gravel
43	-43					
44	-44	SS-23 44.0-46.0	24/20	0.0	7-60-45	Same as above, large cobble in end of spoon
45	-45					
46	-46	SS-24 46.0-48.0	24/10	0.0	8-27-24	Same as above
47	-47					
48	-48	SS-25 48.0-50.0	24/14	0.0	9-28-21	Same as above
49	-49					
50	-50	SS-26 50.0-52.0	24/10	0.0	8-20-16	Same as above
51	-51					
52						



Hull & associates, inc.

South Bend Area A
UP&V Reservoir
South Bend, IN

SBI002

Date Started	: 08/09/01
Date Completed	: 08/09/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 78.0'
S. Water Level Date	:
S. Water Level (ft.)	:

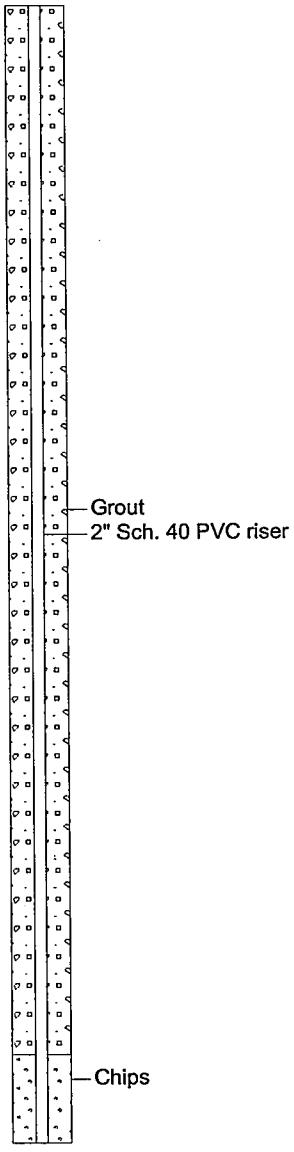
LOG OF BORING HMW-8D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
52	-52	SS-27 52.0-54.0	24/12	0.0	12-37-23			Same as above, few gravel
53	-53							
54	-54	SS-28 54.0-56.0	24/12	0.0	9-35-30			Same as above
55	-55							
56	-56	SS-29 56.0-58.0	24/10	0.0	11-26-17			Same as above
57	-57							
58	-58	SS-30 58.0-60.0	24/16	0.0	19-45-27			Same as above, large cobble in spoon
59	-59							
60	-60	SS-31 60.0-62.0	24/18	0.0	10-50-43			Same as above, brown medium to coarse sand, trace silt, trace gravel, wet
61	-61							
62	-62	SS-32 62.0-64.0	23/12	0.0	14-60-50			Same as above
63	-63							
64	-64	SS-33 64.0-66.0	24/20	0.0	16-51-35			Same as above
65								

Well: HMW-8D
Elev.:



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11-30-2001

Hull & associates, inc.

South Bend Area A
UP&V Reservoir
South Bend, IN
SBI002

Date Started	: 08/09/01
Date Completed	: 08/09/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 78.0'
S. Water Level Date	:
S. Water Level (ft.)	:

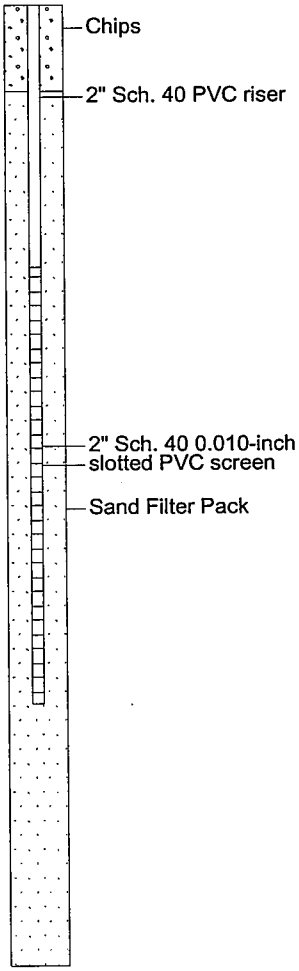
LOG OF BORING HMW-8D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	DESCRIPTION
65	-65					Same as above, few gravel
66	-66	SS-34 66.0-68.0	24/18	0.0	14-61-37	Brown silty CLAY seam, 1" thick at end of spoon
67	-67					Brown medium to coarse SAND, trace silt, trace gravel, wet
68	-68	SS-35 68.0-70.0	23/16	0.0	23-60-50	Same as above, few gravel
69	-69					Same as above, trace gravel
70	-70	SS-36 70.0-72.0	15/10	0.0	34-50	Greyish to brown silty SAND 8" of greyish to brown clayey SILT, dry
71	-71					Brown medium to fine SAND, trace silt, trace gravel, wet
72	-72	SS-37 72.0-74.0	23/23	0.0	6-36-50	
73	-73					Same as above
74	-74	SS-38 74.0-76.0	17/17	0.0	37-42-50	Grey very fine very silty SAND, wet Same as above
75	-75					
76	-76	SS-39 76.0-78.0	17/17	0.0	23-41-50	Grey very fine sandy SILT, wet
77	-77					Grey SILT outer beded with clay
78						Grey very fine very silty SAND End of boring at 78'

Well: HMW-8D
Elev.:



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Hull & associates, inc.

South Bend Area A
UP&V Reservoir
South Bend, IN

SBI002

Date Started	: 09/15/01
Date Completed	: 09/15/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: 48" Split Spoon
Total Depth (ft.)	: 69.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-9D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
0	0	HA-1/ 0.0-2.0		3.3				Dark brown fine to medium SAND, trace gravel, moist
1	-1							
2	-2	HA-2/ 2.0-4.0		2.9				Brown fine to medium SAND, trace gravel, moist
3	-3							
4	-4	SS-3 4.0-6.0	24/20	0.6				Dark brown fine to medium SAND, trace gravel, moist
5	-5							Brown medium to coarse SAND trace gravel, moist
6	-6	SS-4 6.0-8.0	24/10	0.0				Same as above
7	-7							
8	-8	SS-5 8.0-10.0	24/12	0.9				Same as above
9	-9							
10	-10	SS-6 10.0-12.0	24/10	0.0				Same as above
11	-11							
12	-12	SS-7 12.0-14.0	24/8	3.2				Same as above
13	-13							
14								

Well: HMW-9D
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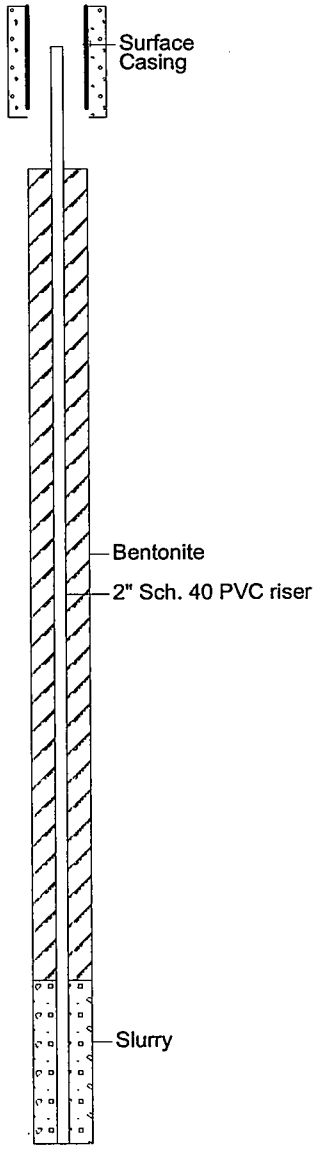

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11-30-2001

Hull & associates, inc.

South Bend Area A
UP&V Reservoir
South Bend, IN

SBI002

Date Started	: 09/15/01
Date Completed	: 09/15/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: 48" Split Spoon
Total Depth (ft.)	: 69.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-9D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
14	-14	SS-8 14.0-16.0	24/12	3.9				Same as above
15	-15							
16	-16	SS-9 16.0-18.0	24/14	2.7				Same as above, less coarse, more fine sand
17	-17							
18	-18	SS-10 18.0-20.0	24/14	3.4				Same as above, increase coarse
19	-19							
20	-20	SS-11 20.0-22.0	24/10	1.0				Same as above
21	-21							
22	-22	SS-12 22.0-24.0	24/10	2.1				Same as above, wet
23	-23							
24	-24	SS-13 24.0-26.0	24/15	0.5	5-13-10			Same as above
25	-25							
26	-26	SS-14 26.0-28.0	24/10	2.4	6-17-11			Same as above
27	-27							
28								

Well: HMW-9D
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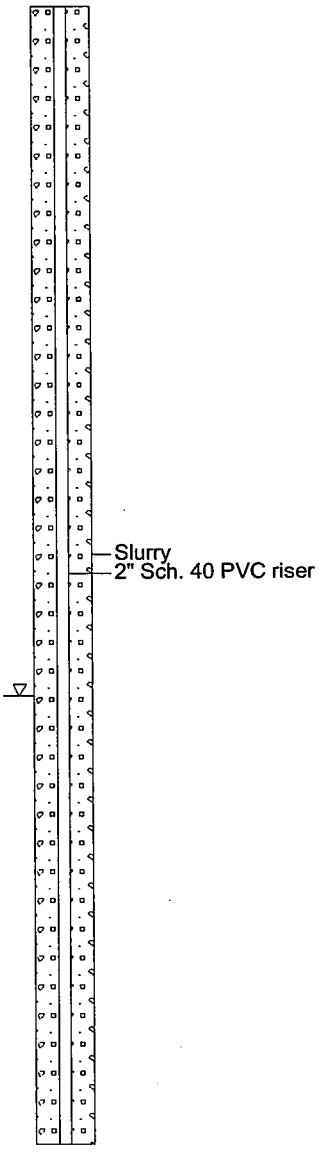

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11-30-2001

Hull & associates, inc.

South Bend Area A
UP&V Reservoir
South Bend, IN

SBI002

Date Started	: 09/15/01
Date Completed	: 09/15/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: 48" Split Spoon
Total Depth (ft.)	: 69.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-9D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
28	-28	SS-15 28.0-30.0	24/20	1.9	5-13-8			Same as above
29	-29							
30	-30	SS-16 30.0-32.0	24/12	1.5	2-6-5			Same as above, Petro staining and odor (start drumming soils)
31	-31							
32	-32	SS-17 32.0-34.0	24/24	1.0	7-16-13			Same as above, staining continues
33	-33							
34	-34	SS-18 34.0-36.0	24/15	1.6	7-17-14			Same as above, staining continues
35	-35							
36	-36	SS-19 36.0-38.0	24/15	0.2	7-19-17			Same as above, staining continues
37	-37							
38	-38	SS-20 38.0-40.0	24/12	1.6	5-16-11			Same as above, staining continues
39	-39							
40	-40	SS-21 40.0-42.0	24/12	1.8	7-18-10			Same as above, staining continues
41	-41							
42								

Well: HMW-9D
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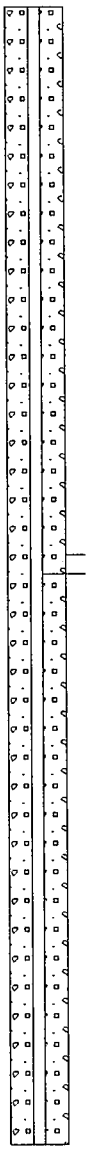

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11-30-2001

Hull & associates, inc.

South Bend Area A
UP&V Reservoir
South Bend, IN

SBI002

Date Started	: 09/15/01
Date Completed	: 09/15/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: 48" Split Spoon
Total Depth (ft.)	: 69.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-9D

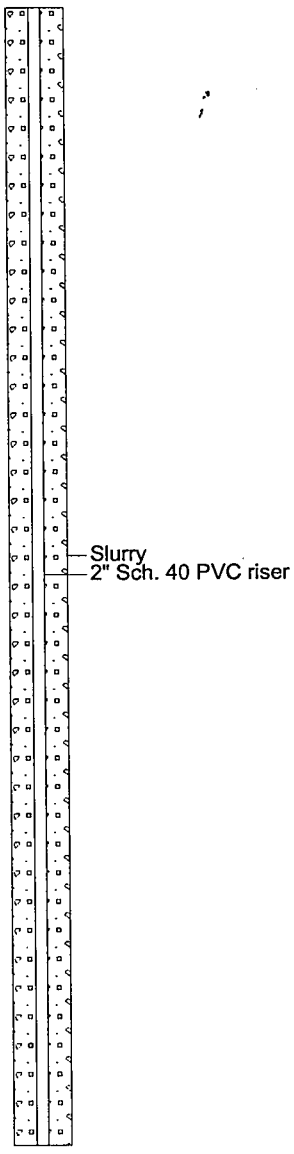
G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
42	-42	SS-22 42.0-44.0	24/15	1.6	7-14-10			Same as above, staining continues
43	-43							
44	-44	SS-23 44.0-46.0	24/15	1.1	7-19-14			Same as above, staining continues
45	-45							
46	-46	SS-24 46.0-48.0	24/10	3.1	7-25-21			Same as above, staining continues
47	-47							
48	-48	SS-25 48.0-50.0	24/10	2.2	7-17-14			Same as above, more gravel in bottom 5" of spoon, less staining
49	-49							
50	-50	SS-26 50.0-52.0	24/10	2.0	10-26-17			Same as above, less gravel, slight staining
51	-51							
52	-52	SS-27 52.0-54.0	24/10	4.2	8-24-26			Same as above, more gravel in bottom 6" of spoon, slight staining
53	-53							
54	-54	SS-28 54.0-56.0	24/8	2.1	8-17-8			Same as above, less gravel, slight staining
55	-55							
56								

Well: HMW-9D
Elev.:



Hull & associates, inc.

South Bend Area A
UP&V Reservoir
South Bend, IN

SBI002

Date Started	: 09/15/01
Date Completed	: 09/15/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: 48" Split Spoon
Total Depth (ft.)	: 69.0'
S. Water Level Date	:
S. Water Level (ft.)	:

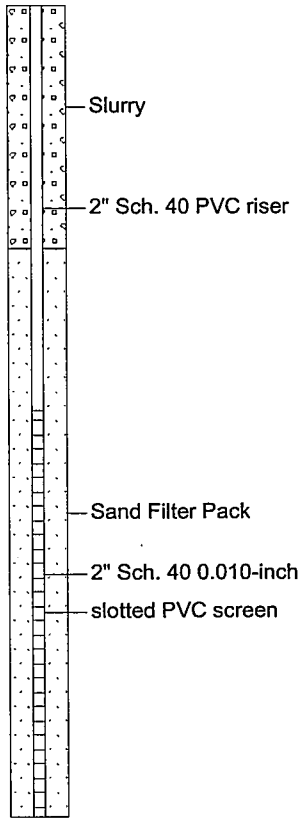
LOG OF BORING HMW-9D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
56	-56	SS-29 56.0-58.0	24/3	2.2	17-24-50			Same as above, slight staining
57	-57							
58	-58	SS-30 58.0-60.0	24/10	1.0	21-64-50			Same as above, more gravel in bottom 7" of spoon, slight staining
59	-59							
60	-60	SS-31 60.0-62.0	24/10	1.5	5-12-9			Same as above, slight staining
61	-61							
62	-62	SS-32 62.0-64.0	24/8	1.3	10-28-36			Same as above, slight odor, no obvious staining
63	-63							
64	-64	SS-33 64.0-66.0	24/15	1.7	5-12-40			Same as above
65	-65							
66	-66	SS-34 66.0-68.0	14/12	1.7	44-34-52			Tight grey sandy SILT, trace gravel, moist
67	-67							
68	-68		12/6	0.2	34-50			Same as above
								End of boring at 69.0'
69	-69							
70								

Well: HMW-9D
Elev.:



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Hull & associates, inc.

Phase II Drilling
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/22/01
Date Completed	: 08/22/01
Logged by	: Matt Young
Reviewed by	: James P. Hogan
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: 48" Split Spoon
Total Depth (ft.)	: 74.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-11D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
0	0							Concrete and rebar
1	-1							
2	-2	HA-1/ 2.0-4.0						FILL - Brown clayey sand, trace gravel / crushed limestone / crushed concrete, piece of cloth noted
3	-3							
4	-4	SS-2 4.0-6.0	14/6		4-6-50			Same as above, refusal on concrete fragment at 5.1', augered to 10' Boring located on abandoned and filled truck dock
5	-5							
6	-6							
7	-7							
8	-8							
9	-9							
10	-10	SS-3 10.0-12.0	24/18	11.1	6-10-7			Brown medium to fine SAND, trace silt, trace gravel, moist
11	-11							
12	-12	SS-4 12.0-14.0	24/16	14.8	4-12-8			Same as above, less silt with depth
13	-13							
14	-14	SS-5 14.0-16.0	24/22	17.8	4-10-10			Same as above
15								

Well: HMW-11D
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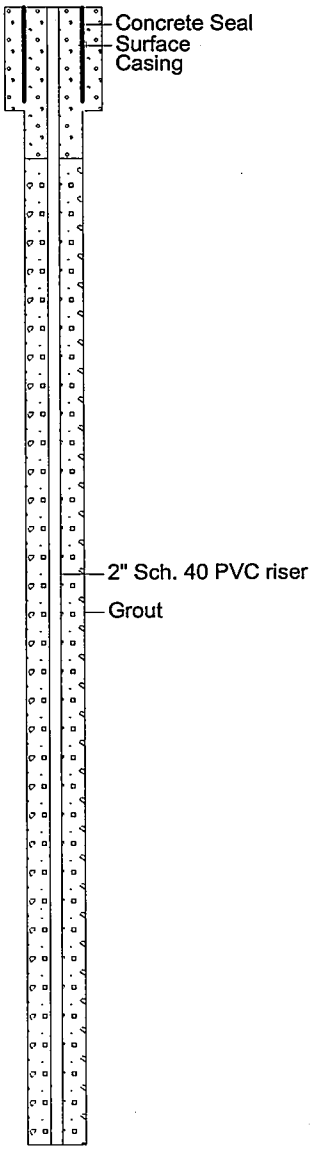

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11-30-2001

Hull & associates, inc.

Phase II Drilling
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/22/01
Date Completed	: 08/22/01
Logged by	: Matt Young
Reviewed by	: James P. Hogan
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: 48" Split Spoon
Total Depth (ft.)	: 74.0'
S. Water Level Date	:
S. Water Level (ft.)	:

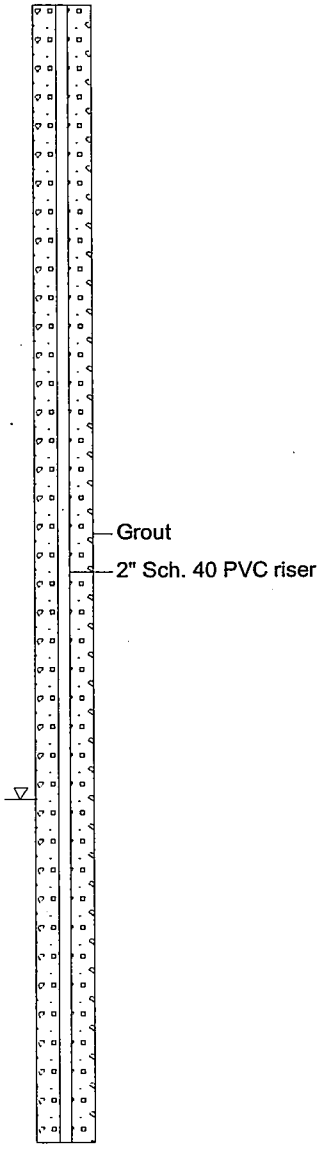
LOG OF BORING HMW-11D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
15	-15							
16	-16	SS-6 16.0-18.0	24/22	16.0	6-17-12			Same as above
17	-17							
18	-18	SS-7 18.0-20.0	24/22	16.8	5-9-6			Same as above, less fines, increase coarse sand
19	-19							
20	-20	SS-8 20.0-22.0	24/20	16.9	6-16-12			Same as above, increase gravel
21	-21							
22	-22	SS-9 22.0-24.0	24/20	19.2	6-19-12			Same as above, less gravel
23	-23							
24	-24	SS-10 24.0-26.0	24/20	11.0	4-10-11			Light brown medium to fine sand, trace silt trace gravel
25	-25							Same as above, less fines, wet
26	-26	SS-11 26.0-28.0	24/24	44.6	2-7-7			Grey medium to fine SAND, trace silt, strong odor (petro bitter) noted, few black stains noted
27	-27							
28	-28	SS-12 28.0-30.0	24/24	94.2	3-19-21			Same as above, strong odor noted
29	-29							
30								

Well: HMW-11D
Elev.:



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Hull & associates, inc.

Phase II Drilling
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/22/01
Date Completed	: 08/22/01
Logged by	: Matt Young
Reviewed by	: James P. Hogan
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: 48" Split Spoon
Total Depth (ft.)	: 74.0'
S. Water Level Date	:
S. Water Level (ft.)	:

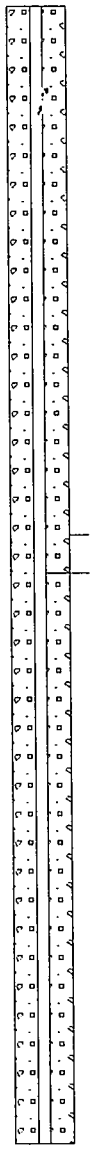
LOG OF BORING HMW-11D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
30	-30	SS-13 30.0-32.0	24/16	89.4	2-12-15			Same as above, trace gravel, sample wax have washed out, increase fine sand, strong odor noted
31	-31							
32	-32	SS-14 32.0-34.0	24/18	81.8	6-29-24			Same as above, strong odor noted
33	-33							
34	-34	SS-15 34.0-36.0	24/18	120	3-11-15			Same as above, strong odor noted, increase gravel with depth, less fines, brown oily staining noted (free phase)
35	-35							
36	-36	SS-16 36.0-38.0	24/24	121	5-30-24			Same as above, strong odor noted, brown oily staining noted
37	-37							Brown medium to coarse SAND, trace silt, trace gravel, strong odor (petro bitter)
38	-38	SS-17 38.0-40.0	24/18	70.7	4-16-20			Same as above
39	-39							
40	-40	SS-18 40.0-42.0	24/22	15.4	6-36-30			Same as above, slight odor
41	-41							
42	-42	SS-19 42.0-44.0	24/16	17.5	7-25-23			Same as above, slight odor
43	-43							
44	-44	SS-20 44.0-46.0	24/12	18.1	4-33-27			Same as above, slight odor, black stain noted
45								

Well: HMW-11D
Elev.:



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11-30-2001

Hull & associates, inc.

Phase II Drilling
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/22/01
Date Completed	: 08/22/01
Logged by	: Matt Young
Reviewed by	: James P. Hogan
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: 48" Split Spoon
Total Depth (ft.)	: 74.0'
S. Water Level Date	:
S. Water Level (ft.)	:

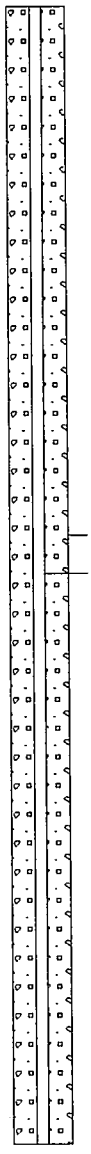
LOG OF BORING HMW-11D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
45	-45							
46	-46	SS-21 46.0-48.0	24/12	15.8	14-54-33			Same as above, slight odor
47	-47							
48	-48	SS-22 48.0-50.0	24/12	11.4	8-44-33			Same as above, increase silt, increase gravel, slight odor may be from pulling spoons through bad water
49	-49							
50	-50	SS-23 50.0-52.0	24/12	15.4	12-79-37			Same as above
51	-51							
52	-52	SS-24 52.0-54.0	21/14	16.3	8-61-50			Same as above
53	-53							
54	-54	SS-25 54.0-56.0	24/16	15.9	9-46-33			Same as above
55	-55							
56	-56	SS-26 56.0-58.0	24/12	15.3	6-25-50			Same as above, less coarse sand, less gravel
57	-57							
58	-58	SS-27 58.0-60.0	24/8	7.8	20-70-35			Brown fine to medium SAND, trace gravel trace clay
59	-59							Large cobble in spoon
60								

Well: HMW-11D
Elev.:



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11-30-2001

Hull & associates, inc.

Phase II Drilling
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/22/01
Date Completed	: 08/22/01
Logged by	: Matt Young
Reviewed by	: James P. Hogan
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: 48" Split Spoon
Total Depth (ft.)	: 74.0'
S. Water Level Date	:
S. Water Level (ft.)	:

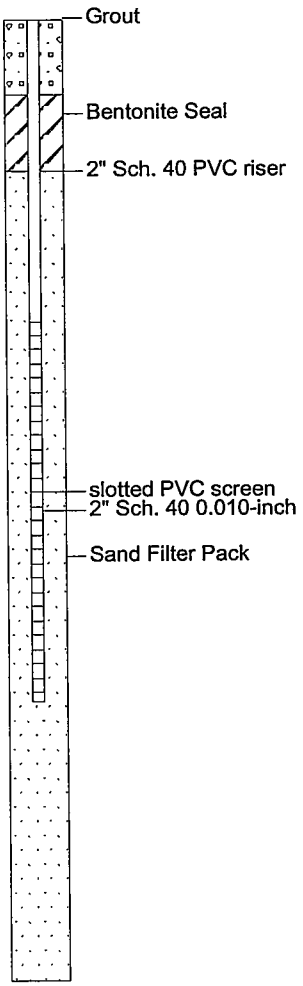
LOG OF BORING HMW-11D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
60	-60	SS-28 60.0-62.0	24/12	0.0	16-60-28			Same as above
61	-61							
62	-62	SS-29 62.0-64.0	24/14	0.0	16-73-50			Same as above, less clay, few gravel
63	-63							
64	-64	SS-30 64.0-66.0	24/6	0.0	24-45-50			Same as above, large cobble in spoon
65	-65							
66	-66	SS-31 66.0-68.0	24/14	0.0	25-60-50			Same as above, no clay, trace silt
67	-67							
68	-68	SS-32 68.0-70.0	24/18	0.0	18-58-38			Same as above, 2" very fine sand, trace silt seem at top of spoon
69	-69							
70	-70	SS-33 70.0-72.0	24/16					Same as above
71	-71							
72	-72	SS-34 72.0-74.0						Brown very fine silty SAND
73	-73							
74	-74							
75								

Well: HMW-11D
Elev.:



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11-30-2001

Hull & associates, inc.

Phase II Drilling
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/22/01
Date Completed	: 08/22/01
Logged by	: Matt Young
Reviewed by	: James P. Hogan
Drilling Contractor	: Topflite
Drilling Method	: Canterra CT250
Sampling Method	: Hand Auger/Split Spoon
Total Depth (ft.)	: 74.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-11DA

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
0	0							Concrete
1	-1							
2	-2	HA-1/ 2.0-4.0						FILL - Brown clayey sand, trace gravel / crushed limestone / crushed concrete, piece of cloth noted
3	-3							
4	-4	SS-2 4.0-6.0	14/6		4-6-50			Same as above, refusal on concrete fragment at 5.1', augered to 10' Boring located on abandoned and filled truck dock
5	-5							
6	-6							
7	-7							
8	-8							
9	-9							
10	-10	SS-3 10.0-12.0	24/18	11.1	6-10-7			Brown medium to fine SAND, trace silt, trace gravel, moist
11	-11							
12	-12	SS-4 12.0-14.0	24/16	14.8	4-12-8			Same as above, less silt with depth
13	-13							
14	-14	SS-5 14.0-16.0	24/22	17.8	4-10-10			Same as above
15								

Well: HMW-11DA
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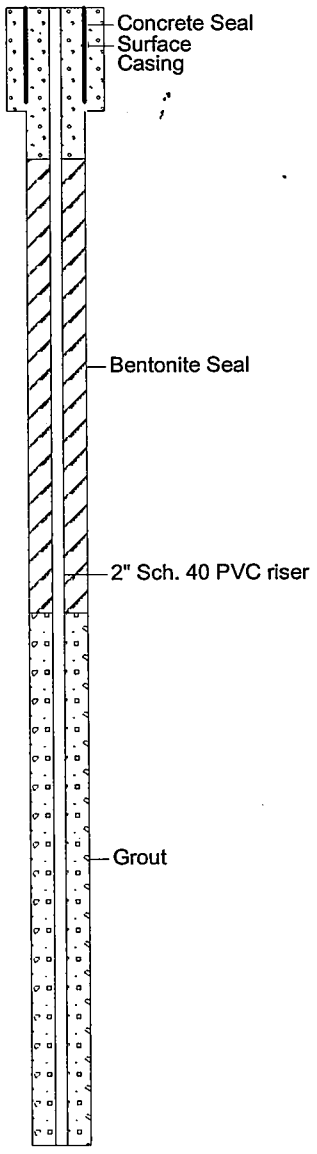


Hull & associates, inc.

Phase II Drilling
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/22/01
Date Completed	: 08/22/01
Logged by	: Matt Young
Reviewed by	: James P. Hogan
Drilling Contractor	: Topflite
Drilling Method	: Canterra CT250
Sampling Method	: Hand Auger/Split Spoon
Total Depth (ft.)	: 74.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-11DA

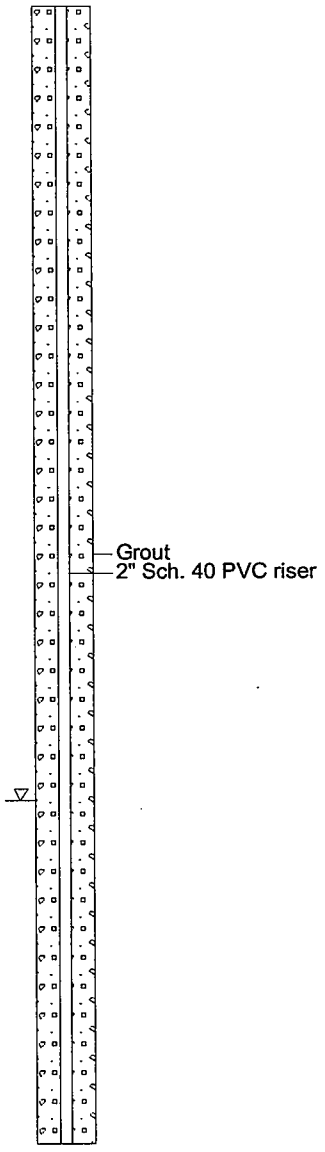
G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
15	-15							
16	-16	SS-6 16.0-18.0	24/22	16.0	6-17-12			Same as above
17	-17							
18	-18	SS-7 18.0-20.0	24/22	16.8	5-9-6			Same as above, less fines, increase coarse sand
19	-19							
20	-20	SS-8 20.0-22.0	24/20	16.9	6-16-12			Same as above, increase gravel
21	-21							
22	-22	SS-9 22.0-24.0	24/20	19.2	6-19-12			Same as above, less gravel
23	-23							
24	-24	SS-10 24.0-26.0	24/20	11.0	4-10-11			Light brown medium to fine sand, trace silt trace gravel
25	-25							Same as above, less fines, wet
26	-26	SS-11 26.0-28.0	24/24	44.6	2-7-7			Grey medium to fine SAND, trace silt, strong odor (petro bitter) noted, few black stains noted
27	-27							
28	-28	SS-12 28.0-30.0	24/24	94.2	3-19-21			Same as above, strong odor noted
29	-29							
30								

Well: HMW-11DA
Elev.:



Hull & associates, inc.

Phase II Drilling
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/22/01
Date Completed	: 08/22/01
Logged by	: Matt Young
Reviewed by	: James P. Hogan
Drilling Contractor	: Topflite
Drilling Method	: Canterra CT250
Sampling Method	: Hand Auger/Split Spoon
Total Depth (ft.)	: 74.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-11DA

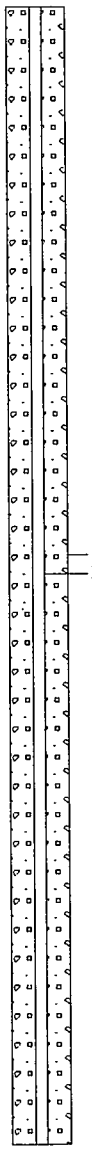
G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
30	-30	SS-13 30.0-32.0	24/16	89.4	2-12-15			Same as above, trace gravel, sample wax have washed out, increase fine sand, strong odor noted
31	-31							
32	-32	SS-14 32.0-34.0	24/18	81.8	6-29-24			Same as above, strong odor noted
33	-33							
34	-34	SS-15 34.0-36.0	24/18	120	3-11-15			Same as above, strong odor noted, increase gravel with depth, less fines, brown oily staining noted (free phase)
35	-35							
36	-36	SS-16 36.0-38.0	24/24	121	5-30-24			Same as above, strong odor noted, brown oily staining noted
37	-37							Brown medium to coarse SAND, trace silt, trace gravel, strong odor (petro bitter)
38	-38	SS-17 38.0-40.0	24/18	70.7	4-16-20			Same as above
39	-39							
40	-40	SS-18 40.0-42.0	24/22	15.4	6-36-30			Same as above, slight odor
41	-41							
42	-42	SS-19 42.0-44.0	24/16	17.5	7-25-23			Same as above, slight odor
43	-43							
44	-44	SS-20 44.0-46.0	24/12	18.1	4-33-27			Same as above, slight odor, black stain noted
45								

Well: HMW-11DA
Elev.:



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Hull & associates, inc.

Phase II Drilling
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/22/01
Date Completed	: 08/22/01
Logged by	: Matt Young
Reviewed by	: James P. Hogan
Drilling Contractor	: Topflite
Drilling Method	: Canterra CT250
Sampling Method	: Hand Auger/Split Spoon
Total Depth (ft.)	: 74.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-11DA

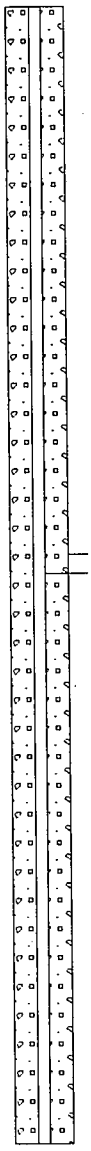
G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Well: HMW-11DA
Elev.:

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
45	-45							
46	-46	SS-21 46.0-48.0	24/12	15.8	14-54-33			Same as above, slight odor
47	-47							
48	-48	SS-22 48.0-50.0	24/12	11.4	8-44-33			Same as above, increase silt, increase gravel, slight odor may be from pulling spoons through bad water
49	-49							
50	-50	SS-23 50.0-52.0	24/12	15.4	12-79-37			Same as above
51	-51							
52	-52	SS-24 52.0-54.0	21/14	16.3	8-61-50			Same as above
53	-53							
54	-54	SS-25 54.0-56.0	24/16	15.9	9-46-33			Same as above
55	-55							
56	-56	SS-26 56.0-58.0	24/12	15.3	6-25-50			Same as above, less coarse sand, less gravel
57	-57							
58	-58	SS-27 58.0-60.0	24/8	7.8	20-70-35			Brown fine to medium SAND, trace gravel trace clay
59	-59							Large cobble in spoon
60								



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11-30-2001

Hull & associates, inc.

Phase II Drilling
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/22/01
Date Completed	: 08/22/01
Logged by	: Matt Young
Reviewed by	: James P. Hogan
Drilling Contractor	: Topflite
Drilling Method	: Canterra CT250
Sampling Method	: Hand Auger/Split Spoon
Total Depth (ft.)	: 74.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-11DA

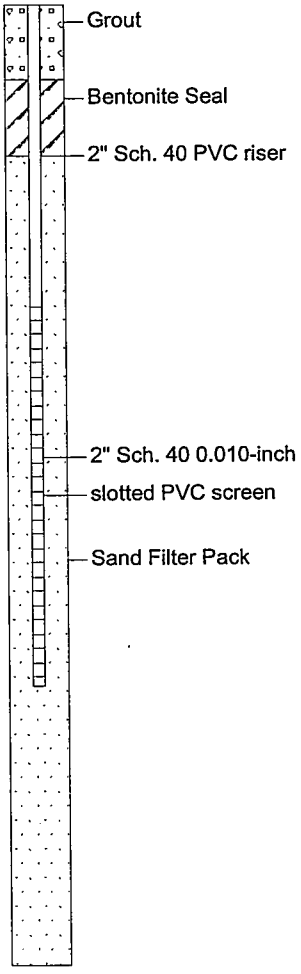
G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	DESCRIPTION
60	-60	SS-28 60.0-62.0	24/12	0.0	16-60-28	Same as above
61	-61					
62	-62	SS-29 62.0-64.0	24/14	0.0	16-73-50	Same as above, less clay, few gravel
63	-63					
64	-64	SS-30 64.0-66.0	24/6	0.0	24-45-50	Same as above, large cobble in spoon
65	-65					
66	-66	SS-31 66.0-68.0	24/14	0.0	25-60-50	Same as above, no clay, trace silt
67	-67					
68	-68	SS-32 68.0-70.0	24/18	0.0	18-58-38	Same as above, 2" very fine sand, trace silt seem at top of spoon
69	-69					Drilling note: Encountered hard gray clayey SILT at 69.0 to 69.5'
70	-70	SS-33 70.0-72.0	24/16			Same as above
71	-71					
72	-72	SS-34 72.0-74.0				Hard gray clayey SILT, trace sand; dry
73	-73					
74	-74					
75						

Well: HMW-11DA
Elev.:



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11-30-2001

Hull & associates, inc.

Phase II Drilling
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/22/01
Date Completed	: 08/22/01
Logged by	: Matt Young
Reviewed by	: James P. Hogan
Drilling Contractor	: Topflite
Drilling Method	: Canterra CT250,4 1/4"HSA
Sampling Method	: Hand Auger/Split Spoon
Total Depth (ft.)	: 40.0'
S. Water Level Date	:
S. Water Level (ft.)	:

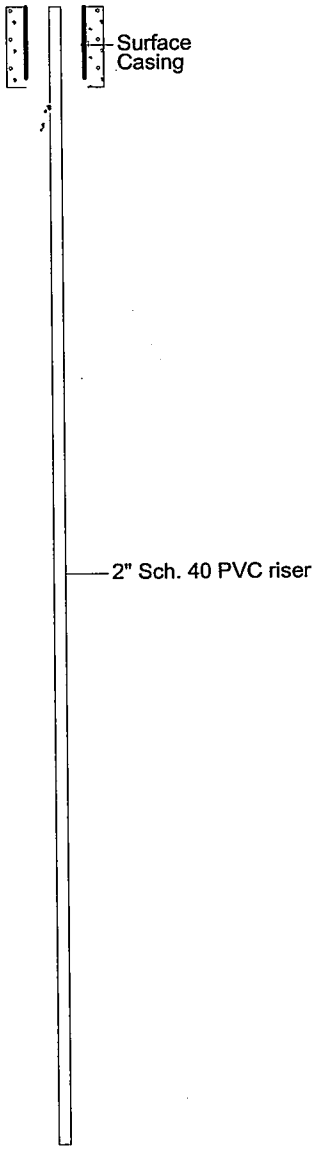
LOG OF BORING HMW-11I

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
0	0							15" Concrete
2	-2	HA-1/ 2.0-4.0						FILL - Brown clayey sand, trace gravel / crushed limestone / crushed concrete, piece of cloth noted
4	-4	SS-2 4.0-6.0	14/6		4-6-50			Same as above, refusal on concrete fragment at 5.1', augered to 10' Boring located on abandoned and filled truck dock
10	-10	SS-3 10.0-12.0	24/18	11.1	6-10-7			Brown medium to fine SAND, trace silt, trace gravel, moist
12	-12	SS-4 12.0-14.0	24/16	14.8	4-12-8			Same as above, less silt with depth
14	-14	SS-5 14.0-16.0	24/22	17.8	4-10-10			Same as above
16	-16	SS-6 16.0-18.0	24/22	16.0	6-17-12			Same as above
18	-18	SS-7 18.0-20.0	24/22	16.8	5-9-6			Same as above, less fines, increase coarse sand
20								

Well: HMW-11I
Elev.:



Hull & associates, inc.

Phase II Drilling
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/22/01
Date Completed	: 08/22/01
Logged by	: Matt Young
Reviewed by	: James P. Hogan
Drilling Contractor	: Topflite
Drilling Method	: Canterra CT250,4 1/4"HSA
Sampling Method	: Hand Auger/Split Spoon
Total Depth (ft.)	: 40.0'
S. Water Level Date	:
S. Water Level (ft.)	:

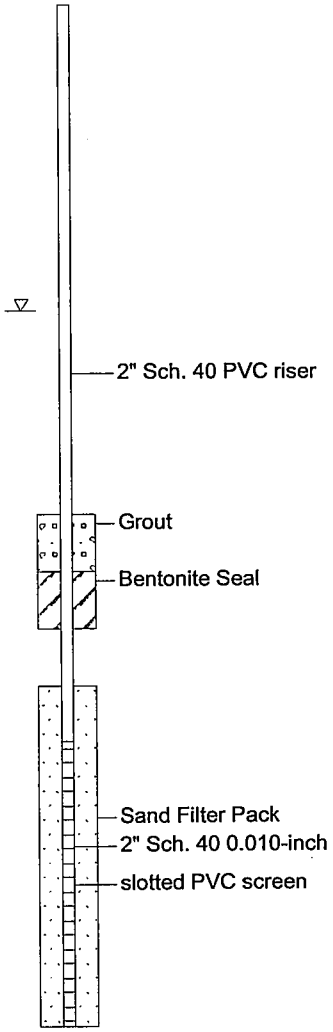
LOG OF BORING HMW-11I

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
20	-20	SS-8 20.0-22.0	24/20	16.9	6-16-12			Same as above, increase gravel
21	-21							
22	-22	SS-9 22.0-24.0	24/20	19.2	6-19-12			Same as above, less gravel
23	-23							
24	-24	SS-10 24.0-26.0	24/20	11.0	4-10-11			Light brown medium to fine sand, trace silt trace gravel
25	-25							Same as above, less fines, wet
26	-26	SS-11 26.0-28.0	24/24	44.6	2-7-7			Grey medium to fine SAND, trace silt, strong odor (petro bitter) noted, few black stains noted
27	-27							
28	-28	SS-12 28.0-30.0	24/24	94.2	3-19-21			Same as above, strong odor noted
29	-29							Auger 28' to 33' – photos 13 to 7 free Product encountered
30	-30	SS-13 30.0-32.0	24/16	89.4	2-12-15			Same as above, trace gravel, sample wax have washed out, increase fine sand, strong odor noted
31	-31							
32	-32	SS-14 32.0-34.0	24/18	81.8	6-29-24			Same as above, strong odor noted
33	-33							
34	-34	SS-15 34.0-36.0	24/18	120	3-11-15			Same as above, strong odor noted, increase gravel with depth, less fines, brown oily staining noted (free phase)
35	-35							
36	-36	SS-16 36.0-38.0	24/24	121	5-30-24			Same as above, strong odor noted, brown oily staining noted
37	-37							Brown medium to coarse SAND, trace silt, trace gravel, strong odor (petro bitter)
38	-38	SS-17 38.0-40.0	24/18	70.7	4-16-20			Same as above
39	-39							
40								

Well: HMW-11I
Elev.:



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Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/13/01
Date Completed	: 08/13/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 68.0'
S. Water Level Date	:
S. Water Level (ft.)	:

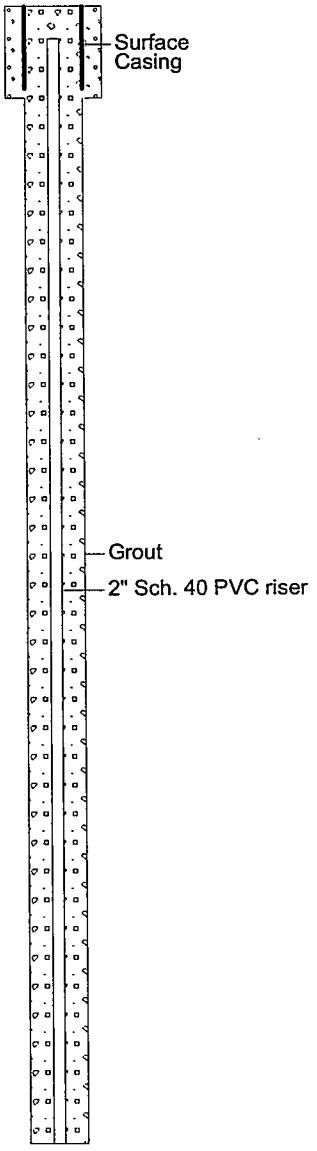
LOG OF BORING HMW-12D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	DESCRIPTION
0	0	HA-1/ 0.0-2.0				Concrete and rebar
1	-1					
2	-2	HA-2/ 2.0-4.0		0.0		Brown medium to coarse SAND, trace silt, trace gravel; small amount of balck staining, moist
3	-3					
4	-4	SS-3 4.0-6.0	24/12	2.5	4-3-2	Same as above, less staining
5	-5					
6	-6	SS-4 6.0-8.0	24/22	7.8	3-3-1	Same as above
7	-7					
8	-8	SS-5 8.0-10.0	24/14	4.7	3-6-3	Light brown medium to coarse SAND, trace gravel, trace silt, moist
9	-9					
10	-10	SS-6 10.0-12.0	24/8	10.1	9-9-5	Brown medium to coarse SAND, trace silt, trace gravel, moist
11	-11					
12	-12	SS-7 12.0-14.0	24/16	7.0	8-21-14	Same as above, less silt
13	-13					
14	-14	SS-8 14.0-16.0	24/14	9.0	8-21-15	Light brown fine to medium SAND, trace silt, moist
15	-15					
16	-16	SS-9 16.0-18.0	24/22	7.3	8-24-15	Same as above
17						

Well: HMW-12D
Elev.:



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Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/13/01
Date Completed	: 08/13/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 68.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-12D

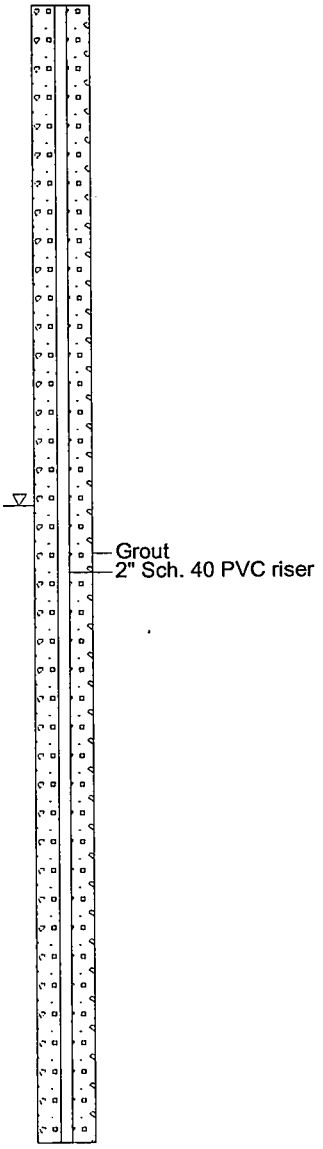
G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
17	-17							
18	-18	SS-10 18.0-20.0	24/22	2.0	6-16-10			Same as above, gradual black through spoon, less fines more medium to coarse
19	-19							
20	-20	SS-11 20.0-22.0	24/18	0.0	6-16-12			Same as above, trace gravel
21	-21							Same as above
22	-22	SS-12 22.0-24.0	24/24	0.0	8-23-14			Same as above
23	-23							
24	-24	SS-13 24.0-26.0	24/18	0.0	5-25-13			Same as above, wet
25	-25							Brown medium to coarse SAND, few gravel, trace silt, wet
26	-26	SS-14 26.0-28.0	24/12	0.0	4-22-13			Same as above
27	-27							
28	-28	SS-15 28.0-30.0	24/20	0.0	13-24-17			Same as above
29	-29							Same as above, black stain
30	-30	SS-16 30.0-32.0	24/20	0.0	7-33-27			Same as above
31	-31							
32	-32	SS-17 32.0-34.0	24/20	0.0	13-30-16			Same as above
33	-33							
34								

Well: HMW-12D
Elev.:



Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/13/01
Date Completed	: 08/13/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 68.0'
S. Water Level Date	:
S. Water Level (ft.)	:

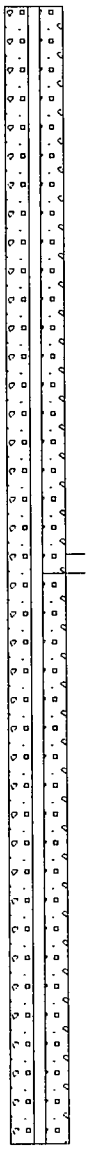
LOG OF BORING HMW-12D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Well: HMW-12D
Elev.:

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
34	-34	SS-18 34.0-36.0	24/16	0.9	29-22-17			Same as above
35	-35							
36	-36	SS-19 36.0-38.0	24/12	1.6	42-28-18			Same as above, 2 large cobbles
37	-37							
38	-38	SS-20 38.0-40.0	24/18	0.0	23-29-17			Same as above
39	-39							
40	-40	SS-21 40.0-42.0	24/12	0.0	47-34-27			Same as above, more silt
41	-41							
42	-42	SS-23 42.0-44.0	24/18	0.4	14-50-29			Same as above
43	-43							
44	-44	SS-23 44.0-46.0	24/16	0.0	7-23-14			Same as above, 4" at top, no gravel
45	-45							
46	-46	SS-24 46.0-48.0	24/18	0.0	14-49-27			Same as above
47	-47							
48	-48	SS-25 48.0-50.0	24/16	0.0	11-55-27			Same as above
49	-49							
50	-50	SS-26 50.0-52.0	24/18	0.0	15-45-44			Same as above, trace gravel
51								



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Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/13/01
Date Completed	: 08/13/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 68.0'
S. Water Level Date	:
S. Water Level (ft.)	:

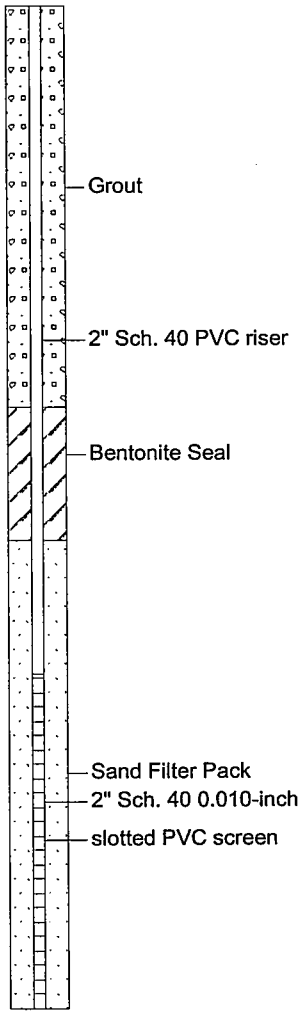
LOG OF BORING HMW-12D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Well: HMW-12D
Elev.:

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	DESCRIPTION
51	-51					
52	-52	SS-27 52.0-54.0	23/16	0.0	13-67-50	Same as above, less gravel
53	-53					
54	-54	SS-28 54.0-56.0	16/12	0.0	37-50-50	Same as above, black banding
55	-55					
56	-56	SS-29 56.0-58.0	24/14	0.0	17-49-33	Same as above, black banding
57	-57					
58	-58	SS-30 58.0-60.0	23	0.0	11-72-50	Same as above
59	-59					
60	-60	SS-31 60.0-62.0	24/18	0.0	10-51-42	Same as above, less gravel
61	-61					
62	-62	SS-32 62.0-64.0	24/4	0.0	10-50-50	Same as above, no gravel, sample most likely washed out
63	-63					
64	-64	SS-33 64.0-66.0	23/20	3.4	8-54-50	Same as above, trace gravel
65	-65					Same as above, black staining
66	-66	SS-34 66.0-68.0	24/22	0.0	10-62-50	Brown SILT, trace gravel
67	-67					Grey SILT, trace fine to medium sand, trace gravel
68						End of boring at 68.0'



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Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/15/01
Date Completed	: 08/15/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: 4.25 ID HSA
Sampling Method	: 2' Split Spoon
Total Depth (ft.)	: 31.5
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-14S

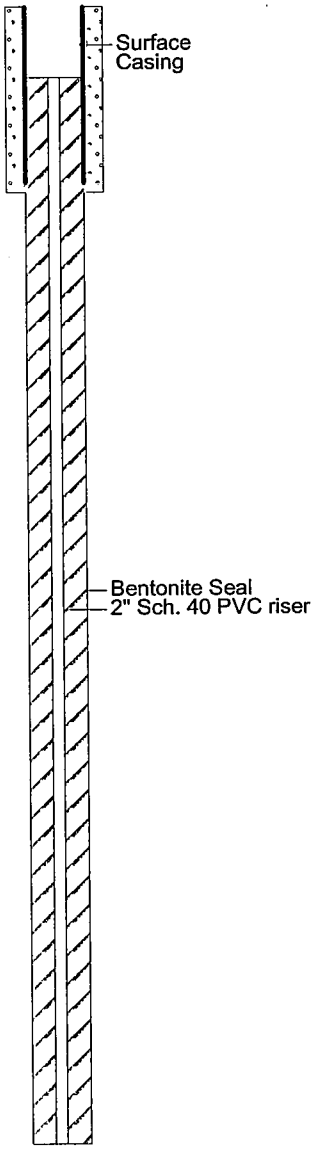
G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
0	0							Asphalt / concrete
1	-1	HA-1/ 1.0-1.5		0.8				Brown fine SAND, some gravel, moist
		HA-2/ 1.5-2.0		3.0				Black silty SAND, some gravel, organics, moist
2	-2	HA-3/ 2.0-2.7		6.8				Black silty SAND, trace gravel, moist
		HA-4/ 2.7-3.3		7.3				Same as above, slight petro odor
3	-3	HA-5/ 3.3-4.2		9.3				Same as above
4	-4	HA-6/ 4.2-4.8		20.6				Same as above
5	-5	SS-7 5.0-5.8	24/24	1.8	2-5-4			Brown fine SAND, trace gravel, slight petro staining and odor
								Brown clayey SAND, trace gravel, moist
6	-6							Brown coarse SAND, trace gravel, moist
7	-7	SS-8 7.0-8.5	24/18	3.7	2-3-2			Same as above
8								

Well: HMW-14S
Elev.:



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Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/15/01
Date Completed	: 08/15/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: 4.25 ID HSA
Sampling Method	: 2' Split Spoon
Total Depth (ft.)	: 31.5
S. Water Level Date	:
S. Water Level (ft.)	:

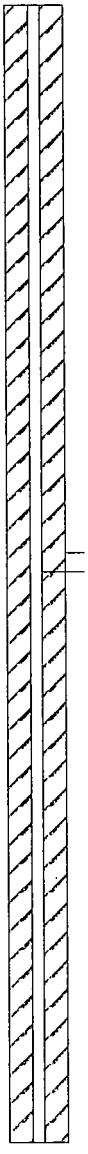
LOG OF BORING HMW-14S

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
8	-8							
9	-9	SS-9 9.0-10.3	24/15	5.1	6-7-4			Same as above, trace clay at 9.3 to 9.8
10	-10							
11	-11	SS-10 11.0-12.7	24/20	1.1	4-7-2			Light brown coarse SAND, trace gravel, moist
12	-12							
13	-13	SS-11 13.0-14.7	24/20	0.0	3-5-3			Light brown fine SAND, trace gravel, moist
14	-14							
15	-15	SS-12 15.0-15.3	24/20	3.0	4-5-2			Same as above Light brown coarse SAND, trace gravel, moist
16								

Well: HMW-14S
Elev.:



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Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN
SBI002

Date Started	: 08/15/01
Date Completed	: 08/15/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: 4.25 ID HSA
Sampling Method	: 2' Split Spoon
Total Depth (ft.)	: 31.5
S. Water Level Date	:
S. Water Level (ft.)	:

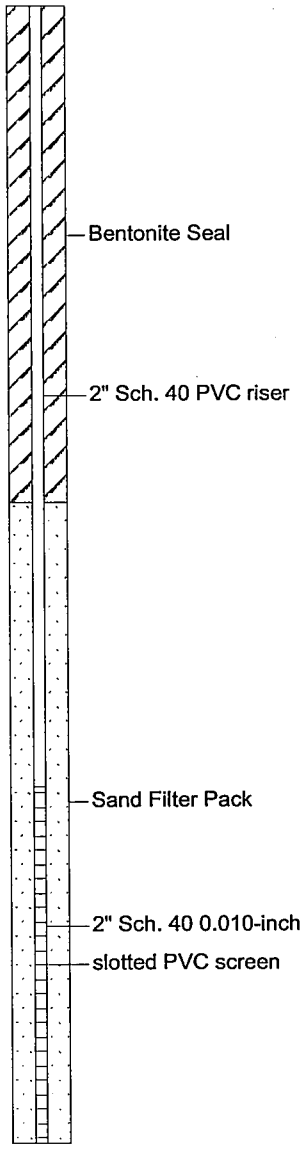
LOG OF BORING HMW-14S

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
16	-16							
17	-17	SS-13 17.0-18.7	24/20	4.3	7-13-12			Same as above
18	-18							
19	-19	SS-14 19.0-20.3	24/15	5.1	7-21-14			Light brown coarse SAND, with gravel, band of dark staining from 19.4 to 19.6 and from 19.9 to 20.2
20	-20							
21	-21	SS-15 21.0-22.3	24/15	4.0	8-33-20			Same as above (no staining)
22	-22							
23	-23	SS-16 23.0-25.0	24/24	5.0	10-22-9			Light brown coarse SAND, some gravel, very moist from 23.0 to 24.0 and saturated at 24.0
24								

Well: HMW-14S
Elev.:



Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/15/01
Date Completed	: 08/15/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: 4.25 ID HSA
Sampling Method	: 2' Split Spoon
Total Depth (ft.)	: 31.5
S. Water Level Date	:
S. Water Level (ft.)	:

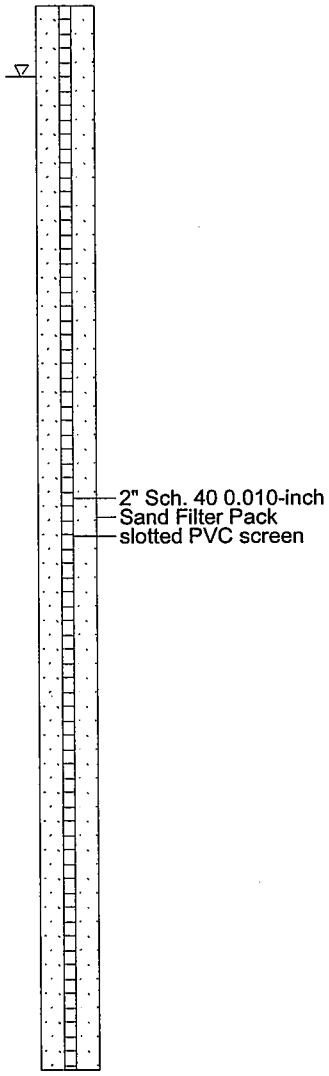
LOG OF BORING HMW-14S

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
24	-24							
25	-25	SS-17 25.0-26.4	24/17	8.9	3-7-10			Same as above
26	-26							
27	-27	SS-18 27.0-28.5	24/18	27.7	4-8-10			Same as above, petrol, stain and odor from 27.7 to 28.5
28	-28							
29	-29	SS-19 29.0-30.5	24/18	11.5	3-5-3			Same as above
30	-30							
31	-31							End of boring at 31.5'
32								

Well: HMW-14S
Elev.:



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11-30-2001

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/15/01
Date Completed	: 08/15/01
Logged by	: James P. Hogan
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: CT250 4 1/4 HSAs
Sampling Method	: Hand Auger, Split Spoons
Total Depth (ft.)	: 64.0'
S. Water Level Date	:
S. Water Level (ft.)	:

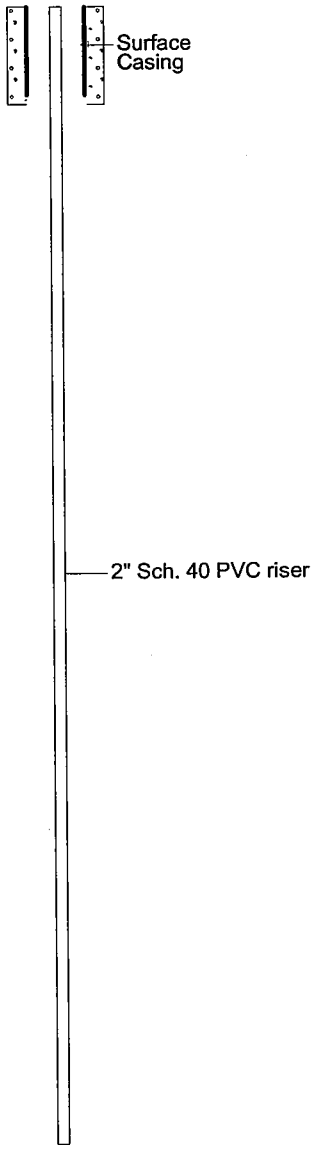
LOG OF BORING HMW-15D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
0	0							Asphalt / concrete
1	-1	HA-1/ 1.0-1.5		0.8				Brown fine SAND, some gravel, moist
		HA-2/ 1.5-2.0		3.0				Black silty SAND, some gravel, organics, moist
2	-2	HA-3/ 2.0-2.7		6.8				Black silty SAND, trace gravel, moist
		HA-4/ 2.7-3.3		7.3				Same as above, slight petro odor
3	-3	HA-5/ 3.3-4.2		9.3				Same as above
4	-4	HA-6/ 4.2-4.8		20.6				Same as above
5	-5	SS-7 5.0-5.8	24/24	1.8	2-5-4			Brown fine SAND, trace gravel, slight petro staining and odor
6	-6							Brown clayey SAND, trace gravel, moist
								Brown coarse SAND, trace gravel, moist
7	-7	SS-8 7.0-8.5	24/18	3.7	2-3-2			Same as above
8	-8							
9	-9	SS-9 9.0-10.3	24/15	5.1	6-7-4			Same as above, trace clay at 9.3 to 9.8
10	-10							
11	-11	SS-10 11.0-12.7	24/20	1.1	4-7-2			Light brown coarse SAND, trace gravel, moist
12	-12							
13	-13	SS-11 13.0-14.7	24/20	0.0	3-5-3			Light brown fine SAND, trace gravel, moist
14	-14							
15	-15	SS-12 15.0-15.3	24/20	3.0	4-5-2			Same as above Light brown coarse SAND, trace gravel, moist
16								

Well: HMW-15D
Elev.:



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Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/15/01
Date Completed	: 08/15/01
Logged by	: James P. Hogan
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: CT250 4 1/4 HSAs
Sampling Method	: Hand Auger, Split Spoons
Total Depth (ft.)	: 64.0'
S. Water Level Date	:
S. Water Level (ft.)	:

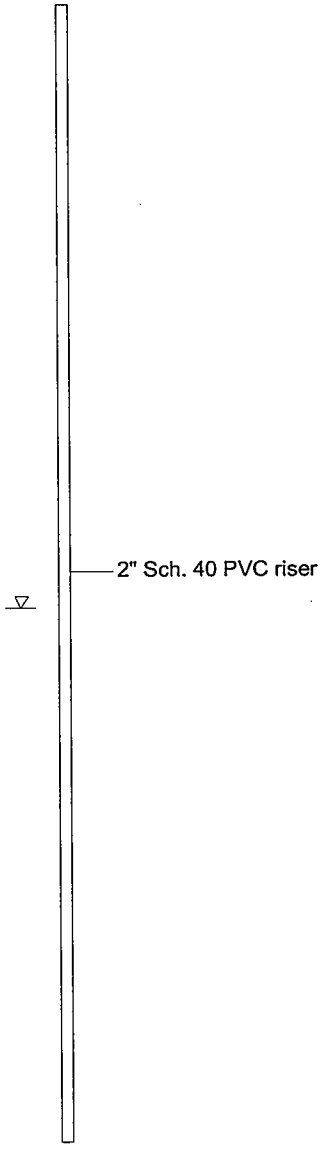
LOG OF BORING HMW-15D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: ⊠ Sampled Int. ■ Lab Sample
Water Levels: ▼ Static ▽ During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
16	-16							
17	-17	SS-13 17.0-18.7	24/20	4.3	7-13-12			Same as above
18	-18							
19	-19	SS-14 19.0-20.3	24/15	5.1	7-21-14			Light brown coarse SAND, with gravel, band of dark staining from 19.4 to 19.6 and from 19.9 to 20.2
20	-20							
21	-21	SS-15 21.0-22.3	24/15	4.0	8-33-20			Same as above (no staining)
22	-22							
23	-23	SS-16 23.0-25.0	24/24	5.0	10-22-9			Light brown coarse SAND, some gravel, very moist from 23.0 to 24.0 and saturated at 24.0
24	-24							
25	-25	SS-17 25.0-26.4	24/17	8.9	3-7-10			Same as above
26	-26							
27	-27	SS-18 27.0-28.5	24/18	27.7	4-8-10			Same as above, petrol, stain and odor from 27.7 to 28.5
28	-28							
29	-29	SS-19 29.0-30.5	24/18	11.5	3-5-3			Same as above
30	-30	SS-1 30.0-31.2	2.0/1.2	2.5	8-21-15			Medium dense to dense coarse and medium brown SAND; trace gravel; wet
31	-31							
32								

Well: HMW-15D
Elev.:



Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/15/01
Date Completed	: 08/15/01
Logged by	: James P. Hogan
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: CT250 4 1/4 HSAs
Sampling Method	: Hand Auger, Split Spoons
Total Depth (ft.)	: 64.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-15D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
32	-32	SS-2 32.0-33.3	2.0/1.3	2.4	7-20-12			Medium dense, same as above
33	-33							
34	-34	SS-3 34.0-35.3	2.0/1.3	7.0	9-23-15			Medium dense to dense, same as above
35	-35							
36	-36	SS-4 36.0-37.3	2.0/1.3	6.2	8-28-17			Same as above
37	-37							
38	-38	SS-5 38.0-38.9	2.0/0.9	5.0	6-20-13			Medium dense brown SAND, trace gravel; wet
39	-39							
40	-40	SS-6 40.0-41.3	2.0/1.3	6.8	4-13-34			Medium dense brown SAND; wet
41	-41							
42	-42	SS-7 42.0-43.0	2.0/1.0	5.3	9-50-33			Dense to very dense orange-brown gravelly coarse SAND; trace of silt, trace clay; wet
43	-43							
44	-44	SS-8 44.0-45.3	2.0/1.3	5.7	11-95-40			
45	-45							
46	-46	SS-9 46.0-46.7	2.0/1.3	7.5	14-48-37			Dense to very dense, same as above
47	-47	SS-10 46.7-47.3		8.0				Dense to very dense fine SAND; wet
48								

Well: HMW-15D
Elev.:

2" Sch. 40 PVC riser

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11-30-2001

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/15/01
Date Completed	: 08/15/01
Logged by	: James P. Hogan
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: CT250 4 1/4 HSAs
Sampling Method	: Hand Auger, Split Spoons
Total Depth (ft.)	: 64.0'
S. Water Level Date	:
S. Water Level (ft.)	:

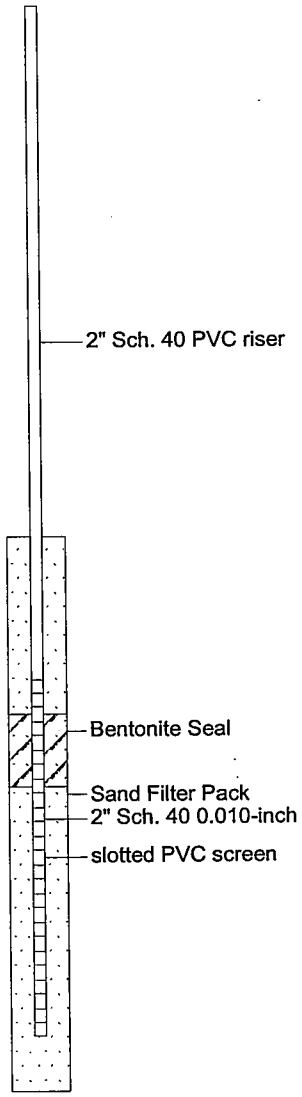
LOG OF BORING HMW-15D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
48	-48	SS-11 48.0-48.8	2.0/0.8	6.8	9-32-31			Dense, same as above
49	-49							
50	-50	SS-12 50.0-50.9	2.0/0.9	7.0	11-14-17			Medium dense brown SAND, trace gravel; wet
51	-51							
52	-52	SS-13 52.0-52.8	2.0/0.8	7.2	7-45-45			Dense to very dense brown SAND; wet
53	-53							
54	-54	SS-14 54.0-55.5	2.0/1.9	4.6	4-22-28			Medium dense to dense brown fine SAND; wet
55	-55							
56	-56	SS-15 55.5-55.9		4.5				Medium dense to dense SAND, litle gravel; wet
		SS-16 56.0-56.8	2.0/0.8	5.4	17-38-40			Dense brown SAND; wet
57	-57							
58	-58	SS-17 58.0-59.3	2.0/1.3	4.0	7-51-48			Very dense, same as above
59	-59							
60	-60	SS-18 60.0-61.0	2.0/1.0	3.3	19-32-31			Dense brown SAND, trace gravel; wet
61	-61							
62	-62	SS-19 62.0-63.0	1.3/1.3	1.4	3-34-50			Very dense brown SAND; wet
63	-63	SS-20 63.0-63.3		2.9				Hard clayey SILT, little sand; dry
64								

Well: HMW-15D
Elev.:



Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/22/01
Date Completed	: 08/22/01
Logged by	: James Hogan
Reviewed by	:
Drilling Contractor	: Topflite Drilling
Drilling Method	: CT250, 4 1/4" HSAs
Sampling Method	: Split Spoon, Hand Auger
Total Depth (ft.)	: 69.0'
S. Water Level Date	:
S. Water Level (ft.)	:

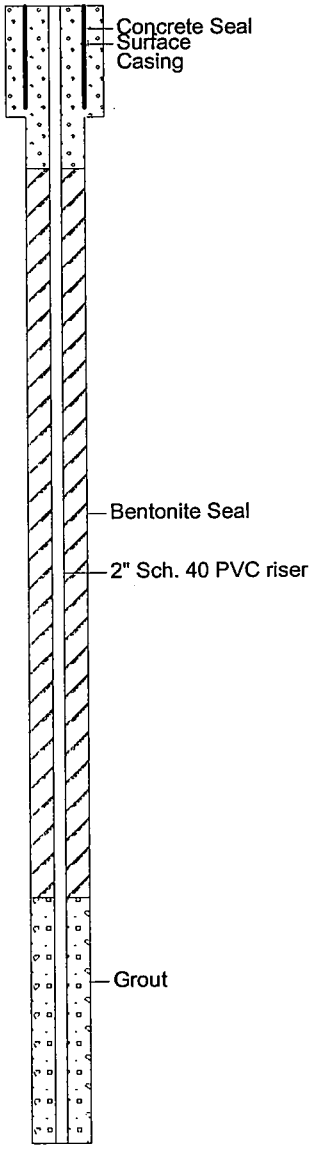
LOG OF BORING HMW-16D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Well: HMW-16D
Elev.:

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	DESCRIPTION
0	0					Asphalt and Concrete
1	-1	HA-1/ 1.0-2.0		6.7		Dark brown gravelly SAND, brick, wood, moist
2	-2	HA-2/ 2.0-4.0		5.3		Dark brown silty SAND, trace gravel; moist
3	-3					
4	-4	SS-3 4.1-5.5	2.0/1.5	0	6-11-6	Same as above Medium dense orange to brown SAND; moist
5	-5					
6	-6	SS-4 6.0-7.1	2.0/1.1	0	4-10-8	Loose orange-brown SAND, trace gravel; moist
7	-7					
8	-8	SS-5 8.0-9.5	2.0/1.5	0	5-12-6	Medium dense orange-brown SAND; trace gravel; moist
9	-9					
10	-10	SS-6 10.0-11.1	2.0/1.1	0	3-10-8	Loose orange-brown SAND, trace gravel, moist
11	-11					
12	-12	SS-7 12.0-13.0	2.0/1.0	0	5-6-1	Same as above
13	-13					
14						



Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/22/01
Date Completed	: 08/22/01
Logged by	: James Hogan
Reviewed by	:
Drilling Contractor	: Topflite Drilling
Drilling Method	: CT250, 4 1/4" HSAs
Sampling Method	: Split Spoon, Hand Auger
Total Depth (ft.)	: 69.0'
S. Water Level Date	:
S. Water Level (ft.)	:

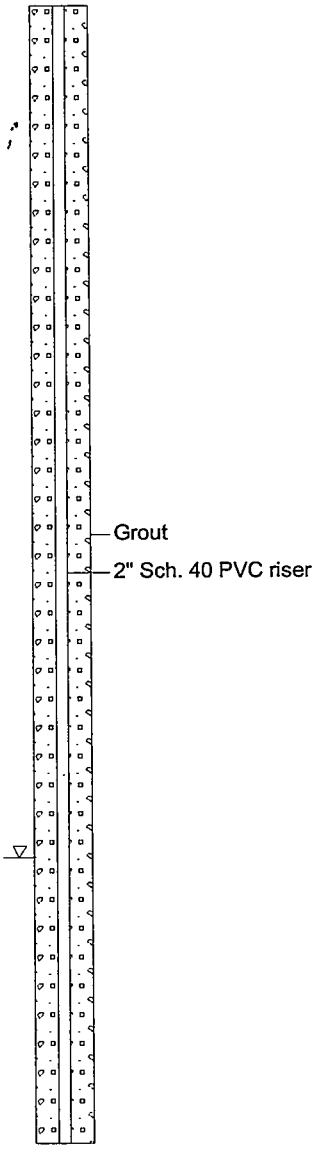
LOG OF BORING HMW-16D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
14	-14	SS-8 14.0-15.1	2.0/1.1	0	5-6-7			Same as above
15	-15							
16	-16	SS-9 16.0-17.0	2.0/1.0	0.7	9-18-10			Medium dense brown gravelly SAND; moist
17	-17							
18	-18	SS-10 18.0-19.3	2.0-1.3	2.0	9-22-8			Medium dense to dense brown gravelly SAND; moist
19	-19							
20	-20	SS-11 20.0-20.7	2.0/0.7	1.3	8-18-13			Medium dense brown sandy GRAVEL; moist
21	-21							
22	-22	SS-12 22.0-23.0	2.0/1.0	2.0	13-31-14			Dense brown gravelly SAND; moist
23	-23							
24	-24	SS-13 24.0-25.1	2.0/1.1	3.2	6-17-13			Medium dense brown SAND; wet
25	-25							
26	-26	SS-14 26.0-27.4	2.0/1.4	2.3	5-16-13			Same as above
27	-27							
28								

Well: HMW-16D
Elev.:



Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/22/01
Date Completed	: 08/22/01
Logged by	: James Hogan
Reviewed by	:
Drilling Contractor	: Topflite Drilling
Drilling Method	: CT250, 4 1/4" HSAs
Sampling Method	: Split Spoon, Hand Auger
Total Depth (ft.)	: 69.0'
S. Water Level Date	:
S. Water Level (ft.)	:

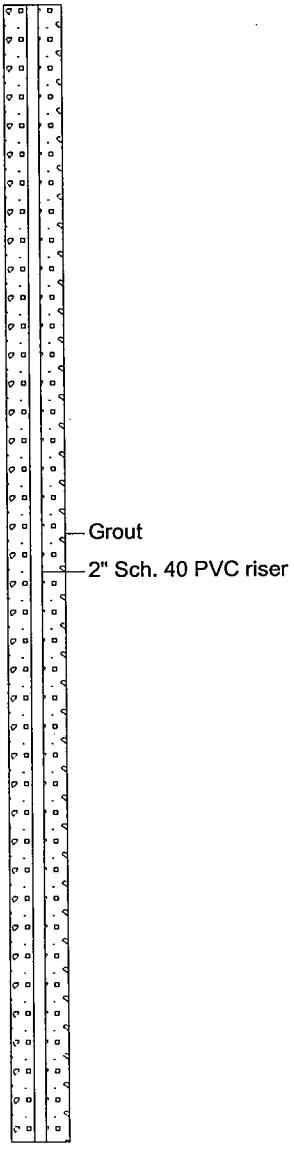
LOG OF BORING HMW-16D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
28	-28	SS-15 28.0-29.3	2.0/1.3	4.0	3-17-13			Same as above
29	-29							
30	-30	SS-16 30.0-31.0	2.0/1.0	1.7	10-17-9			Medium dense brown sandy GRAVEL; wet
31	-31							
32	-32	SS-17 32.0-33.0	2.0/1.0	5.1	8-25-16			Medium dense to dense brown sandy GRAVEL; wet
33	-33							
34	-34	SS-18 34.0-35.0	2.0/1.0	4.8	6-18-12			Medium dense brown SAND; some coarse sand; wet
35	-35							
36	-36	SS-19 36.0-37.2	2.0/1.2	4.3	4-14-13			Same as above
37	-37							
38	-38	SS-20 38.0-39.3	2.0/1.3	2.9	4-24-18			Medium dense to dense brown SAND; trace gravel; wet
39	-39							
40	-40	SS-21 40.0-40.9	2.0/0.9	3.1	8-12-20			Same as above
41	-41							
42								

Well: HMW-16D
Elev.:



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Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/22/01
Date Completed	: 08/22/01
Logged by	: James Hogan
Reviewed by	:
Drilling Contractor	: Topflite Drilling
Drilling Method	: CT250, 4 1/4" HSAs
Sampling Method	: Split Spoon, Hand Auger
Total Depth (ft.)	: 69.0'
S. Water Level Date	:
S. Water Level (ft.)	:

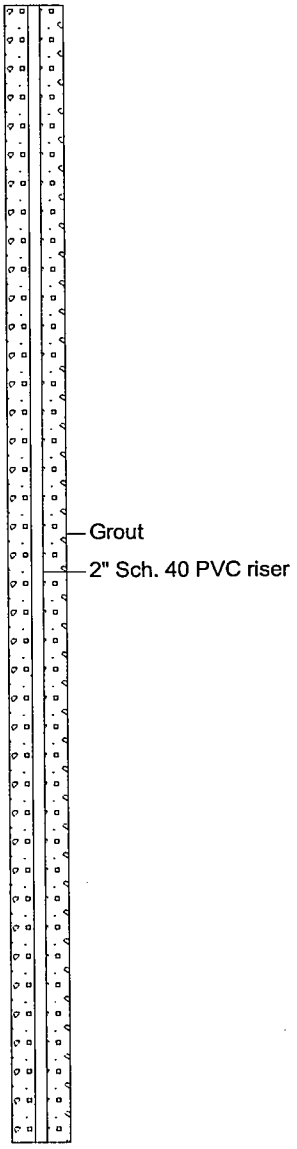
LOG OF BORING HMW-16D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
42	-42	SS-22 42.0-43.1	2.0/1.1	3.1	6-30-19			Medium dense to dense brown SAND; wet
43	-43							
44	-44	SS-23 44.0-45.0	2.0/1.0	3.9	4-12-10			Medium dense, same as above
45	-45							
46	-46	SS-24 46.0-46.8	2.0/0.8	4.1	4-21-21			Medium dense to dense, same as above
47	-47							
48	-48		0.2/0.0		50/2			No recovery
49	-49							
50	-50	SS-25 50.0-50.1	0.1/0.0	4.1	50/1			Very dense SAND, some coarse sand; wet
51	-51							
52	-52	SS-26 52.0-52.1	0.3/0.1	3.9	100/3			Very dense gravelly SAND; wet
53	-53							
54	-54	SS-27 54.0-54.3	0.3/0.3	3.5	50/3			Very dense SAND, some coarse sand; wet
55	-55							
56								

Well: HMW-16D
Elev.:



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11-30-2001

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/22/01
Date Completed	: 08/22/01
Logged by	: James Hogan
Reviewed by	:
Drilling Contractor	: Topflite Drilling
Drilling Method	: CT250, 4 1/4" HSAs
Sampling Method	: Split Spoon, Hand Auger
Total Depth (ft.)	: 69.0'
S. Water Level Date	:
S. Water Level (ft.)	:

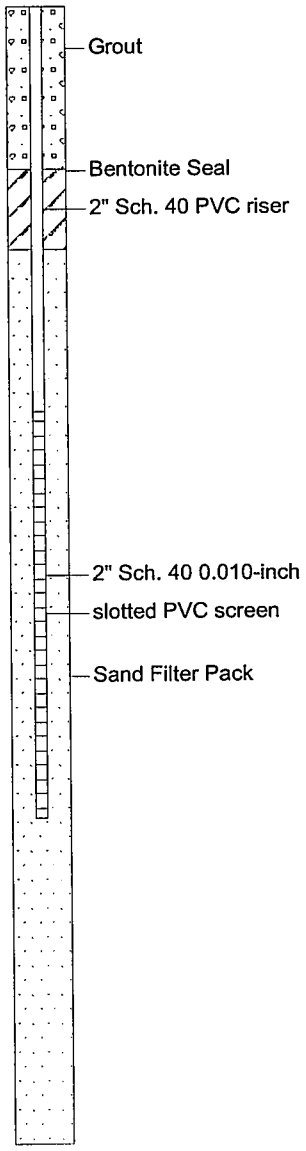
LOG OF BORING HMW-16D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
56	-56	SS-28 56.0-56.7	2.0/0.7	4.8	138-219-25			Very dense coarse SAND; trace sand; trace gravel; wet
57	-57							
58	-58	SS-29 58.0-59.0	2.0/1.0	3.1	39-56-61			Very dense SAND; wet; clayey sand in tip
59	-59							
60	-60	SS-30 60.0-61.1	1.3/1.1	4.3	10-31-50			Very dense brown SAND; wet; sandy gravel in tip
61	-61							
62	-62	SS-31 62.0-63.3	1.9/1.3	4.9	12-55-50			Very dense brown SAND; wet
63	-63							
64	-64	SS-32 64.0-64.7	1.5/1.3	4.0	24-35-50			Same as above
65	-65	SS-33 64.7-65.3		4.3				Very dense brown sandy GRAVEL; wet
66	-66	SS-34 66.0-66.9	1.5/1.2	5.2	9-27-50			Very dense brown SAND; wet
67	-67	SS-35 66.9-67.2		5.8				Very dense brown silty, little sand; trace clay; moist
68	-68	SS-36 68.0-68.9	1.5/0.9	4.4	23-42-50			Hard gray clayey SILT, trace sand; moist End of boring at 69.0'
69	-69							
70								

Well: HMW-16D
Elev.:



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11-30-2001

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/14/01
Date Completed	: 08/14/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: 4.25 HSA
Sampling Method	: Split Spoons
Total Depth (ft.)	: 32'
S. Water Level Date	:
S. Water Level (ft.)	:

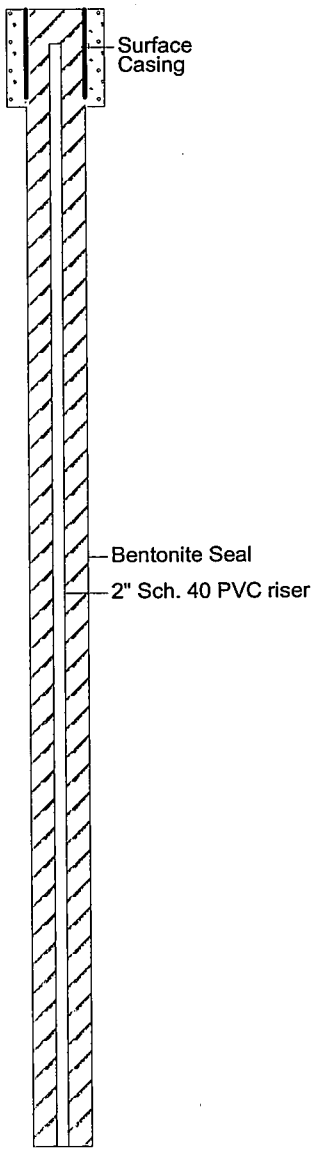
LOG OF BORING HMW-18S

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
0	0	SS-1 0.0-1.2		1.5				Black silty SAND, some gravel organics, very moist
1	-1	SS-2 1.2-2.1		2.1				Same as above
2	-2	SS-3 2.1-2.3		4.9				Brown fine SAND, some gravel, very moist
3	-3							Same as above
4	-4	SS-4 3.5-4.2		2.6				Same as above, wood fragments
		SS-5 4.2-5.0		1.9				Same as above, trace coal fragments
5	-5	SS-6 5.0-6.7	24/20	7.8	4-7-3			Brown fine SAND, trace gravel, moist
6	-6							
7	-7	SS-7 7.0-8.3	24/20	3.9	4-6-3			Same as above
8	-8							Brown coarse SAND, trace gravel, moist
9	-9	SS-8 9.0-10.3	24/15	5.7	5-11-7			Same as above
10	-10							
11	-11	SS-9 11.0-12.3	24/15	6.3	5-7-2			Brown coarse SAND, some gravel, very moist
12	-12							
13	-13	SS-10 13.0-13.8	24/15	1.4	3-5-2			Same as above
14	-14							Brown clayey SILT, some gravel, moist
15	-15	SS-11 15.0-16.3	24/15	3.7	4-10-6			Brown coarse SAND, some gravel, very moist
16								Brown coarse SAND, some gravel, trace clay, very moist

Well: HMW-18S
Elev.:



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11-30-2001

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/14/01
Date Completed	: 08/14/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: 4.25 HSA
Sampling Method	: Split Spoons
Total Depth (ft.)	: 32'
S. Water Level Date	:
S. Water Level (ft.)	:

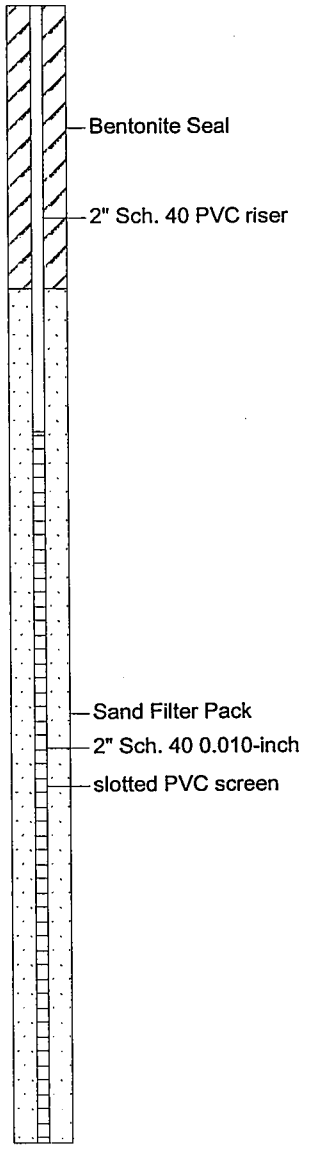
LOG OF BORING HMW-18S

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Well: HMW-18S
Elev.:

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	DESCRIPTION
16	-16					
17	-17	SS-12 17.0-18.0	24/12	3.8	3-8-7	Same as above
18	-18					
19	-19	SS-13 19.0-20.7	24/20	6.2	6-19-18	Brown coarse SAND, some gravel, very moist
20	-20					
21	-21	SS-14 21.0-22.3	24/15	4.7	9-21-24	Same as above
22	-22					
23	-23	SS-15 23.0-24.7	24/20	8.4	12-15-6	Same as above, black staining from 23.8 to 24.7, slight petro odor
24	-24					
25	-25	SS-16 25.0-26.0	24/12	7.8	6-13-9	SAND and GRAVEL, black staining from 25 to 25.3, saturated at 25.3'
26	-26					
27	-27	SS-17 27.0-28.3	24/15	6.7	1-3-2	Light brown coarse SAND, trace gravel, saturated
28	-28					
29	-29	SS-18 29.0-30.0	24/12	5.8	1-2-1	Same as above
30	-30					
31	-31	SS-19 31.0-31.4	24/5	5.9	2-3-2	Same as above
32						



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Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/08/01
Date Completed	: 08/08/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 119'
S. Water Level Date	:
S. Water Level (ft.)	:

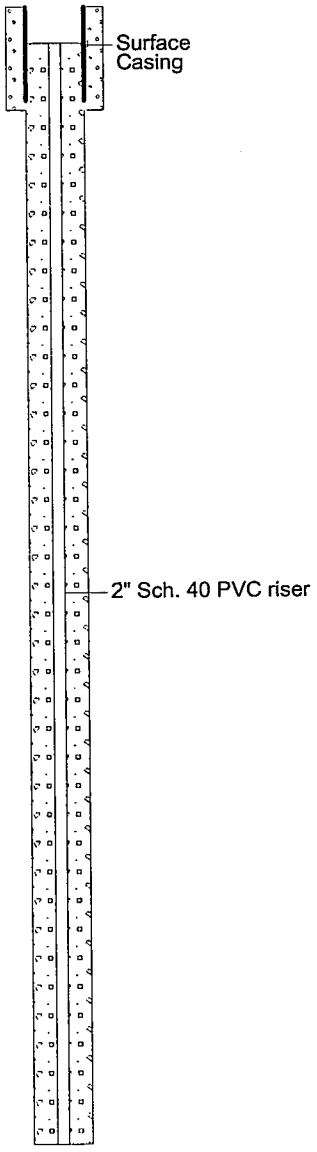
LOG OF BORING HMW-22D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
0	0	HA-1/ 0.0-2.0		3.1				Crushed stone, slag fragments, black FILL medium to coarse grain sand / cinders, dry
1	-1							
2	-2	HA-2/ 2.0-4.0		3.1				Brown medium to fine grain SAND, trace silt, trace gravel, moist
3	-3							
4	-4	SS-3 4.0-6.0	24/8	4.4	7-17-13			Same as above, light brown
5	-5							Same as above
6	-6	SS-4 5.0-6.7	24/18	3.8	2-8-6			Same as above, interbeded silty sand seam at 6.5'
7	-7							Light brown medium to fine grain SAND, moist trace silt
8	-8	SS-5 8.0-10.0	24/12	2.6	2-4-6			Same as above
9	-9							Brown medium to coarse SAND, trace silt, trace gravel
10	-10	SS-6 10.0-12.0	24/12	2.4	9-18-11			Same as above
11	-11							
12	-12	SS-7 12.0-14.0	24/18	3.7	6-21-15			Same as above, interbeded clayey sand seam at 12.5'
13	-13							
14	-14	SS-8 14.0-16.0	24/16	8.6	12-29-17			Same as above
15								

Well: HMW-22D
Elev.:



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11-05-2001

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/08/01
Date Completed	: 08/08/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 119'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-22D

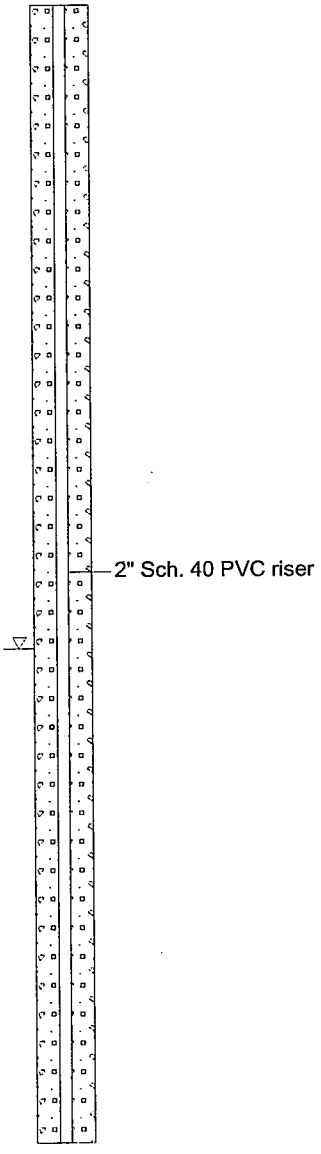
G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
15	-15							
16	-16	SS-9 16.0-18.0	24/20	1.8	9-26-17			Same as above, less gravel at 17.0
17	-17							
18	-18	SS-10 18.0-20.0	24/20	6.3	8-28-16			Same as above
19	-19							
20	-20	SS-11 20.0-22.0	24/22	14.7	10-25-16			Same as above, black banding at 21.5'
21	-21							
22	-22	SS-12 22.0-23.0	24/20	3.8	8-19-12			
23	-23	SS-13 23.0-24.0		4.1				Same as above, wet at 23.0'
24	-24	SS-14 24.0-26.0	24/22	3.6	4-14-9			Same as above, brown coarse to medium sand, trace silt, trace gravel
25	-25							
26	-26	SS-15 26.0-28.0	24/22	9.7	4-28-20			Same as above
27	-27							
28	-28	SS-16 28.0-30.0	24/16	9.9	6-23-16			Same as above, more gravel
29	-29							
30								

Well: HMW-22D
Elev.:



Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started : 08/08/01
Date Completed : 08/08/01
Logged by : Matt Young
Reviewed by :
Drilling Contractor : Topflite
Drilling Method : 4.25 ID HSA
Sampling Method : Split Spoon
Total Depth (ft.) : 119'
S. Water Level Date :
S. Water Level (ft.) :

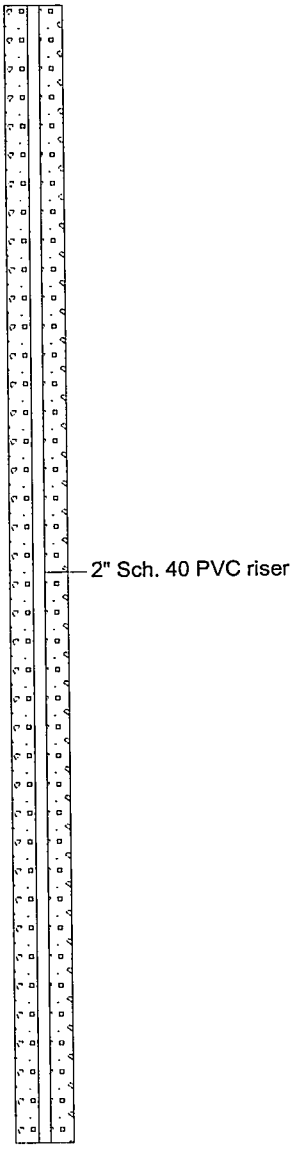
LOG OF BORING HMW-22D

G. Elev. (ft. USGS) : Not Surveyed
PID/FID Model : PID / 2020
PID/FID Calibration : 100ppm Isobutylene
Drum Label ID :

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
30	-30	SS-17 30.0-32.0	24/20	16.0	6-10-13			Same as above, black banding at 31.5'
31	-31							
32	-32	SS-18 32.0-34.0	24/22	5.9	9-19-22			Same as above
33	-33							
34	-34	SS-19 34.0-36.0	24/18	13.7	6-21-14			Same as above, large stone stuck in end of spoon, less coarse sand
35	-35							
36	-36	SS-20 36.0-38.0	24/20	5.4	9-22-9			Same as above, more coarse sand
37	-37							
38	-38	SS-21 38.0-40.0	24/18	5.6	6-32-35			Same as above
39	-39							
40	-40	SS-22 40.0-42.0	23/22	3.4	8-58-50			Same as above
41	-41							
42	-42	SS-23 42.0-44.0	24/16	2.4	9-49-30			Same as above
43	-43							
44	-44	SS-24 44.0-46.0	24/24	4.1	9-47-25			Same as above
45								

Well: HMW-22D
Elev.:



Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/08/01
Date Completed	: 08/08/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 119'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-22D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Well: HMW-22D
Elev.:

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
45	-45							
46	-46	SS-25 46.0-48.0	24/20	5.9	14-47-37			Same as above, increase gravel
47	-47							
48	-48	SS-26 48.0-50.0	24/20	5.5	10-38-19			Same as above, few gravel, less sand
49	-49							
50	-50	SS-27 50.0-52.0	24/10	5.6	13-31-28			Same as above, increase silt
51	-51							
52	-52	SS-28 52.0-54.0	23/16	4.6	25-88-50			Same as above, large stone in spoon
53	-53							Brown fine to medium SAND, trace silt, trace gravel, large stone in end of spoon
54	-54	54.0-55.0	24/18	6.8	24-53-27			Same as above
55	-55	SS-30 55.0-56.0		6.3				Grey silty clayey SAND, trace gravel
56	-56	SS-31 56.0-58.0	24/6	4.0	39-75-18			Same as above
57	-57							
58	-58	SS-22 58.0-60.0	24/12	6.6	2-19-19			Same as above
59	-59							Brown fine to medium SAND, trace gravel trace silt
60								

2" Sch. 40 PVC riser

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/08/01
Date Completed	: 08/08/01
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Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 119'
S. Water Level Date	:
S. Water Level (ft.)	:

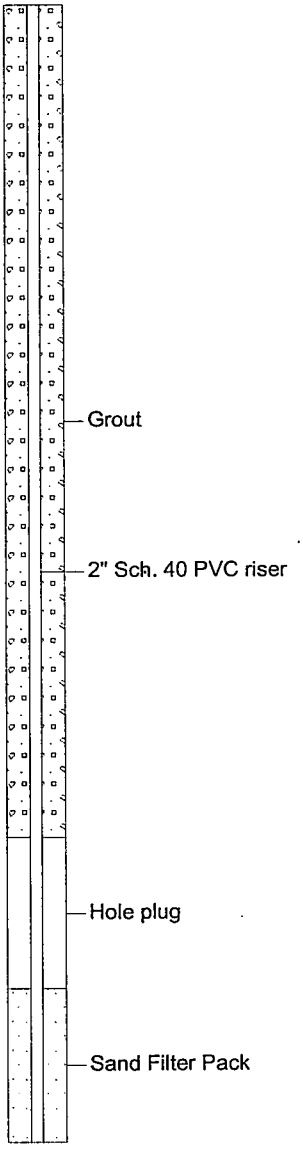
LOG OF BORING HMW-22D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	DESCRIPTION
60	-60	SS-23 60.0-62.0	24/24	8.4	8-28-27	Same as above, medium to coarse sand
61	-61					Brown fine SAND, trace silt, trace gravel 2" brown clayey sand seam, very dense, trace gravel
62	-62	SS-27 62.0-64.0	24/24	8.3	13-68-52	Brown fine SAND, trace silt, trace gravel
63	-63					Same as above, increase gravel
64	-64	SS-28 64.0-66.0	17/6	8.1	18-25-50	Brown fine silty SAND 1" brown silt seam, lost last 6" at 63.5 Same as above, may have washed out sand when removing rods
65	-65					
66	-66	SS-29 66.6-68.0	23/18	5.5	10-57-50	Brown fine to medium SAND, trace silt, trace gravel
67	-67					
68	-68	SS-30 68.0-70.0	21/24	8.2	15-58-50	Same as above, no gravel
69	-69					
70	-70	SS-31 70.0-72.0	22/20	8.5	18-56-50	2" brown sandy SILT seam at 69.5' Same as above, trace gravel
71	-71					
72	-72	SS-32 72.0-74.0	15/15	8.7	9-25-50	Same as above, no gravel, 3" brown silt seam at 73.5, lost last 6"
73	-73					
74	-74	SS-33 74.0-76.0	21/18	0.0	25-61-50	Same as above, trace gravel just above 1" sandy silt seam
75						

Well: HMW-22D
Elev.:



Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/08/01
Date Completed	: 08/08/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 119'
S. Water Level Date	:
S. Water Level (ft.)	:

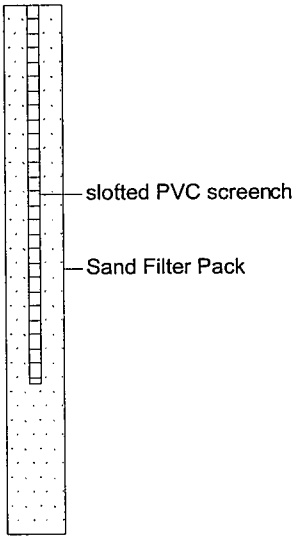
LOG OF BORING HMW-22D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
75	-75							
76	-76	SS-34 76.0-78.0	22/18	0.0	10-75-50			Same as above, increase silt with depth, trace gravel
77	-77							
78	-78	SS-35 78.0-80.0	24/18	0.0	8-44-50			Same as above
79	-79							Brown silt seam at 79', 1" thick Brown sandy silt, 6" thick Brown silt at end of spoon 3" thick
80	-80	SS-36 80.0-82.0	24/16	0.0	8-35-35			Brown sandy SILT, trace gravel
81	-81							Brown silt seam, trace gravel, last 4"
82	-82	SS-37 82.0-84.0	24/24	0.0	12-38-46			Light brown fine to medium SAND, trace silt, trace gravel
83	-83							
84	-84	SS-38 84.0-86.0	16/16	0.0	24-45-50			Brown sandy silt, last 6" Same as above, first 3"
85	-85							
86	-86	SS-39 86.0-88.0	16/6	0.0	12-25-50			Brown medium to fine SAND, trace silt, trace gravel
87	-87							Grey sandy SILT, manganese exidation, last 6" Same as above
88	-88	SS-40 88.0-90.0	16/14	0.0	11-45-50			Same asa bove, first 2" Grey silt, very dense, 6" thick
89	-89							
90								

Well: HMW-22D
Elev.:



Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/08/01
Date Completed	: 08/08/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 119'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-22D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Well: HMW-22D
Elev.:

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
90	-90	SS-41 90.0-92.0	12/10	0.0	25/86			Grey silty SAND, last 6"
91	-91							Same as above
92	-92		24/0		8-24-13			Gravel (cobbles) at end of spoon, few medium to fine sand, trace silt
93	-93							
94	-94	SS-42 94.0-96.0	24/14	0.0	8-32-24			Grey silty SAND
95	-95							
96	-96	SS-43 96.0-98.0	24/24	0.0	8-39-31			Same as above
97	-97							
98	-98		21/24		8-69-50			Same as above
99	-99							
100	-100	SS-45 100-102	24/18	4.2	18-55-50			Same as above
101	-101							Grey SILT, trace fine sand
102	-102	SS-46 102-104	21/16	2.8	22-78-50			Grey sandy SILT
103	-103							
104	-104	SS-47 104-106	15/15	0.0	19-33-50			Same as above
105								

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/08/01
Date Completed	: 08/08/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: Topflite
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 119'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-22D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Well: HMW-22D
Elev.:

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
105	-105							
106	-106	SS-48 106-108	21/16	0.0	19-62-50			Same as above, less sand, trace gravel
107	-107							
108	-108	SS-49 108-110	24/18	0.0	12-32-30			Grey fine to medium grain silty SAND
109	-109							Same as above
110	-110	SS-50 110-112	16/12	0.0	23-37-50			Same as above
111	-111							
112	-112	SS-51 112-114	17/16	0.0	23-47-50			Same as above
113	-113							
114	-114	SS-52 114-116	24/24	0.0	12-71-50			Same as above
115	-115							Grey SILT
116	-116	SS-53 116-118	17/16	0.0	10-31-50			Grey silty fine SAND, grey silt
117	-117							Same as above, grey silt, trace sand
118	-118		12/12	0.0	20-50			Grey sandy CLAY, trace gravel, very dense, moist
119	-119							Same as above Sand at end of spoon End of boring at 119.0
120								

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/13/01
Date Completed	: 08/13/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: 4.25 HSA
Sampling Method	: Split Spoon, 2" Macro
Total Depth (ft.)	: 30'
S. Water Level Date	:
S. Water Level (ft.)	:

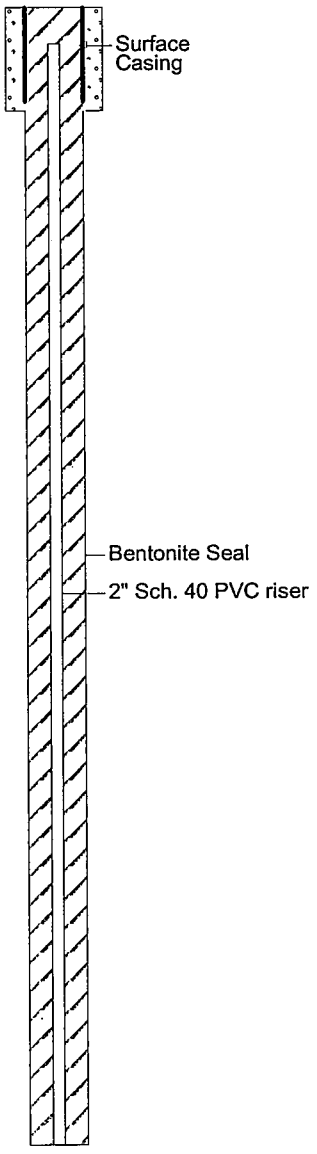
LOG OF BORING HMW-25S

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
0	0							Asphalt and Concrete
1	-1	HA-1/ 1.0-2.5		0.2				Silty SAND, some gravel very moist
2	-2							
3	-3	HA-2/ 2.5-4.0		0.5				Brown silty SAND, few gravel, very moist
4	-4	HA-3/ 4.0-5.0		0.0				Brown SAND, trace gravel, very moist
5	-5	SS-4 5.0-6.7	24/20	2.5	3-5-2			Light brown fine SAND, trace gravel, very moist
6	-6							
7	-7	SS-5 7.0-8.7	24/20	2.6	3-5-2			Same as above
8	-8							Light brown coarse SAND, some gravel, very moist
9	-9	SS-6 9.0-10.0	24/12	0.9	5-10-7			Same as above
10	-10							
11	-11	SS-7 11.0-12.5	24/18	2.4	4-6-4			Same as above
12	-12							Light brown medium coarse SAND, trace gravel, very moist
13	-13	SS-8 13.0-14.5	24/18	1.9	5-12-8			Same as above
14	-14							Light brown coarse SAND, some gravel, very moist
15								

Well: HMW-25S
Elev.:



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11-30-2001

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/13/01
Date Completed	: 08/13/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: 4.25 HSA
Sampling Method	: Split Spoon, 2" Macro
Total Depth (ft.)	: 30'
S. Water Level Date	:
S. Water Level (ft.)	:

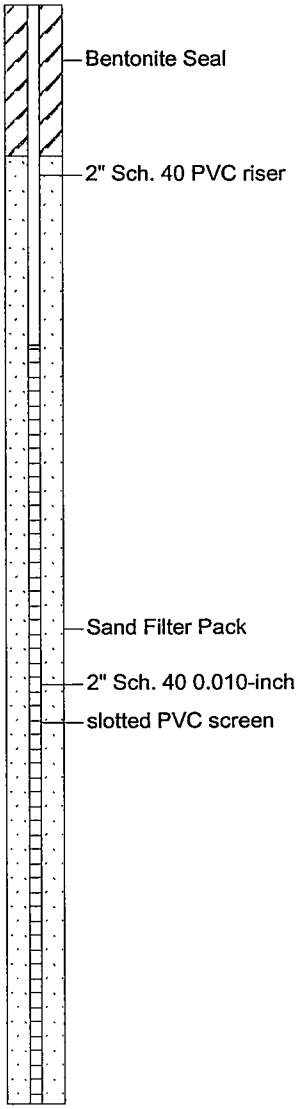
LOG OF BORING HMW-25S

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
15	-15	SS-9 15.0-16.7	24/20	2.3	8-18-14			
16	-16							
17	-17	SS-10 17.0-18.7	24/20	5.3	7-12-5			Same as above
18	-18							Coarse SAND and GRAVEL, petrol staining from 18.3 to 18.7', very moist
19	-19	SS-11 19.0-20.0	24/12	4.5	6-21-9			Same as above (also stained)
20	-20							Light brown coarse SAND, trace gravel
21	-21	SS-12 21.0-22.0	24/12	4.3	5-11-9			Light brown coarse SAND and GRAVEL, slight petro staining at 21.7'
22	-22							
23	-23	SS-13 23.0-24.5	24/18	4.1	14-20-12			Same as above, saturated at 24.0'
24	-24							
25	-25	SS-14 25.0-26.2	24/14	4.6	7-10-5			Same as above
26	-26							
27	-27	SS-15 27.0-28.0	24/12	3.7	7-14-8			Same as above
28	-28							
29	-29							Total depth of well is 29' 6"
30								

Well: HMW-25S
Elev.:



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11-30-2001

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/09/01
Date Completed	: 08/09/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: 4" HSA
Sampling Method	: 2' Split Spoon
Total Depth (ft.)	: 28'
S. Water Level Date	:
S. Water Level (ft.)	:

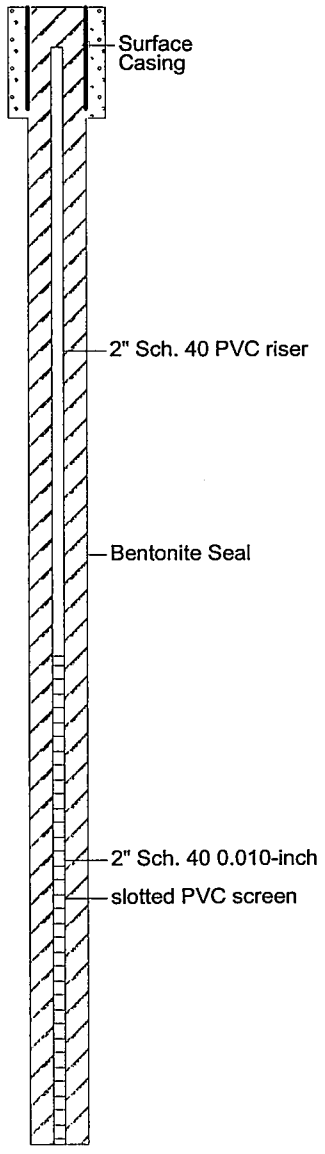
LOG OF BORING HMW-26S

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	DESCRIPTION
0	0					Asphalt and Concrete
1	-1	HA-1/ 1.5-2.3		1.8		Silty SAND, some gravel, trace clay, moist
2	-2	HA-2/ 2.3-3.8		1.7		Brown coarse SAND, trace gravel, moist
3	-3					
4	-4	HA-3/ 3.8-5.0		5.2		Same as above
5	-5	SS-4 5.0-7.0	24/24	0.5	4-4-3	Same as above
6	-6					
7	-7	SS-5 7.0-8.7	24/20	0.7	2-2-1	Light brown coarse SAND, trace gravel, very moist
8	-8					
9	-9	SS-6 9.0-10.3	24/15	10.1	3-8-4	Same as above
10	-10					
11	-11	SS-7 11.0-12.7	24/20	1.3	2-6-5	Same as above
12	-12					
13	-13	SS-8 13.0-14.7	24/20	8.3	5-7-8	Same as above, more gravel from 14.5 to 14.7
14						

Well: HMW-26S
Elev.:



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11-30-2001

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/09/01
Date Completed	: 08/09/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: 4" HSA
Sampling Method	: 2' Split Spoon
Total Depth (ft.)	: 28'
S. Water Level Date	:
S. Water Level (ft.)	:

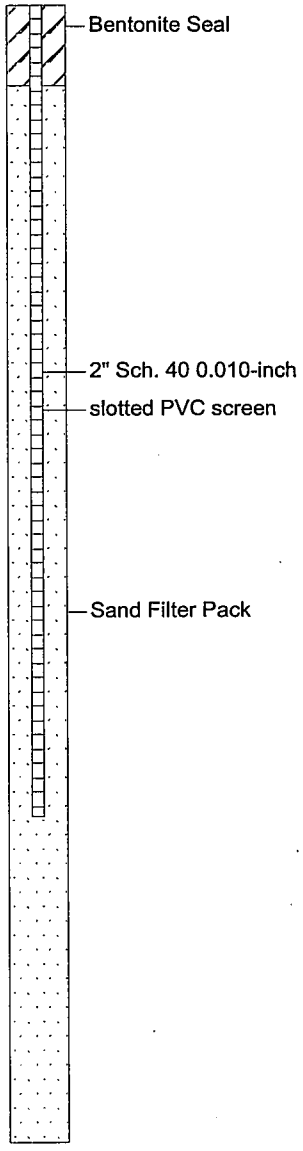
LOG OF BORING HMW-26S

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
14	-14							
15	-15	SS-9 15.0-16.7	24/20	5.1	6-14-12			Light brown SAND with gravel, very moist
16	-16							
17	-17	SS-10 17.0-18.7	24/20	6.8	8-10-9			Same as above
18	-18							
19	-19	SS-11 19.0-20.0	24/12	7.9	8-17-12			Same as above
20	-20							
21	-21	SS-12 21.0-22.7	24/20	6.2	8-17-21			Same as above
22	-22							
23	-23	SS-13 23.0-24.7	24/20	3.1	8-13-11			Light brown coarse SAND, some gravel, very moist
24	-24							
25	-25	SS-14 25.0-27.0	24/20	4.0	5-7-4			Same as above
26	-26							
27	-27	SS-15 27.3-28.0	24/12	2.5	6-6			Coarse SAND with gravel, saturated at 27.0'
28								Coarse sand and gravel, saturated Total depth of well is 28.0'

Well: HMW-26S
Elev.:



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11-30-2001

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/13/01
Date Completed	: 08/13/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: 4.25 HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 33'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-27S

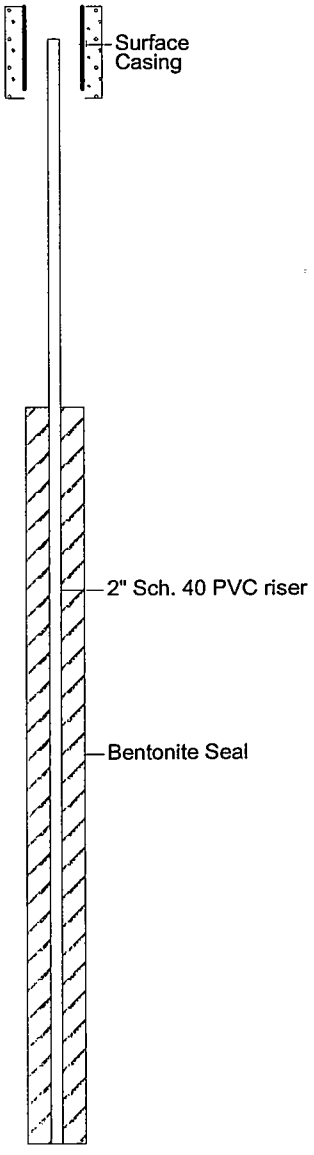
G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
0	0	HA-1/ 0.0-0.8		3.3				Black SAND, rich organics, rootlest
1	-1							Brown fine SAND, trace gravel, moist, rootlets
		HA-2/ 1.5-2.0		1.7				Same as above, no rootlets
2	-2	HA-3/ 2.0-2.5		4.3				Same as above
		HA-4/ 2.5-3.5		3.5				Same as above
3	-3							
		HA-5/ 3.5-4.0		3.6				Same as above
4	-4	HA-6/ 4.0-5.0		3.9				Same as above
5	-5	SS-7 5.0-6.0	24/12	0.0	1-3-3			Same as above
6	-6							Hit sewer line at 6.5' bg. offset 5' SW, Asphalt cover drill through asphalt and use probe to 5' - probed to 5' - no obstrutions. Straight drill to 7'
7	-7	SS-8 7.0-7.5	24/10	2.7	4-8-2			Brown fine SAND, trace gravel, moist
8	-8							Light brown coarse SAND, trace gravel, moist
9	-9	SS-9 9.0-10.0	24/12	2.4	1-2-4			Same as above
10	-10							
11	-11	SS-10 11.0-12.0	24/12	1.0	1-2-12			Light brown coarse SAND with gravel, moist
12	-12							
13	-13	SS-11 13.0-14.0	24/12	1.9	1-13-1			Light brown coarse SAND, some gravel, moist
14	-14							
15	-15	SS-12 15.0-16.3	24/15	2.4	2-4-4			Same as above
16	-16							
17								

Well: HMW-27S
Elev.:



Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/13/01
Date Completed	: 08/13/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: 4.25 HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 33'
S. Water Level Date	:
S. Water Level (ft.)	:

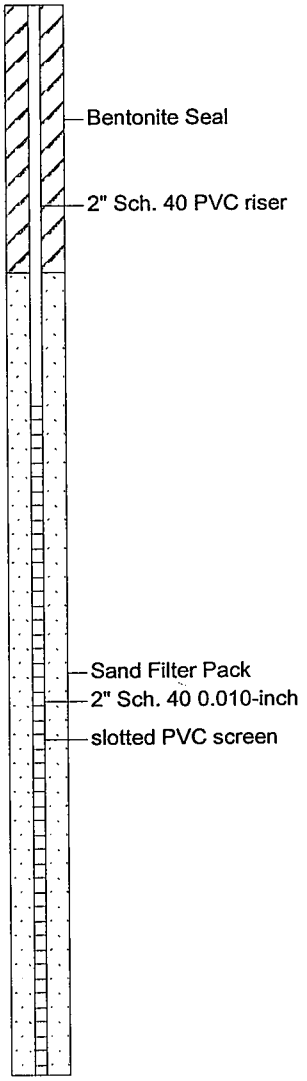
LOG OF BORING HMW-27S

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
17	-17	SS-13 17.0-19.0	24/24	3.3	5-16-10			Same as above
18	-18							
19	-19	SS-14 19.0-20.3	24/18	4.7	10-20-15			Same as above
20	-20							
21	-21	SS-15 21.0-22.7	24/20	6.3	5-20-23			Same as above
22	-22							
23	-23	SS-16 23.0-24.0	24/12	6.7	5-20-20			Same as above, very moist to saturated
24	-24							
25	-25	SS-17 25.0-26.3	24/15	6.8	6-8-3			Sand and Gravel, saturated at 26.0'
26	-26							
27	-27	SS-18 27.0-27.8	24/10	4.2	5-10-5			Same as above
28	-28							
29	-29	SS-19 29.0-30.7	24/20	5.5	2-5-4			Same as above
30	-30							
31	-31	SS-20 31.0-32.3	24/15	6.3	4-9-13			Same as above
32	-32							
33	-33							Total depth is 33.0'
34								

Well: HMW-27S
Elev.:



Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 09/12/01
Date Completed	: 09/12/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: No Sampling
Total Depth (ft.)	:
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-28S

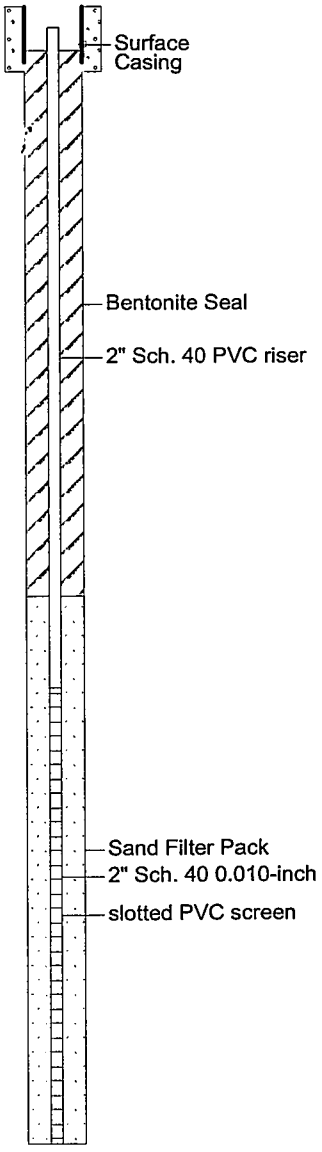
G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: PID / 2020
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. (⊠); Lab Sample (■)

Water Levels: Static (▼); During Drilling (▽)

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
0	0							See HMW-28D for geology
1	-1							
2	-2							
3	-3							
4	-4							
5	-5							
6	-6							
7	-7							
8	-8							
9	-9							
10	-10							
11	-11							
12	-12							
13	-13							
14	-14							
15	-15							
16	-16							
17	-17							
18	-18							
19	-19							
20	-20							
21	-21							
22	-22							
23	-23							
24	-24							
25								

Well: HMW-28S
Elev.:



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Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/30/01
Date Completed	: 08/30/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 96.0'
S. Water Level Date	:
S. Water Level (ft.)	:

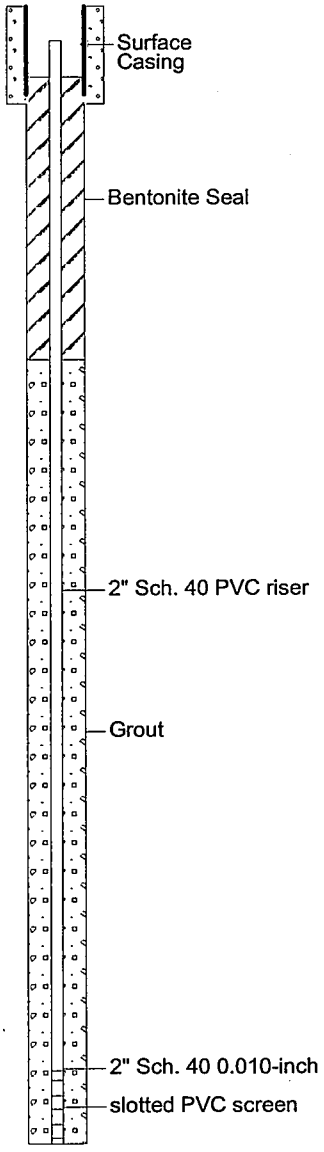
LOG OF BORING MW-28D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
0	0	HA-1/ 0.0-2.0		0.0				Dark brown organic rich clayey SAND, trace gravel, moist
2	-2	HA-2/ 2.0-4.0		0.0				Brown medium to coarse SAND, few silt, trace gravel
4	-4	SS-3 4.0-6.0	24/12	0.0	2-3-3			Same as above
6	-6	SS-4 6.0-8.0	24/18	0.0	2-4-2			Same as above, less silt
8	-8	SS-5 8.0-10.0	24/20	0.0	2-4-2			Same as above
10	-10	SS-6 10.0-12.0	24/8	0.0	2-3-1			Same as above, trace clay
12	-12	SS-7 12.0-14.0	24/12	0.0	8-19-10			Light brown medium to coarse SAND, trace silt, trace gravel, moist
14	-14	SS-8 14.0-16.0	24/16	0.0	6-18-14			Same as above
16								

Well: HMW-28D
Elev.:



Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/30/01
Date Completed	: 08/30/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 96.0'
S. Water Level Date	:
S. Water Level (ft.)	:

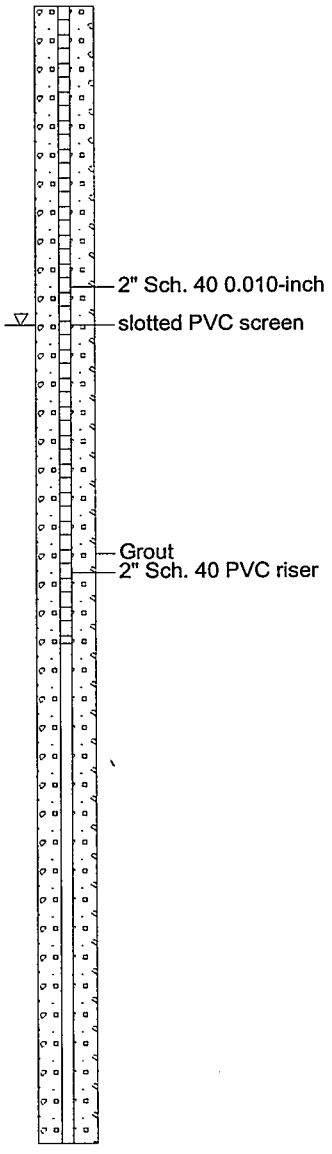
LOG OF BORING MW-28D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
16	-16	SS-9 16.0-18.0	24/18	0.0	7-20-10			Same as above
17	-17							
18	-18	SS-10 18.0-20.0	24/16	0.0	7-21-12			Same as above
19	-19							
20	-20	SS-11 20.0-22.0	24/16	0.0	6-19-9			Same as above, wet
21	-21							
22	-22	SS-12 22.0-24.0	24/12	0.0	6-18-14			Same as above, large cobble in end of spoon
23	-23							
24	-24	SS-13 24.0-26.0	24/12	0.0	7-21-14			Same as above
25	-25							
26	-26	SS-14 26.0-28.0	24/16	0.0	4-16-15			Same as above
27	-27							Same as above, few gravel
28	-28	SS-15 28.0-30.0	24/14	0.0	6-15-14			Same as above, trace gravel
29	-29							
30	-30	SS-16 30.0-32.0	24/12	0.0	2-8-8			Same as above
31	-31							
32								

Well: HMW-28D
Elev.:



Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/30/01
Date Completed	: 08/30/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 96.0'
S. Water Level Date	:
S. Water Level (ft.)	:

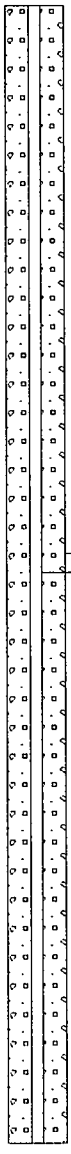
LOG OF BORING MW-28D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
32	-32	SS-17 32.0-34.0	24/16	0.0	3-16-22			Same as above
33	-33							
34	-34	SS-18 34.0-36.0	24/12	0.0	8-48-30			Same as above, large cobble noted in spoon
35	-35							
36	-36	SS-19 36.0-38.0	24/18	0.0	13-28-24			Same as above, increase gravel
37	-37							
38	-38	SS-20 38.0-40.0	24/12	0.0	10-31-23			Same as above
39	-39							
40	-40	SS-21 40.0-42.0	24/6	0.0	6-25-21			Same as above
41	-41							
42	-42	SS-22 42.0-44.0	24/20	0.0	14-53-33			Same as above
43	-43							Same as above, few gravel, trace clay interbeded
44	-44	SS-23 44.0-46.0	24/14	0.0	7-40-17			Same as above, no clay, increase silt, trace gravel
45	-45							Same as above, less gravel
46	-46	SS-24 46.0-48.0	24/20	0.0	7-61-49			Same as above
47	-47							
48								

Well: HMW-28D
Elev.:



Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/30/01
Date Completed	: 08/30/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 96.0'
S. Water Level Date	:
S. Water Level (ft.)	:

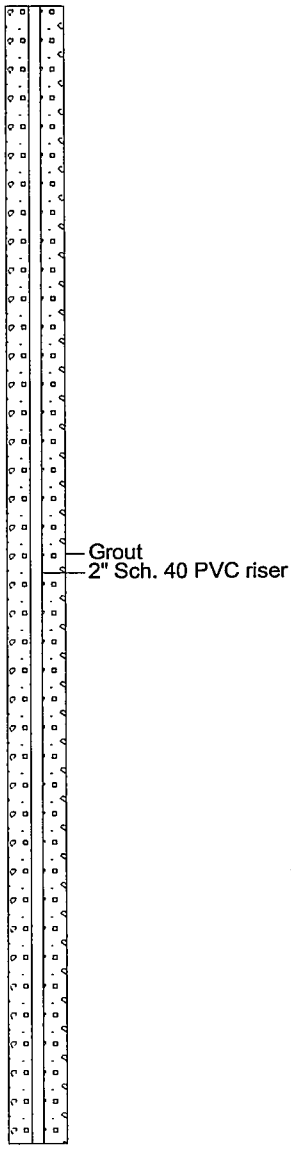
LOG OF BORING MW-28D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
48	-48	SS-25 48.0-50.0	24/18	0.0	6-65-50			Same as above
49	-49							
50	-50	SS-26 50.0-52.0	24/6	0.0	10-29-50			Same as above
51	-51							
52	-52	SS-27 52.0-54.0	24/0	0.0	14-50			Sample may have washed out
53	-53							
54	-54	SS-28 54.0-56.0	24/8	0.0	13-35-50			Same as above
55	-55							
56	-56	SS-29 56.0-58.0	24/18	0.0	9-74-50			Same as above
57	-57							
58	-58	SS-30 58.0-60.0	24/0	0.0	9-30-50			Same as above, interbeded few silt (grey), sample may have washed out
59	-59							
60	-60		24/0		1-28-44			May have washed out sample
61	-61							
62	-62	SS 62.0-64.0	23/12	0.0	3-53-50			Same as above
63	-63							
64								

Well: HMW-28D
Elev.:



Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/30/01
Date Completed	: 08/30/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 96.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING MW-28D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Well: HMW-28D
Elev.:

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	DESCRIPTION
64	-64	SS 64.0-66.0	22/18	0.0	7-74-50	Same as above
65	-65					
66	-66	SS 66.0-68.0	23/16	0.0	8-71-50	Same as above
67	-67					
68	-68	SS 68.0-70.0	22/20	0.0	9-66-50	Same as above, increase silt
69	-69					
70	-70	SS 70.0-72.0	23/20	0.0	6-47-50	Same as above
71	-71					
72	-72	SS 72.0-74.0	21/20	0.0	14-97-50	Same as above
73	-73					
74	-74	SS 74.0-76.0	21/20	0.0	15-87-50	Same as above
75	-75					
76	-76	SS 76.0-78.0	24/0	0.0	12-43-50	No recovery
77	-77					
78	-78	SS 78.0-80.0	24/20	0.0	9-78-50	Same as above, increase gravel, trace clay
79	-79					
80						

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/30/01
Date Completed	: 08/30/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 96.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING MW-28D

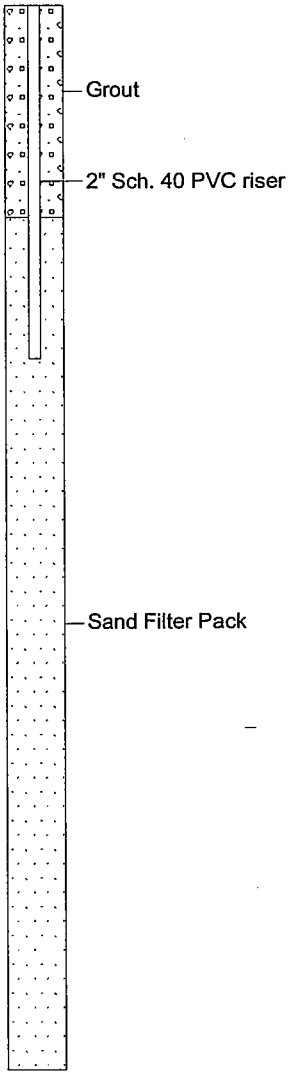
G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: ⊠ Sampled Int. ■ Lab Sample

Water Levels: ▼ Static ▽ During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
80	-80	SS 80.0-82.0	22/22	0.0	7-52-50			Same as above
81	-81							
82	-82	SS 82.0-84.0	17/16	0.0	6-55-50			Same as above, large cobble in end of shoe
83	-83							
84	-84	SS 84.0-86.0	23/21	0.0	9-45-50			Same as above, increase silt
85	-85							
86	-86	SS 86.0-87.0	12/12	0.0	7-79			Same as above
87	-87							Brown sandy CLAY at end of spoon, trace gravel, soft - interbeded
88	-88	SS 88.0-90.0	15/5	0.0	9-60-50			Same as above, large broken cobbles inspoon
89	-89							
90	-90	SS 90.0-92.0	15/15	0.0	7-83-50			Same as above
91	-91							
92	-92	SS 92.0-94.0	15/15	0.0	29-36-50			Same as above
93	-93							
94	-94	SS 94.0-96.0	16/16	0.0	12-35-50			Same as above
95	-95							Brown clayey SAND, few gravel, trace large broken cobbles
96								End of boring at 96.0'

Well: HMW-28D
Elev.:



Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 09/11/01
Date Completed	: 09/11/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 82.0'
S. Water Level Date	:
S. Water Level (ft.)	:

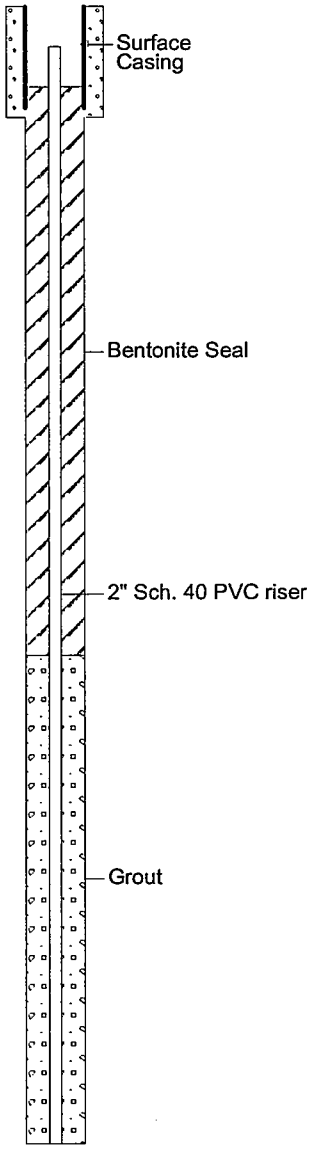
LOG OF BORING HMW-29D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
0	0	HA-1/ 0.0-2.0		0.2				Asphalt top 3" crushed limestone to 6"
1	-1							Brown clayey SAND, trace gravel, moist
2	-2	HA-2/ 2.0-4.0		0.4				Brown medium to fine SAND, trace silt, trace gravel, moist
3	-3							
4	-4	SS-3 4.0-6.0	24/20	0.3	4-11-7			Same as above
5	-5							Same as above, 1" black stain, no odor
6	-6	SS-4 6.0-8.0	24/18	0.6	3-9-8			Same as above
7	-7							
8	-8	SS-5 8.0-10.0	24/20	0.2	2-10-6			Same as above
9	-9							
10	-10	SS-6 10.0-12.0	24/16	0.4	5-23-14			Same as above
11	-11							Same as above, 4" increase gravel and trace clay seem at 11.5'
12	-12	SS-7 12.0-14.0	24/20	0.6	4-17-17			Same as above, increase coarse sand less fine sand
13	-13							
14								

Well: HMW-29D
Elev.:



Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 09/11/01
Date Completed	: 09/11/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 82.0'
S. Water Level Date	:
S. Water Level (ft.)	:

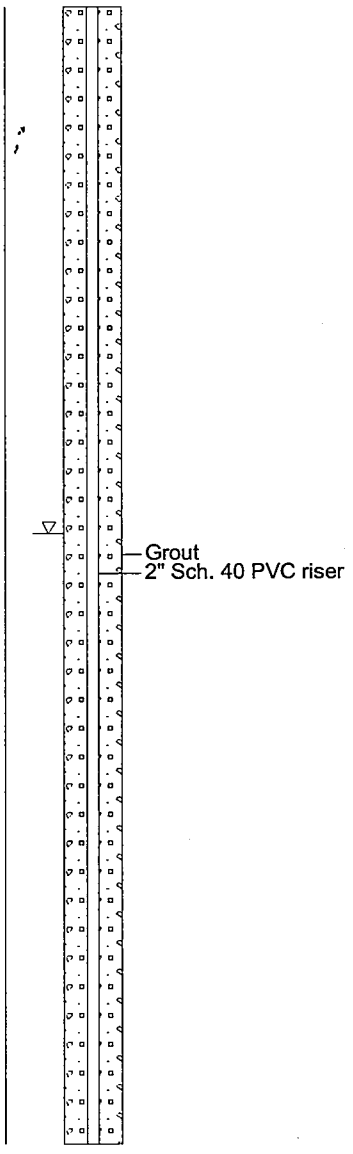
LOG OF BORING HMW-29D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
14	-14	SS-8 14.0-16.0	24/20	0.3	7-35-15			Same as above, increase gravel, trace clay
15	-15							
16	-16	SS-9 16.0-18.0	24/20	0.8	8-20-11			Same as above, very coarse sand, no clay
17	-17							
18	-18	SS-10 18.0-20.0	24/16	0.0	12-27-15			Same as above, less coarse sand
19	-19							
20	-20	SS-11 20.0-22.0	24/18	0.5	11-28-15			Same as above, black stain at 20.5", no odor, wet
21	-21							
22	-22							
23	-23							
24	-24							
25	-25	SS-12 25.0-27.0	24/20	0.3	11-28-14			begin 5' centers
26	-26							
27	-27							
28								

Well: HMW-29D
Elev.:



Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 09/11/01
Date Completed	: 09/11/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 82.0'
S. Water Level Date	:
S. Water Level (ft.)	:

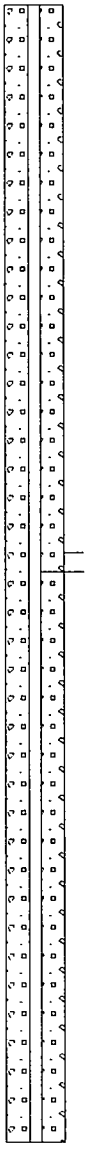
LOG OF BORING HMW-29D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
28	-28							
29	-29							
30	-30	SS-13 30.0-32.0	24/20	96.3	11-31-24			Same as above
31	-31							
32	-32							Brown silty CLAY, trace sand
33	-33							Black silty SAND, trace gravel, strong odor
34	-34							
35	-35	SS-14 35.0-37.0	24/14	191	9-29-24			Same as above, strong odor
36	-36							
37	-37							
38	-38							
39	-39							
40	-40	SS-15 40.0-42.0	24/22	20.7	12-41-35			Same as above
41	-41							
42								

Well: HMW-29D
Elev.:



Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 09/11/01
Date Completed	: 09/11/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 82.0'
S. Water Level Date	:
S. Water Level (ft.)	:

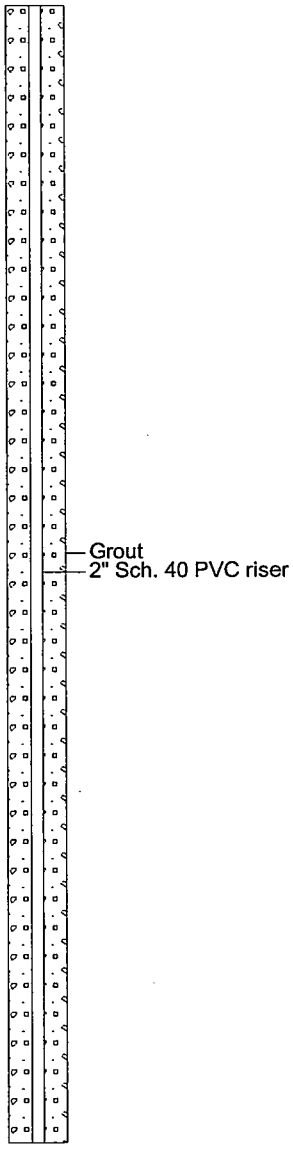
LOG OF BORING HMW-29D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
42	-42							Same as above, no staining / brown
43	-43							
44	-44							
45	-45	SS-16 45.0-47.0	34/16	0.0	23-51-35			Same as above, few gravel
46	-46							
47	-47							
48	-48							
49	-49							
50	-50	SS-17 50.0-52.0	24/12	20.8	8-36-35			Same as above, trace gravel, grey
51	-51							
52	-52							
53	-53							
54	-54							
55	-55							No recovery
56								

Well: HMW-29D
Elev.:



Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 09/11/01
Date Completed	: 09/11/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 82.0'
S. Water Level Date	:
S. Water Level (ft.)	:

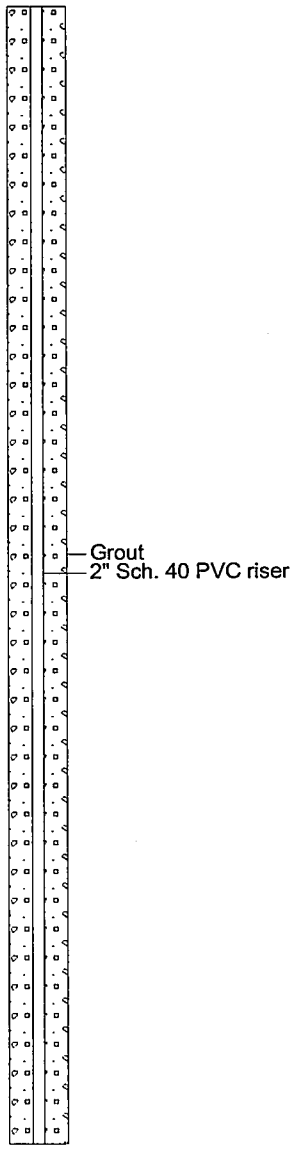
LOG OF BORING HMW-29D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
56	-56		24/0		6-24-31			
57	-57							
58	-58							
59	-59							
60	-60		24/0		20-37-37			No recovery
61	-61							
62	-62							
63	-63							
64	-64							
65	-65	SS-18 65.0-67.0	21/18	35.2	8-41-50			Same as above
66	-66							
67	-67							
68	-68							
69	-69							
70								

Well: HMW-29D
Elev.:



Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 09/11/01
Date Completed	: 09/11/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 82.0'
S. Water Level Date	:
S. Water Level (ft.)	:

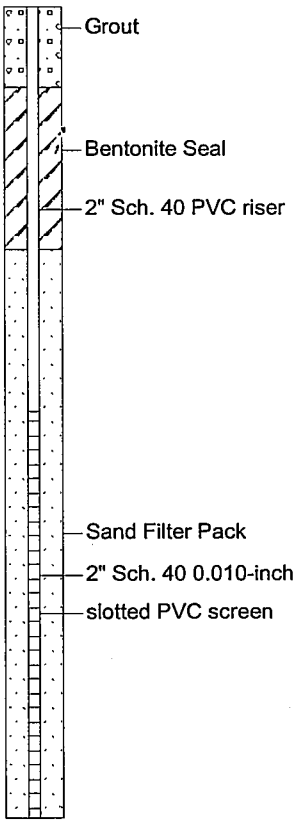
LOG OF BORING HMW-29D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
70	-70		17/0		11-27-20			No recovery
71	-71							
72	-72							
73	-73							
74	-74							
75	-75	SS-19 75.0-77.0	17/17	16.3	11-30-100			Same as above, brown
76	-76							
77	-77							
78	-78							
79	-79							
80	-80							Same as above
81	-81	SS-20 81.0-82.0	24/16	14.2				Brown silty CLAY, trace gravel, trace sand, 3" thick
82	-82							Brown SAND, trace gravel, trace sand End of boring at 82.0'
83	-83							
84								

Well: HMW-29D
Elev.:



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11-30-2001

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 09/12/01
Date Completed	: 09/12/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: No Sampling
Total Depth (ft.)	:
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-29I

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

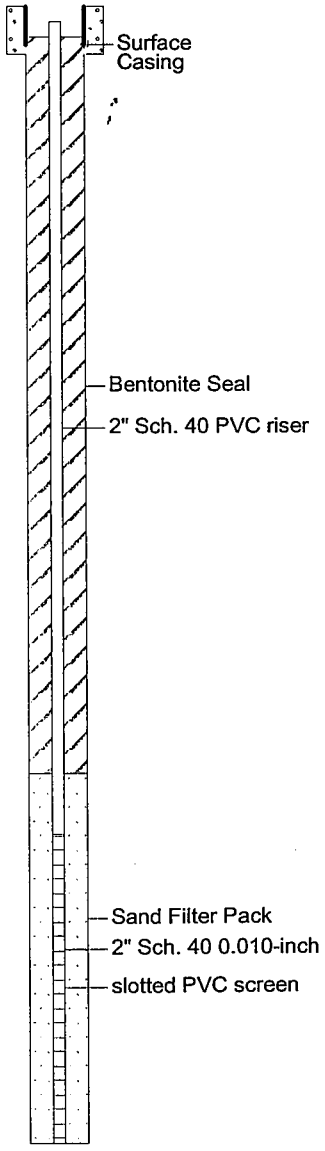
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log
0–37	0 to -36						

DESCRIPTION

See HMW-29D for geology

Well: HMW-29I
Elev.:



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11-30-2001

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 09/13/01
Date Completed	: 09/13/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: No Sampling
Total Depth (ft.)	:
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-30I

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
0	0							See HMW-30D for geology
1	-1							
2	-2							
3	-3							
4	-4							
5	-5							
6	-6							
7	-7							
8	-8							
9	-9							
10	-10							
11	-11							
12	-12							
13	-13							
14	-14							
15	-15							
16	-16							
17	-17							
18	-18							
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32	-32							
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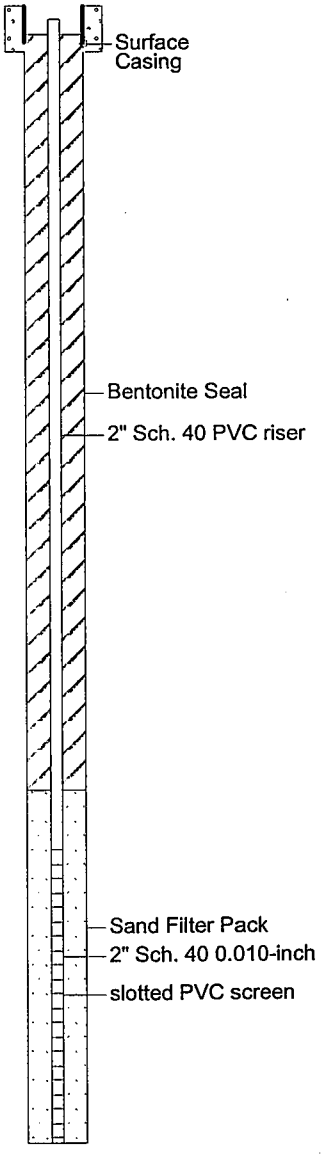
38	-38							
39								

Well: HMW-30I
Elev.:



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Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 09/05/01
Date Completed	: 09/05/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 70'
S. Water Level Date	:
S. Water Level (ft.)	:

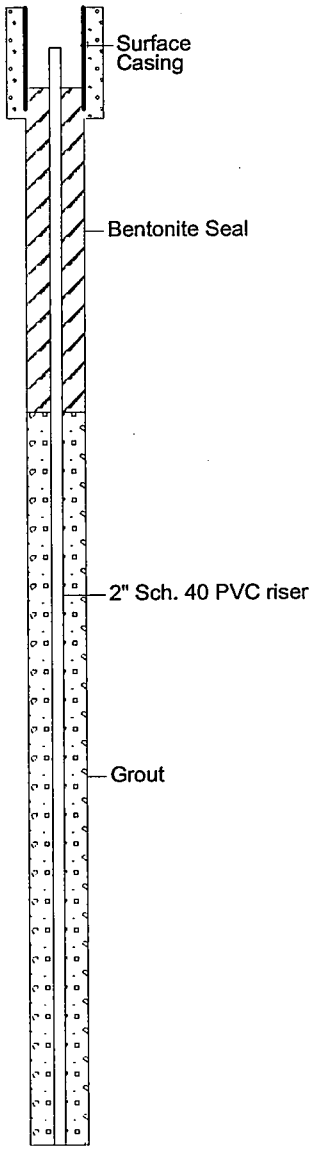
LOG OF BORING HMW-30D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
0	0	HA-1/ 0.0-2.0		0.0				Asphalt top 3", crushed limestone to 6"
1	-1							Brown clayey SAND, trace gravel, moist
2	-2	HA-2/ 2.0-4.0		0.2				Same as above
3	-3							
4	-4	SS-3 4.0-6.0	24/24	0.7	4-11-4			Brown fine to medium SAND, trace silt, trace gravel, moist
5	-5							Same as above, trace clay interbeded
6	-6	SS-4 6.0-8.0	24/20	0.8	4-10-4			Same as above
7	-7							
8	-8	SS-5 8.0-10.0	24/18	1.6	3-4-3			Same as above
9	-9							
10	-10	SS-6 10.0-12.0	24/18	1.0	2-4-2			Same as above
11	-11							Same as above, increase gravel
12	-12	SS-7 12.0-14.0	24/10	0.9	4-6-4			Same as above
13	-13							
14								

Well: HMW-30D
Elev.:



11-30-2001 F:\CLIENTS\SBI\SBI002\SOIL BORING LOGS\HMW-30D.BOR

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 09/05/01
Date Completed	: 09/05/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 70'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-30D

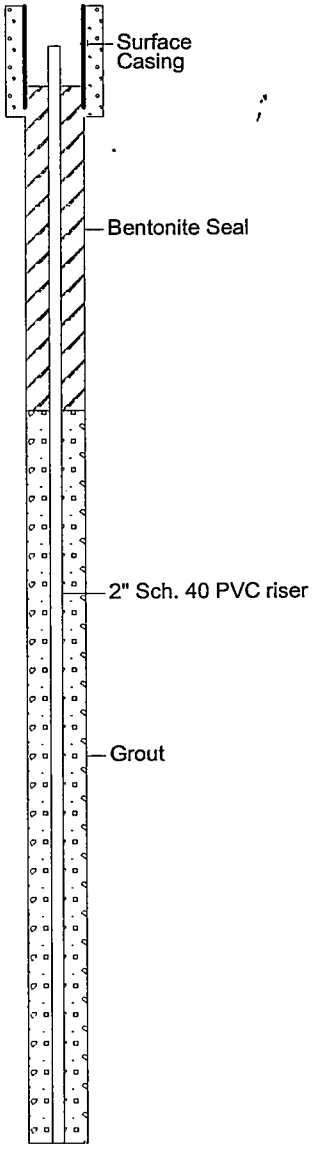
G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
0	0	HA-1/ 0.0-2.0		0.0				Asphalt top 3", crushed limestone to 6"
1	-1							Brown clayey SAND, trace gravel, moist
2	-2	HA-2/ 2.0-4.0		0.2				Same as above
3	-3							
4	-4	SS-3 4.0-6.0	24/24	0.7	4-11-4			Brown fine to medium SAND, trace silt, trace gravel, moist
5	-5							Same as above, trace clay interbeded
6	-6	SS-4 6.0-8.0	24/20	0.8	4-10-4			Same as above
7	-7							
8	-8	SS-5 8.0-10.0	24/18	1.6	3-4-3			Same as above
9	-9							
10	-10	SS-6 10.0-12.0	24/18	1.0	2-4-2			Same as above
11	-11							Same as above, increase gravel
12	-12	SS-7 12.0-14.0	24/10	0.9	4-6-4			Same as above
13	-13							
14								

Well: HMW-30D
Elev.:



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Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN
SBI002

Date Started	: 09/05/01
Date Completed	: 09/05/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 70'
S. Water Level Date	:
S. Water Level (ft.)	:

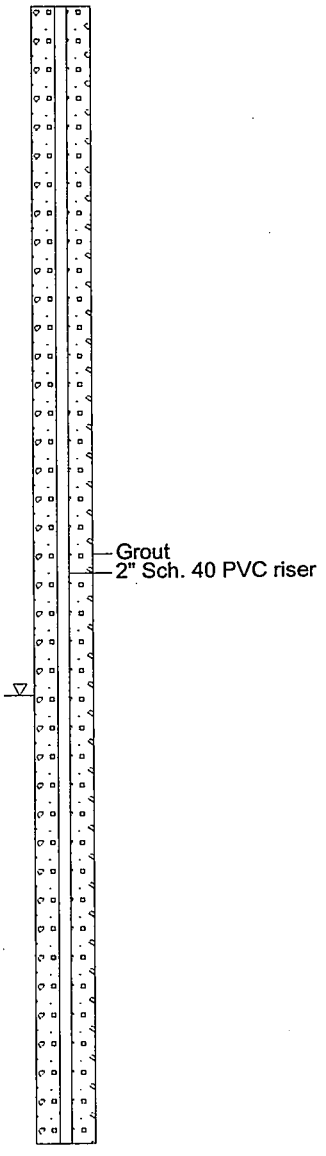
LOG OF BORING HMW-30D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
14	-14	SS-8 14.0-16.0	24/20	0.0	5-16-11			Same as above, no clay, decrease gravel
15	-15							Same as above, increase in gravel, large broken cobble in spoon
16	-16	SS-9 16.0-18.0	24/18	0.6	5-17-9			Same as above
17	-17							
18	-18	SS-10 18.0-20.0	24/22	0.8	5-15-9			Light brown medium to coarse SAND, trace gravel, trace silt, moist
19	-19							
20	-20	SS-11 20.0-22.0	24/22	1.0	7-18-11			Same as above
21	-21							Same as above, trace clay interbeded
22	-22	SS-12 22.0-24.0	24/20	2.2	4-14-8			Same as above, wet, no clay
23	-23							
24	-24	SS-13 24.0-26.0	24/18	2.1	2-15-15			Same as above
25	-25							
26	-26	SS-14 26.0-28.0	24/18	2.0	4-16-9			Same as above, trace clay interbeded, increase gravel
27	-27							
28								

Well: HMW-30D
Elev.:



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Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 09/05/01
Date Completed	: 09/05/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 70'
S. Water Level Date	:
S. Water Level (ft.)	:

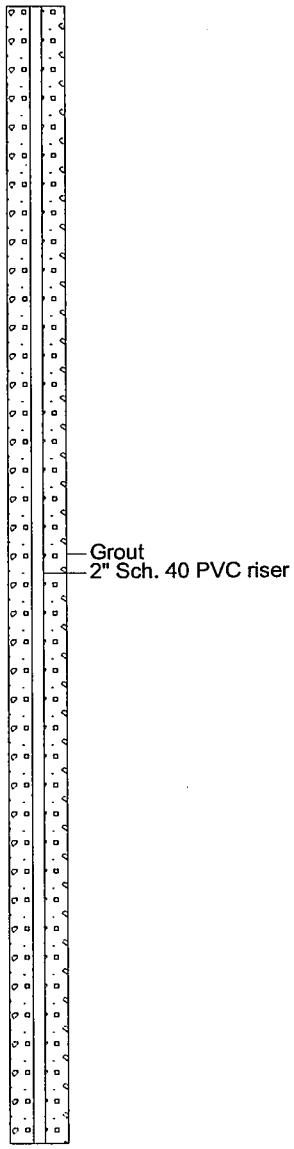
LOG OF BORING HMW-30D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
28	-28	SS-15 28.0-30.0	24/22	3.1	6-19-7			Same as above
29	-29							
30	-30	SS-16 30.0-32.0	24/20	2.3	7-19-11			Same as above, no clay, increase silt
31	-31							
32	-32	SS-17 32.0-34.0	24/18	60.2	9-25-20			Same as above, black staining, strong odor
33	-33							Same as above, grey staining
34	-34	SS-18 34.0-36.0	24/24	1196	9-54-50			Same as above, black staining, very strong odor
35	-35							
36	-36	SS-19 36.0-38.0	24/23	1727	11-45-24			Same as above
37	-37							
38	-38	SS-20 38.0-40.0	24/22	>2000	7-24-13			Same as above
39	-39							
40	-40	SS-21 40.0-42.0	10/10	544	9-50			Same as above, less staining
41	-41							
42								

Well: HMW-30D
Elev.:



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Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 09/05/01
Date Completed	: 09/05/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 70'
S. Water Level Date	:
S. Water Level (ft.)	:

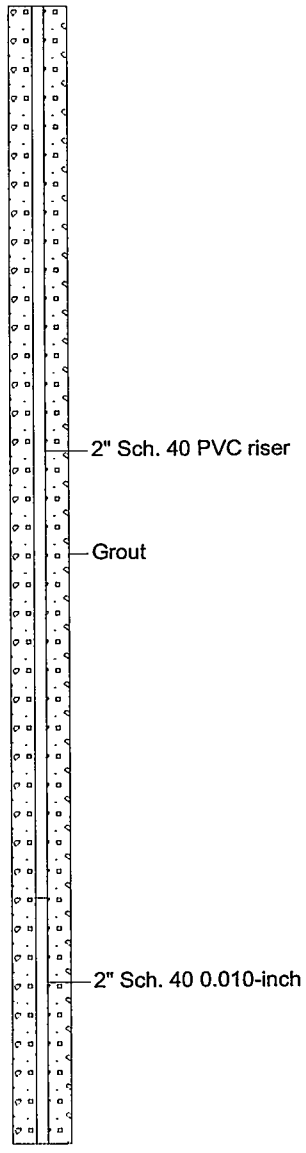
LOG OF BORING HMW-30D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
42	-42		0/0					No recovery, pushing stone
43	-43							
44	-44	SS-22 44.0-46.0	24/16	560	24-30-13			Same as above, no staining, few gravel
45	-45							
46	-46	SS-23 46.0-48.0	24/12	449	13-32-26			Same as above
47	-47							
48	-48	SS-24 48.0-50.0	24/12	53	9-54-26			Same as above, trace clay
49	-49							
50	-50	SS-25 50.0-52.0	24/8	102	56-40-31			Same as above, no clay
51	-51							
52	-52							No recovery
53	-53							
54	-54							No recovery
55	-55							
56								

Well: HMW-30D
Elev.:



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Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 09/05/01
Date Completed	: 09/05/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 70'
S. Water Level Date	:
S. Water Level (ft.)	:

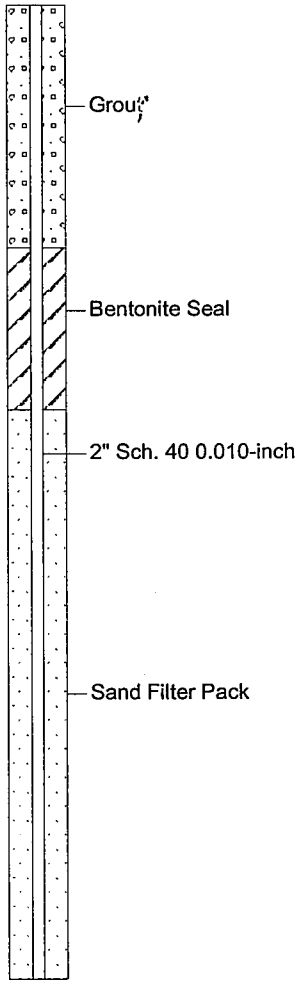
LOG OF BORING HMW-30D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
56	-56	SS-26 56.0-58.0	16/14	102	104-36-50			Same as above, no gravel
57	-57							
58	-58	SS-27 58.0-60.0	5/5	119				Same as above, trace gravel, increase silt
59	-59							
60	-60	SS-28 60.0-62.0	21/20	179	6-68-50			Same as above
61	-61							
62	-62	SS-29 62.0-64.0	22/16	117	5-52-50			Same as above
63	-63							
64	-64	SS-30 64.0-66.0	21/18	68.3	18-77-50			Same as above
65	-65							
66	-66	SS-31 66.0-68.0	24/20	65.8	5-62-33			Same as above
67	-67							
68	-68	SS-32 68.0-70.0	15/15	0.0	8-22-50			Grey very dense silty CLAY, trace sand, trace gravel, dry
69	-69							
70								End of boring at 70.0'

Well: HMW-30D
Elev.:



Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 09/10/01
Date Completed	: 09/10/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: No Sampling
Total Depth (ft.)	:
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-31S

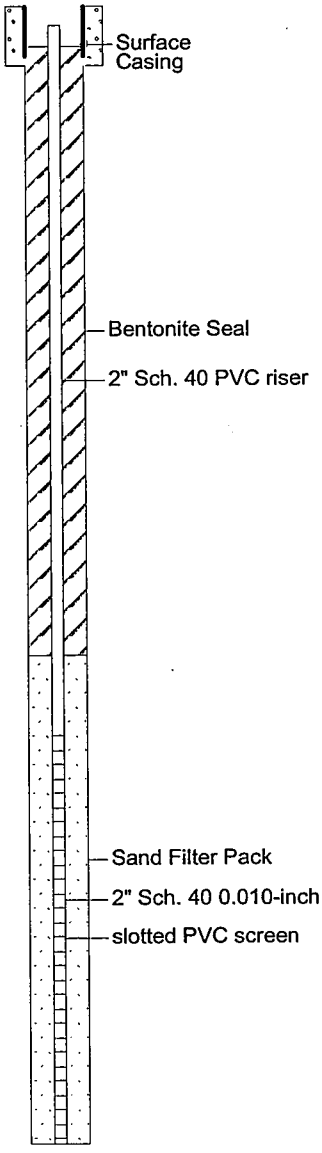
G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
0	0							See HMW-31D for geology
1	-1							
2	-2							
3	-3							
4	-4							
5	-5							
6	-6							
7	-7							
8	-8							
9	-9							
10	-10							
11	-11							
12	-12							
13	-13							
14	-14							
15	-15							
16	-16							
17	-17							
18	-18							
19	-19							
20	-20							
21	-21							
22	-22							
23	-23							
24	-24							
25	-25							
26	-26							
27	-27							
28								

Well: HMW-31S
Elev.:



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11-30-2001

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 09/10/01
Date Completed	: 09/10/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: No Sampling
Total Depth (ft.)	:
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-31I

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

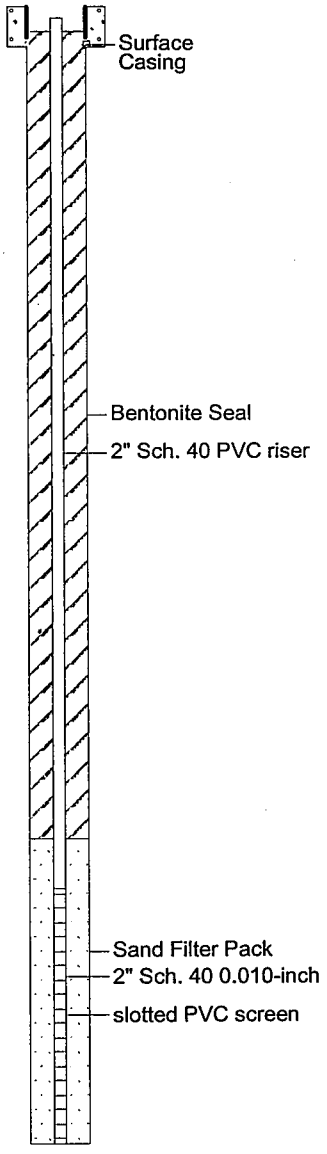
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log
0	0						
1	-1						
2	-2						
3	-3						
4	-4						
5	-5						
6	-6						
7	-7						
8	-8						
9	-9						
10	-10						
11	-11						
12	-12						
13	-13						
14	-14						
15	-15						
16	-16						
17	-17						
18	-18						
19	-19						
20	-20						
21	-21						
22	-22						
23	-23						
24	-24						
25	-25						
26	-26						
27	-27						
28	-28						
29	-29						
30	-30						
31	-31						
32	-32						
33	-33						
34	-34						
35	-35						
36	-36						
37	-37						
38	-38						
39	-39						
40	-40						
41	-41						
42	-42						
43	-43						
44	-44						
45							

DESCRIPTION

See HMW-31D for geology

Well: HMW-31I
Elev.:



Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 09/10/01
Date Completed	: 09/10/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: No Sampling
Total Depth (ft.)	:
S. Water Level Date	:
S. Water Level (ft.)	:

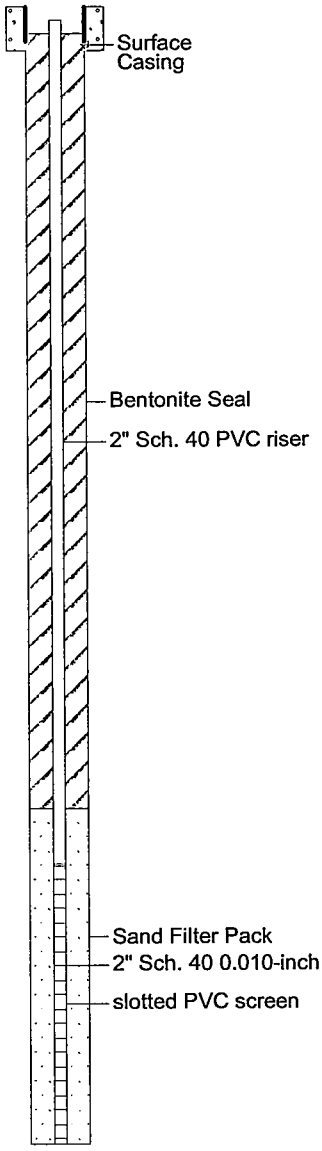
LOG OF BORING HMW-32I

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
0	0							See HMW-31D for geology
1	-1							
2	-2							
3	-3							
4	-4							
5	-5							
6	-6							
7	-7							
8	-8							
9	-9							
10	-10							
11	-11							
12	-12							
13	-13							
14	-14							
15	-15							
16	-16							
17	-17							
18	-18							
19	-19							
20	-20							
21	-21							
22	-22							
23	-23							
24	-24							
25	-25							
26	-26							
27	-27							
28	-28							
29	-29							
30	-30							
31	-31							
32	-32							
33	-33							
34	-34							
35	-35							
36	-36							
37	-37							
38	-38							
39	-39							
40	-40							
41								

Well: HMW-32I
Elev.:



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11-30-2001

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 09/04/01
Date Completed	: 09/04/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 62.0'
S. Water Level Date	:
S. Water Level (ft.)	:

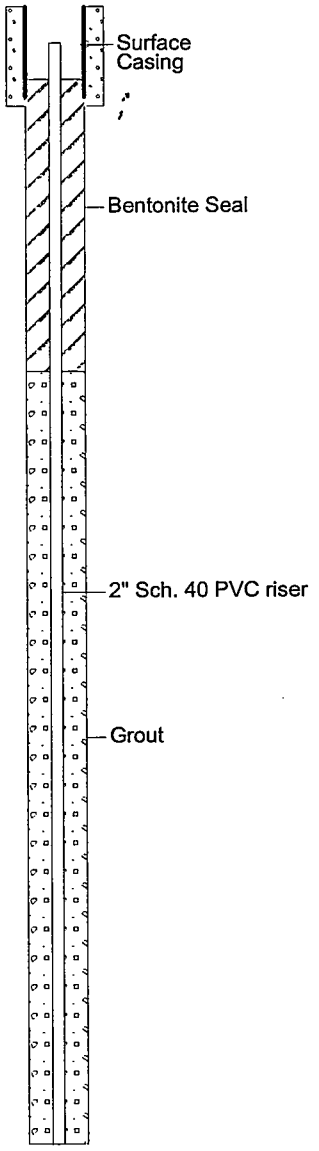
LOG OF BORING HMW-31D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	DESCRIPTION
0	0	HA-1/ 0.0-2.0		0.0		Black sandy FILL, few clay, few gravel, crushed asphalt noted, moist
1	-1					
2	-2	HA-2/ 2.0-4.0		0.0		Brown clayey SAND, trace gravel, moist
3	-3					
4	-4	SS-3 4.0-6.0	24/18	0.0	1-4-3	Brown medium to coarse SAND, few clay, trace gravel, moist
5	-5					
6	-6	SS-4 6.0-8.0	24/16	0.0	3-11-7	Light brown medium to coarse SAND, Trace silt, trace gravel, moist
7	-7					
8	-8	SS-5 8.0-10.0	24/14	0.0	3-8-6	Same as above
9	-9					
10	-10	SS-6 10.0-12.0	24/16	0.0	3-5-2	Same as above, trace clay interbeded
11	-11					
12	-12	SS-7 12.0-14.0	24/8	0.0	2-1-1	Same as above, increase gravel
13	-13					
14	-14	SS-8 14.0-16.0	24/12	0.0	2-2-1	Same as above, less gravel
15						

Well: HMW-31D
Elev.:



11-30-2001 F:\CLIENTS\SBI\SBI002\SOIL BORING LOGS\HMW-31D.BOR

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 09/04/01
Date Completed	: 09/04/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 62.0'
S. Water Level Date	:
S. Water Level (ft.)	:

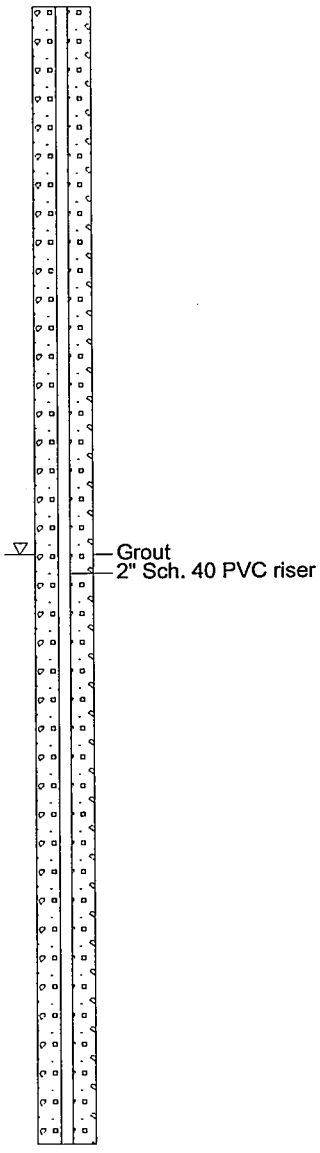
LOG OF BORING HMW-31D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
16	-16	SS-9 16.0-18.0	24/12	0.0	3-10-12			
17	-17							
18	-18	SS-10 18.0-20.0	24/6	0.0	6-30-17			Same as above, large cobble in end of shoe
19	-19							
20	-20	SS-11 20.0-22.0	24/16	0.0	6-22-14			Same as above, large broken cobble noted in spoon
21	-21							Same as above, no gravel
22	-22	SS-12 22.0-23.0	24/18	0.0	7-21-12			Same as above, trace gravel
23	-23	SS-13 23.0-24.0		0.0				Same as above, increase coarse sand, wet
24	-24							
25	-25							Sample washed out
26	-26		24/0		6-10-9			
27	-27							Begin 5' centers
28	-28							
29	-29	SS-14 29.0-31.0	24/18	0.0	6-18-17			Same as above
30	-30							
31								

Well: HMW-31D
Elev.:



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Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 09/04/01
Date Completed	: 09/04/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 62.0'
S. Water Level Date	:
S. Water Level (ft.)	:

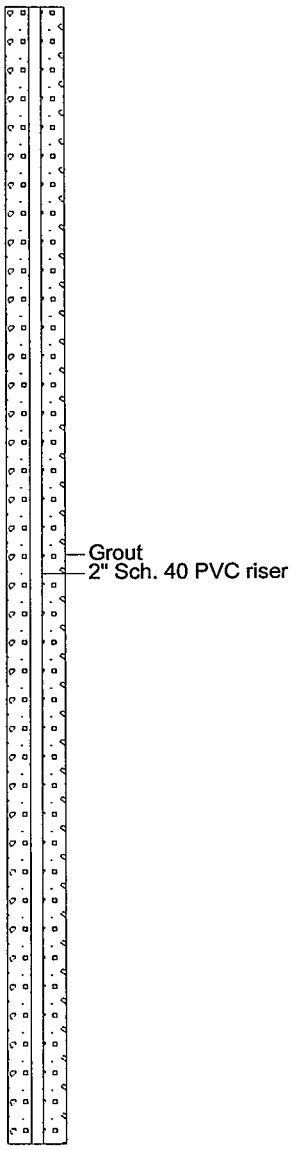
LOG OF BORING HMW-31D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
32	-32							
33	-33							
34	-34	SS-15 34.0-36.0	24/12	13.2	8-15-9			Same as above, black staining, petro odor, increase gravel
35	-35							
36	-36							
37	-37							
38	-38							
39	-39	SS-16 39.0-41.0	24/12	193	12-18-9			Same as above, strong sweet odor, decrease gravel, black staining
40	-40							
41	-41							
42	-42							
43	-43							
44	-44	SS-17 44.0-46.0	24/16	249	6-49-20			Same as above, no staining, increase silt, strong odor
45	-45							
46	-46							
47								

Well: HMW-31D
Elev.:



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11-30-2001

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 09/04/01
Date Completed	: 09/04/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 62.0'
S. Water Level Date	:
S. Water Level (ft.)	:

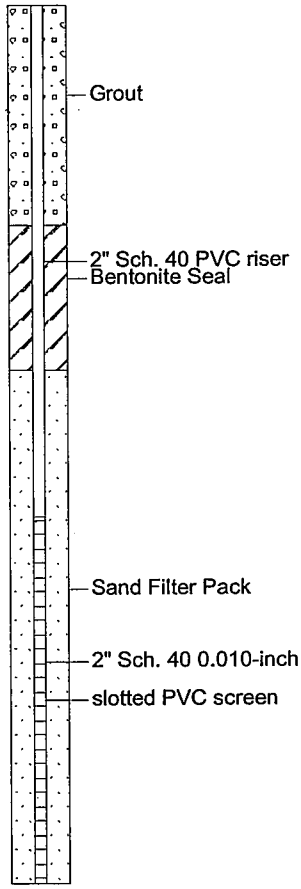
LOG OF BORING HMW-31D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
48	-48							
49	-49	SS-18 49.0-51.0	24/18	141	25-48-22			Same as above, increase fine sand, no staining, strong odor
50	-50							
51	-51							Same as above, decrease fine sand, increase gravel, trace clay
52	-52							
53	-53							
54	-54	SS-19 54.0-56.0	24/20	98	7-43-32			Same as above
55	-55							
56	-56							
57	-57							
58	-58							
59	-59	SS-20 59.0-61.0	24/17	84.5	7-27-50			Same as above
60	-60							
61	-61	SS-21 61.0-62.0	24/17		8-34-50			Grey dense CLAY, trace gravel, trace sand, dry
62	-62							End of boring at 62.0'
63								

Well: HMW-31D
Elev.:



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Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 09/06/01
Date Completed	: 09/06/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 94.0'
S. Water Level Date	:
S. Water Level (ft.)	:

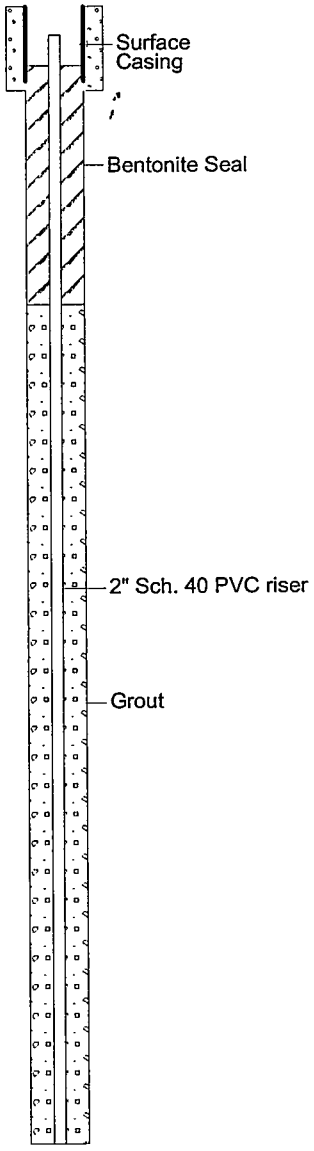
LOG OF BORING HMW-32D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
0	0	HA-1/ 0.0-2.0		1.2				Asphalt to 3", crushed limestone to 6"
1	-1							Brown medium to fine SAND, trace silt, trace gravel, dry
2	-2	HA-2/ 2.0-4.0		1.3				Same as above
3	-3							
4	-4	SS-3 4.0-6.0	23/20	2.0	10-44-50			Brown clayey SAND, trace gravel, moist
5	-5							
6	-6	SS-4 6.0-8.0	24/22	1.1	7-23-14			Same as above
7	-7							
8	-8	SS-5 8.0-10.0	24/18	0.7	13-25-21			Same as above, brick fragment noted in middle of spoon
9	-9							
10	-10	SS-6 10.0-12.0	24/14	2.5	10-22-18			Light brown medium to coarse SAND, trace gravel, trace silt, moist
11	-11							
12	-12		5/0		50			No recovery
13	-13							
14	-14	SS-7 14.0-16.0	24/14	2.4	10-31-32			Same as above
15	-15							
16	-16	SS-8 16.0-18.0	24/12	0.7	10-27-17			Same as above
17	-17							
18	-18	SS-9 18.0-20.0	24/20	3.1	6-18-12			Same as above
19								

Well: HMW-32D
Elev.:



12-03-2001 F:\CLIENTS\SBI\SBI002\SOIL BORING LOGS\HMW-32D.BOR

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 09/06/01
Date Completed	: 09/06/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 94.0'
S. Water Level Date	:
S. Water Level (ft.)	:

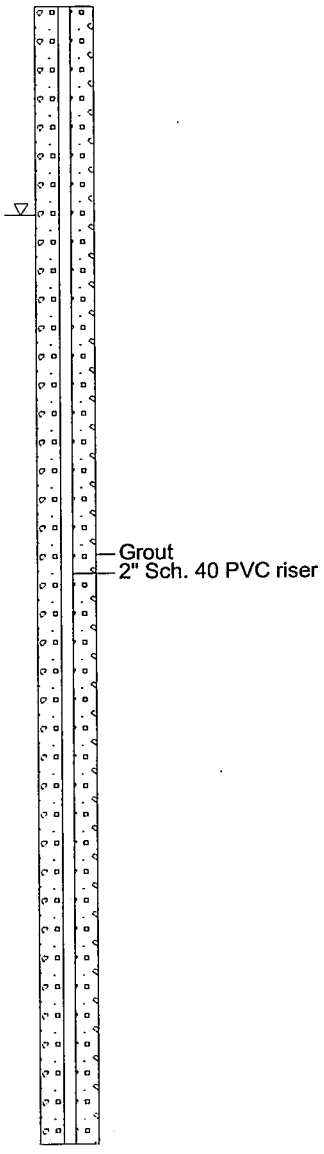
LOG OF BORING HMW-32D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
19	-19							
20	-20	SS-10 20.0-22.0	24/16	3.4	9-26-22			Same as above
21	-21							
22	-22	SS-11 22.0-24.0	24/12	1.9	6-35-23			Same as above, few gravel, trace clay, wet
23	-23							
24	-24	SS-12 24.0-26.0	24/12	4.2	10-31-12			Same as above
25	-25							
26	-26	SS-13 26.0-28.0	24/12	5.4	12-25-8			Same as above
27	-27							
28	-28	SS-14 28.0-30.0	24/18	5.8	11-34-23			Same as above
29	-29							
30	-30	SS-15 30.0-32.0	24/14	4.5	11-44-36			Same as above, trace gravel, increase silt, no clay
31	-31							
32	-32	SS-16 32.0-34.0	24/16	3.1	7-18-13			Same as above, decrease silt
33	-33							
34	-34	SS-17 34.0-36.0	24/14	8.9	5-29-98			Same as above
35	-35							
36	-36	SS-18 36.0-38.0	24/18	1618	8-40-23			Same as above
37	-37							Same as above, black staining, strong odor
38								

Well: HMW-32D
Elev.:



12-03-2001 F:\CLIENTS\SBI\SBI002\SOIL BORING LOGS\HMW-32D.BOR

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 09/06/01
Date Completed	: 09/06/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 94.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-32D

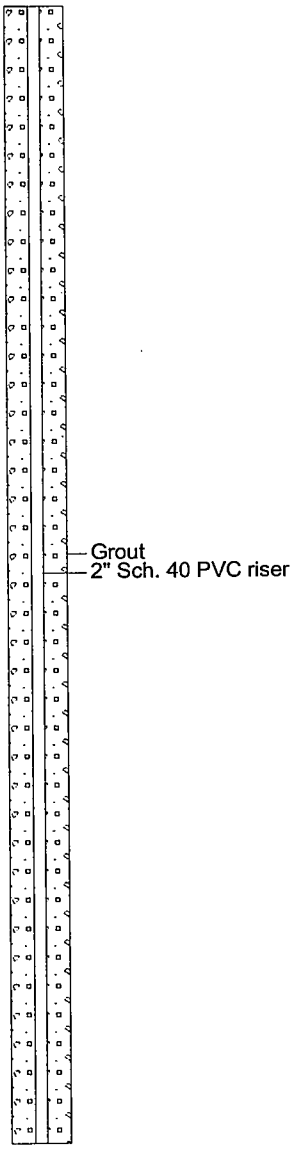
G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Well: HMW-32D
Elev.:

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	DESCRIPTION
38	-38	SS-19 38.0-40.0	24/12	1803	9-25-17	Same as above
39	-39					
40	-40	SS-20 40.0-42.0	24/12	1940	11-31-29	Same as above
41	-41					
42	-42	SS-21 42.0-44.0	24/12	553	7-33-26	Same as above, grey staining
43	-43					
44	-44	SS-22 44.0-46.0	24/12	812	10-41-26	Same as above
45	-45					
46	-46	SS-23 46.0-48.0	24/12	350	6-40-50	Same as above
47	-47					
48	-48	SS-24 48.0-50.0	24/16	346	13-31-20	Same as above
49	-49					
50	-50	SS-25 50.0-52.0	24/16	222	8-36-36	Same as above
51	-51					
52	-52	SS-26 52.0-54.0	22/22	137	8-64-50	Same as above
53	-53					
54	-54	SS-27 54.0-56.0	9/6	73.4	38-50	Same as above, increase silt
55	-55					
56	-56	SS-28 56.0-58.0	18/10	140	11-33-65	Same as above
57						



12-03-2001 F:\CLIENTS\SBI\SBI002\SOIL BORING LOGS\HMW-32D.BOR

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 09/06/01
Date Completed	: 09/06/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 94.0'
S. Water Level Date	:
S. Water Level (ft.)	:

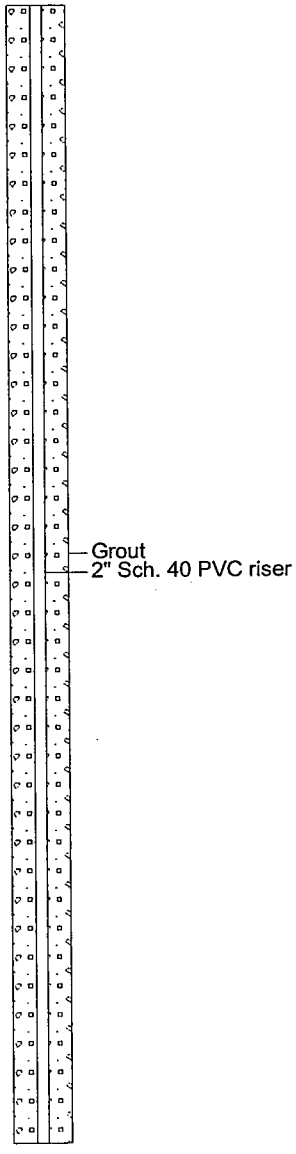
LOG OF BORING HMW-32D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
57	-57							
58	-58	SS-29 58.0-60.0	22/18	119	17-67-50			Same as above
59	-59							
60	-60	SS-30 60.0-62.0	24/20	144	4-17-41			Same as above
61	-61							
62	-62	SS-31 62.0-64.0	17/12	184	9-26-61			Same as above, few silt
63	-63							
64	-64		17/0		14-39-50			No recovery
65	-65							
66	-66	SS-32 66.0-68.0	24/20	55.9	6-72-54			Same as above
67	-67							Same as above, brown / no staining, trace clay
68	-68	SS-33 68.0-70.0	24/16	44.9	7-38-39			Same as above, no clay
69	-69							
70	-70	SS-34 70.0-72.0	24/18	65.3	4-18-41			Same as above
71	-71							
72	-72	SS-35 72.0-74.0	21/21	84.9	12-91-50			Same as above
73	-73							
74	-74	SS-36 74.0-76.0	23/19	69.7	19-72-50			Same as above
75	-75							
76								

Well: HMW-32D
Elev.:



12-03-2001 F:\CLIENTS\SB\SBI002\SOIL BORING LOGS\HMW-32D.BOR

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 09/06/01
Date Completed	: 09/06/01
Logged by	: Matt Young
Reviewed by	:
Drilling Contractor	: TopFlight
Drilling Method	: 4.25 ID HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 94.0'
S. Water Level Date	:
S. Water Level (ft.)	:

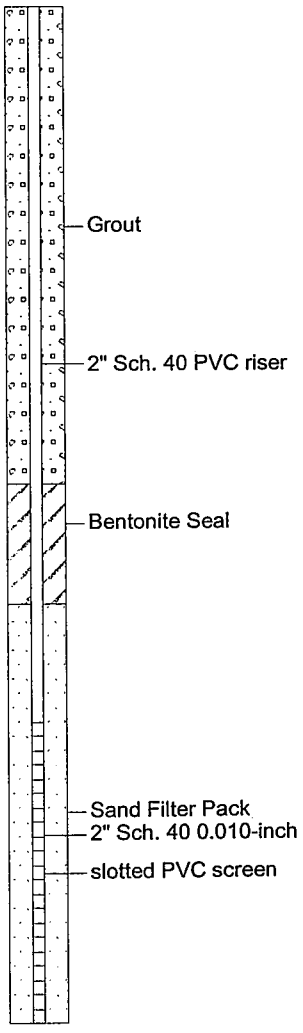
LOG OF BORING HMW-32D

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	DESCRIPTION
76	-76	SS-37 76.0-78.0	21/18	45.7	19-96-50	Same as above
77	-77					
78	-78	SS-38 78.0-80.0	22/18	29.9	12-62-50	Same as above
79	-79					Brown SILT, wet
80	-80		21/0		13-53-50	No recovery, most likely sand that washed out
81	-81					
82	-82	SS-39 82.0-84.0	22/22	33.7	4-30-50	Brown silty SAND, trace gravel, wet
83	-83					
84	-84	SS-40 84.0-86.0	16/15	21.5	15-16-50	Same as above
85	-85					Grey SILT, moist
86	-86	SS-41 86.0-88.0	24/10	12.9	1-22-22	Grey silty SAND, trace gravel wet
87	-87					
88	-88	SS-42 88.0-90.0	24/24	12.1	14-58-48	Same as above
89	-89					
90	-90	SS-43 90.0-92.0	22/14	11.4	6-58-50	
91	-91					
92	-92	SS-44 92.0-94.0	24/12	12.6	13-56-50	Grey sandy SILT, dense / stiff, trace gravel, wet
93	-93					
94	-94					End of boring at 94.0'
95						

Well: HMW-32D
Elev.:



12-03-2001 F:\CLIENTS\SBI\SBI002\SOIL BORING LOGS\HMW-32D.BOR

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/14/01
Date Completed	: 08/14/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: 4.25 HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 31.6'
S. Water Level Date	:
S. Water Level (ft.)	:

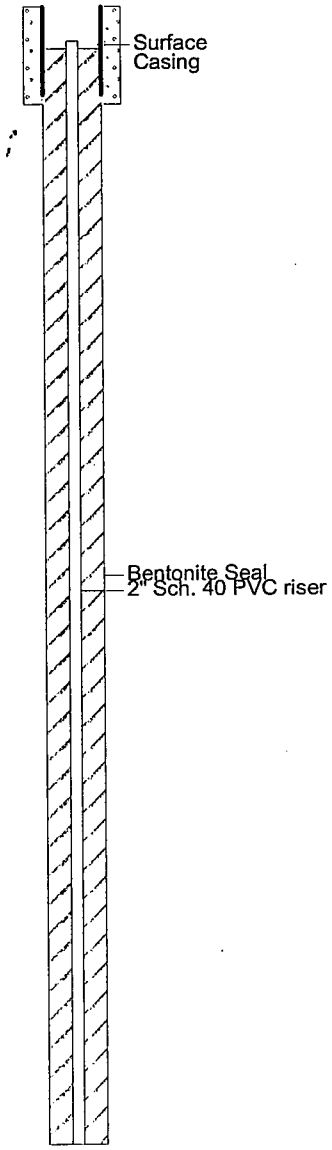
LOG OF BORING HMW-34S

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	DESCRIPTION
0	0	HA-1/ 0.0-1.0		0.6				Brown fine SAND, some gravel, moist
1	-1	HA-2/ 1.0-2.0		1.9				Same as above
2	-2	HA-3/ 2.0-3.0		3.0				Black fine SAND, some gravel, moist
3	-3	HA-4/ 3.0-4.0		4.6				Brown fine SAND, trace gravel, very moist
4	-4	HA-5/ 4.0-5.0		0.7				Same as above
5	-5	SS-6 5.0-6.7	24/20	2.0	3-6-3			Same as above
6	-6							
7	-7	SS-7 7.0-8.3	24/15	1.3	3-9-8			Same as above
8	-8							
9	-9	SS-8 9.0-10.7	24/20	1.1	6-20-16			Light brown coarse SAND, some gravel, moist
10	-10							
11	-11	SS-9 11.0-12.7	24/20	3.0	6-9-8			Same as above, trace clay
12	-12							
13	-13	SS-10 13.0-14.3	24/15	1.9	5-8-10			Light brown coarse SAND, some gravel, moist
14	-14							
15	-15	SS-11 15.0-16.7	24/20	0.6	7-17-14			Same as above
16								

Well: HMW-34S
Elev.:



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12-03-2001

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/14/01
Date Completed	: 08/14/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: 4.25 HSA
Sampling Method	: Split Spoon
Total Depth (ft.)	: 31.6'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING HMW-34S

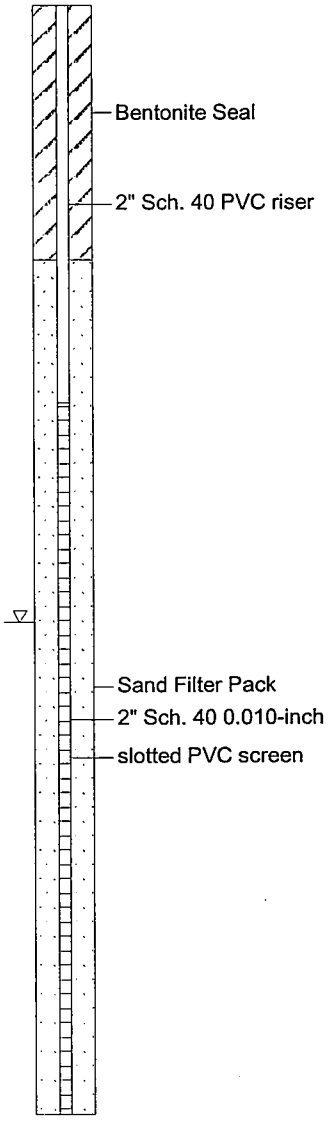
G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 2020 / 100ppm Iso.
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	DESCRIPTION
16	-16					
17	-17	SS-12 17.0-18.3	24/15	2.0	6-16-11	Light brown coarse SAND and GRAVEL, moist
18	-18					
19	-19	SS-13 19.0-21.0	24/24	2.5	6-14-6	Same as above, very moist
20	-20					
21	-21	SS-14 21.0-22.3	24/15	3.0	5-16-15	Same as above
22	-22					
23	-23	SS-15 23.0-24.7	24/20	3.5	8-17-8	Same as above, saturated at 24.2'
24	-24					
25	-25	SS-16 25.0-26.3	24/15	3.1	3-4-3	Same as above
26	-26					
27	-27	SS-17 27.0-27.4	24/5	2.0	4-8-5	Same as above
28	-28					
29	-29	SS-18 29.0-30.3	24/15	1.5	3-7-5	Same as above
30	-30					
31	-31					End of boring at 31.6'
32						

Well: HMW-34S
Elev.:



12-03-2001 F:\CLIENTS\SBI\SBI002\SOIL BORING LOGS\HMW-34S.BOR

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/01/01
Date Completed	: 08/01/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: Hand Auger
Drilling Method	: Grab Sample
Sampling Method	: Grab Sample
Total Depth (ft.)	: 0.6"
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING GS-2

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples
⊠ Sampled Int.
■ Lab Sample

Water Levels
▼ Static
▽ During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0								Foundry SAND	
1										

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/01/01
Date Completed	: 08/01/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: Hand Auger
Drilling Method	: Grab Sample
Sampling Method	: Grab Sample
Total Depth (ft.)	: 0.6"
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING GS-3

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: ⊠ Sampled Int. ■ Lab Sample

Water Levels: ▼ Static ▽ During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0								Foundry SAND	
1										

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/09/01
Date Completed	: 08/09/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 3.5
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING GB-1

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0	SS-1 0.0-1.0	24/12	5.1					GRAVEL, some cinder fill from 0.8 to 1.0'	
1	-1									
2	-2	SS-2 2.0-3.5	24/18	5.1					Brown coarse SAND, trace gravel, very moist	
3	-3								End of boring at 3.5'	
4										

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11-28-2001

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/09/01
Date Completed	: 08/09/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 4.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING GB-2

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: ⊠ Sampled Int. ■ Lab Sample

Water Levels: ▼ Static ▽ During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0	SS-1 0.0-0.8	24/20	7.9					SAND and GRAVEL	
		SS-1 0.8-1.7		6.3					Cinder FILL Top 5" is slough	
1	-1									
2	-2	SS-2 2.4-2.7	24/24	5.7					Cinder FILL	
		SS-2 2.7-4.0		3.8					Brown coarse SAND, trace gravel, very moist	
3	-3									
4									End of boring at 4.0'	

11-28-2001 F:\CLIENTS\SB\SBI002\SOIL BORING LOGS\GB-2.BOR

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/08/01
Date Completed	: 08/08/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 4.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING GB-3

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	DESCRIPTION	REMARKS
0	0	SS-1 0.0-0.5	24/24	6.2		SAND and GRAVEL	
		SS-1 0.5-2.0		8.3		Cinder FILL, trace gravel	
1	-1						
2	-2	SS-2 2.0-2.7	24/24	5.6		Silty SAND, some gravel, moist	
		SS-2 2.7-3.9		5.2		Brown SAND, trace gravel, very moist	
3	-3						
4						End of boring at 4.0'	

11-28-2001 F:\CLIENTS\SBI\SBI002\SOIL BORING LOGS\GB-3.BOR

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN
SBI002

Date Started	: 08/08/01
Date Completed	: 08/08/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 5.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING GB-5

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0								Concrete	
1	-1									
		SS-1	24/18	8.8					Dark brown SAND, trace gravel, moist	
		1.5-3.0								
2	-2									
3	-3									
		SS-2	24/18	9.7					Same as above	
		3.5-5.0								
4	-4									
									End of boring at 5.0'	
5										

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11-28-2001

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/08/01
Date Completed	: 08/08/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 4.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING GB-8

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: ⊠ Sampled Int. ■ Lab Sample

Water Levels: ▼ Static ▽ During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0	SS-1 0.0-1.3	24/24	7.8					Sandy SILT, trace gravel, rootlets	
1	-1	SS-2 1.3-2.0		10.9					Brown SAND, trace gravel, moist	
2	-2	SS-3 2.0-3.0	24/24	9.0					Same as above	
3	-3	SS-4 3.0-4.0		7.0					Light brown SAND, trace gravel, very moist	
4									End of boring at 4.0'	

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11-28-2001

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/09/01
Date Completed	: 08/09/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 4.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING GB-9

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: ⊠ Sampled Int. ■ Lab Sample

Water Levels: ▼ Static ▽ During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0	SS-1 0.0-2.0	24/24	1.7					Intermittent layers approx. 5" thick of SAND and GRAVEL and cinder fill.	
1	-1									
2	-2	SS-2 2.0-4.0	24/24	0.6					Brown fine SAND with gravel, sand is lighter in color and more coarse in the bottom 2 inches (46-48")	
3	-3									
4									End of boring at 4.0'	

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11-28-2001

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/09/01
Date Completed	: 08/09/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 4.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING GB-10

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0	SS-1 0.0-2.0	24/24	5.4					SAND and GRAVEL, rootlets	
1	-1								Dark brown SAND, some gravel intermittent layers of cinder fill approx. 0.5" thick	
2	-2	SS-2 2.0-4.0	24/24	2.2					Dark brown SAND, trace gravel, very moist, sand becomes lighter in color with increasing depth	
3	-3									
4									End of boring at 4.0'	

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11-28-2001

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/10/01
Date Completed	: 08/10/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 3.5'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING GB-11

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: ⊠ Sampled Int. ■ Lab Sample

Water Levels: ▼ Static ▽ During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0	SS-1 0.0-1.5	24/18	3.6					Silty SAND, some gravel, very moist	
									Cinder FILL	
1	-1								Brown fine SAND, trace gravel, moist	
2	-2	SS-2 2.0-3.5	24/18	2.6					Same as above	
3	-3								End of boring at 3.5'	
4										

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/09/01
Date Completed	: 08/09/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 3.7'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING GB-12

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0	SS-1 0.0-2.0	24/24	0.2					Brown SAND, trace gravel, rootlets	
									Cinder FILL	
									Brown SAND, trace gravel	
									Cinder FILL	
1	-1								Brown coarse SAND, some gravel	
2	-2	SS-2 2.0-3.7	24/20	1.6					Same as above	
									Cinder FILL	
3	-3								Dark brown fine SAND, trace gravel, very moist	
									End of boring at 3.7'	
4										

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South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/08/01
Date Completed	: 08/08/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 4.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING GB-13

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	DESCRIPTION	REMARKS
0	0					SAND and GRAVEL	
		SS-1 0.0-1.0	24/24	4.2		Wood fragments	
						SAND and GRAVEL	
1	-1	SS-2 1.0-2.0		7.2		Black stained SAND with cinders, moist Top 3" is slough	
2	-2	SS-3 2.0-2.8	24/24	9.8		Brick and cinder FILL	
3	-3	SS-4 3.0-4.0		12.3		Dark brown silty SAND, trace gravel, very moist	
4						End of boring at 4.0'	

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South Bend Area A
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South Bend, IN

SBI002

Date Started	: 08/08/01
Date Completed	: 08/08/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 5.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING GB-14

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0								Concrete	
1	-1	SS-1 1.5-3.0	24/18	5.6					Silty SAND, trace clay, trace cinder, moist, dark brown	
2	-2									
3	-3	SS-2 3.5-4.8		9.1					Dark brown silty SAND, trace clay, moist, increasing sand content with depth	
4	-4									
5									End of boring at 5.0'	

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/07/01
Date Completed	: 08/07/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 4.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING GB-15

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0	SS-1 0.0-1.0	24/24	2.5					Black SAND, some gravel, trace cinder	
1	-1	SS-2 1.0-2.0		3.9					Cinder FILL	
									Black sandy CLAY, slight petro odor	
2	-2	SS-3 2.0-2.7	24/24	10.3					Same as above	
		SS-4 2.7-4.0		11.9					Brown SAND, trace gravel	
3	-3									
									End of boring at 4.0'	
4										

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South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/02/01
Date Completed	: 08/02/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 4.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING GB-16

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample
Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0	SS-1 0.0-0.7	24/24	16.0					Cinder FILL, some silt and sand, rootlets	
		SS-2 0.8-2.0		19.4					Dark brown SAND, trace gravel, moist	
1	-1									
2	-2	SS-3 2.0-3.0		19.4					Same as above	
3	-3	SS-4 3.0-4.0		19.8					Light brown SAND, trace gravel, moist	
									End of boring at 4.0'	
4										

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South Bend Area A
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South Bend, IN

SBI002

Date Started	: 08/07/01
Date Completed	: 08/07/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 4.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING GB-17

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0	SS-1 0.0-1.5	24/24	15.9					Cinder FILL, trace gravel	
1	-1	SS-2 1.5-2.0		14.5					Dark brown SAND, trace gravel, moist	
2	-2	SS-3 2.0-2.5	24/24	18.7					Same as above	
		SS-4 2.5-4.0		15.2					Light brown fine SAND, trace gravel, moist	
3	-3									
4									End of boring at 4.0'	

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Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/08/01
Date Completed	: 08/08/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 4.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING GB-19

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: ⊠ Sampled Int. ■ Lab Sample

Water Levels: ▼ Static ▽ During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0	SS-1 0.0-1.0	24/24	3.0					Cinder FILL, trace gravel	
1	-1	SS-2 1.0-2.0		1.1					Sandy SILT, some clay, trace gravel, moist	
2	-2	SS-3 2.0-3.0	24/24	7.1					Light brown SAND, trace gravel, moist	
3	-3	SS-4 3.0-4.0		6.7					Same as above	
4									End of boring at 4.0'	

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/07/01
Date Completed	: 08/07/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 3.7'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING GB-28

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0	SS-1 0.0-1.8	24/24	24.0					Light brown fine SAND with gravel	
									GRAVEL	
1	-1								Brown fine SAND, some cinder fill from 1.0 to 1.2', trace clay	
									GRAVEL	
		SS-2 1.8-2.0		15.0					Black stained SAND with gravel, no odor, trace clay	
2	-2	SS-3 2.0-2.3	24/20	24.7					Same as above	
		SS-4 2.3-3.7		22.7					Light brown fine SAND, some gravel, moist	
3	-3								End of boring at 3.7'	
4										

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Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/07/01
Date Completed	: 08/07/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 3.5'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING GB-29

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0	SS-1 0.0-0.6	24/15	10.3					Grey SAND and GRAVEL	
		SS-2 0.7-1.3		8.1					Black stained SAND, some clay, trace gravel, moist, slight petro odor	
1	-1									
2	-2	SS-3 2.0-2.6	24/18	7.6					Same as above	
		SS-4 2.6-3.5		4.3					Light brown fine SAND, some gravel, moist	
3	-3								End of boring at 3.5'	
4										

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Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/07/01
Date Completed	: 08/07/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 3.7'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING GB-31

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0	SS-1 0.0-1.3	24/24	9.5					Cinder FILL with wood fragments from 0.2 to 0.7 feet, creosote odor	
1	-1	SS-2 1.3-2.0		2.8					Silty clay FILL, some sand, some gravel, moist	
									Light brown fine SAND, moist	
2	-2	SS-3 2.0-3.7	24/20	1.0					Same as above	
3	-3								End of boring at 3.7'	
4										

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South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/08/01
Date Completed	: 08/08/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 2.8'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING GB-32

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0	SS-1 0.0-1.3	24/24	7.4					Gravel and cinder FILL, wood fragments.	
1	-1	SS-2 1.3-2.0		4.1					Silty SAND, trace clay and gravel, saturated at 1.3 to 1.4' Top 1.3' is slough	
2	-2	SS-3 2.0-2.8	24/24	3.5					Brown SAND, trace gravel, moist End of boring at 2.8'	
3										

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/07/01
Date Completed	: 08/07/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 4.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING GB-33

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0	SS-1 0.0-1.0	24/24	4.3					Brown SAND, trace gravel and cinder	
1	-1	SS-2 1.0-2.0		4.5					Cinder FILL, trace gravel	
2	-2	SS-3 2.0-2.8	24/24	0.3					Sandy CLAY, trace cinder, moist	
		SS-4 2.8-4.0		0.1					Brown SAND, trace cinder and gravel, slight staining (black) and petro odor	
3	-3									
									End of boring at 4.0'	
4										

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South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/07/01
Date Completed	: 08/07/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 2.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING GB-34

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0	SS-1 0.0-1.4	24/17	0.0					Asphalt Cinder FILL, some gravel, trace sand and silt, wood fragments from 1.3 to 1.4' (likely RR tre, creosote odor)	
1	-1		24/24						Light brown SAND, trace gravel, moist	
2									End of boring at 2.0'	

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11-28-2001

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/07/01
Date Completed	: 08/07/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 3.7'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING GB-35

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0									
		SS-1 0.0-1.5	24/24	6.4					Silty SAND, some gravel, rootlets Black silty SAND, trace gravel, moist, slight petro odor	
1	-1									
		SS-2 1.5-2.0		8.6					Brown clayey SILT, trace sand and gravel Same as above	
2	-2									
		SS-3 2.2-2.5	24/20	7.7					Brown fine SAND, trace gravel, moist	
		SS-4 2.5-3.7		5.6					Light brown fine SAND, trace gravel, very moist End of boring at 3.7'	
3	-3									
4										

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/10/01
Date Completed	: 08/10/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 4.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING GB-36

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0	SS-1 0.0-2.0	24/24	3.2					Silty SAND, trace gravel, trace clay, moist	
1	-1									
2	-2	SS-2 2.0-3.6	24/24	3.8					Brown fine SAND, trace gravel, moist	
3	-3								Brown coarse SAND, trace gravel, moist	
4									End of boring at 4.0'	

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/08/01
Date Completed	: 08/08/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 17.7'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING SB-5

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	DESCRIPTION	REMARKS
0	0	SS-1 0.0-1.5	24/24	4.7		Brown silty SAND, trace gravel, rootlets	
1	-1	SS-2 1.5-2.0		11.0			
2	-2	SS-3 2.0-2.3	24/24	7.6		Brown SAND and GRAVEL Same as above	
3	-3	SS-4 2.3-4.0		9.6		Light brown SAND, trace gravel, moist	
4	-4	SS-5 4.0-5.3	24/15	7.7		Same as above	
5	-5						
6	-6	SS-6 6.0-7.7	24/20	11.1		Same as above, slightly more gravel	
7	-7						
8	-8	SS-7 8.0-9.7	24/20	9.5		Same as above, less gravel	
9	-9						
10	-10	SS-8 10.0-11.7	24/20	9.3		Light brown SAND, very moist	
11	-11						
12	-12	SS-9 12.0-13.7	24/20	9.0		Light brown SAND, trace gravel, very moist	
13	-13						
14	-14	SS-10 14.0-15.7	24/20	8.0		Same as above	
15	-15						
16	-16	SS-11 16.0-17.7	24/20			Same as above	
17	-17					End of boring at 17.7'	
18							

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/15/01
Date Completed	: 08/15/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 4.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING SB-7

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0	SS-1 0.0-2.0	24/24	2.8					SAND and GRAVEL	
1	-1								Cinder FILL	
2	-2	SS-2 2.0-4.0	24/24	2.9					Light brown coarse SAND, trace gravel, moist Same as above	
3	-3									
4									End of boring at 4.0'	

Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/15/01
Date Completed	: 08/15/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 6.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING SB-8

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0	SS-1 0.0-2.0	24/24	2.4					SAND and GRAVEL	
1	-1								Cinder FILL	
									Clayey SAND, some gravel (fill), moist	
2	-2	SS-2 2.0-4.0	24/24	2.4					Brown coarse SAND, trace gravel, moist, slight staining at 3.8'	
3	-3									
4	-4	SS-3 4.0-6.0	24/24	4.4					Same as above, no staining	
5	-5									
6									End of boring at 6.0'	

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Hull & associates, inc.

South Bend Area A
Franklin & Sample
South Bend, IN

SBI002

Date Started	: 08/15/01
Date Completed	: 08/15/01
Logged by	: Mike Coonfare
Reviewed by	:
Drilling Contractor	: ProbeTech
Drilling Method	: Geoprobe
Sampling Method	: Split Spoon
Total Depth (ft.)	: 6.0'
S. Water Level Date	:
S. Water Level (ft.)	:

LOG OF BORING SB-9

G. Elev. (ft. USGS)	: Not Surveyed
PID/FID Model	: 0.0 (10.2 EV)
PID/FID Calibration	: 100ppm Isobutylene
Drum Label ID	:

Soil Samples: Sampled Int. / Lab Sample

Water Levels: Static / During Drilling

Depth in Feet	Surf. Elev.	Sampler Type/ Sample Number	Sample Interval/ Sample Recovery	PID / FID (ppm)	Blow Count (6"-12"-6")	Soil Samples	Graphic Log	Water Levels	DESCRIPTION	REMARKS
0	0	SS-1 0.0-2.0	24/24	5.4					Silty SAND, some gravel, rootlets, moist	
									Cinder FILL	
1	-1								Brown fine SAND, some gravel	
2	-2	SS-2 2.0-4.0	24/24	4.9					Same as above, staining (black) from 3.6 to 3.8'	
3	-3									
4	-4	SS-3 4.0-6.0	24/24	4.3					Brown coarse SAND, trace gravel, moist (appears natne)	
5	-5									
6									End of boring at 6.0'	

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