

Imagine the result



Ford Motor Company

Supplemental Phase II - Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) St. Paul, Minnesota

Ryan Oesterreich Staff Engineer, PE, PG

(+ 1 Ellis

Robert J. Ellis Principal in Charge

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Geologist under the laws of the State of Minnesota.

Print Name:____Ryan Christopher Oesterreich___ Signature:____Rec____

Date: 5-31-12 License #___47974__

Supplemental Phase II – Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi Boulevard St. Paul, Minnesota 55166

Prepared for Ford Motor Company

Prepared by:

ARCADIS 430 First Avenue North, Suite 720 Minneapolis Minnesota 55401 Tel 612.339.9434 Fax 612.336.4538

Our Ref.: DE000440

Date: May 31, 2012

This document is intended only for the use of the individual or entity for which it was prepared and may contain information that is privileged, confidential and exempt from disclosure under applicable law. Any dissemination, distribution or copying of this document is strictly prohibited.

Table of Contents

Ex	ecutive	Summa	ary		1
1.	Introdu	uction			2
2.	Site Ba	ackgrou	und		4
	2.1	Prope	rty Locatic	on and Description	4
	2.2	Site H	istory		4
	2.3	Site G	eology an	d Hydrogeology	5
		2.3.1	Geolog	у	5
		2.3.2	Hydrog	eology	5
	2.4	Previo	us Investi	gations	6
3.	Supple	ementa	l Phase I	I Exterior Investigation	6
	3.1	Metho	ds		7
		3.1.1	Utility C	learance	7
		3.1.2	Soil Bor	rings and Temporary Wells	7
		3.1.3	Perman	nent Monitoring Wells	7
		3.1.4	Surveyi	ng	8
		3.1.5	Backgro	ound Metals Analysis and Petroleum Impacts	9
	3.2	Summ	ary of Inv	estigation Results	9
		3.2.1	North P	arking Area	10
			3.2.1.1	History	10
			3.2.1.2	Supplemental Investigation	10
		3.2.2	Feature	1 – Former Test Track	12
			3.2.2.1	History	12
			3.2.2.2	Supplemental Investigation	12
		3.2.3	Feature	3 – Former Convoy UST	13
			3.2.3.1	History	13
			3.2.3.2	Supplemental Investigation	13

Table of Contents

3.2.4	Feature	4 – Former Area of Impacted Soil – Leak 10700	14
	3.2.4.1	History	14
	3.2.4.2	Supplemental Investigation	14
3.2.5		5 – Former Location of Gasoline and Diesel Fuel ound Piping	15
	3.2.5.1	History	15
	3.2.5.2	Supplemental Investigation	15
3.2.6	Feature	7 – Railroad Spurs	17
	3.2.6.1	History	17
	3.2.6.2	Supplemental Investigation	17
3.2.7	Feature	8 – Former Hazardous Waste Storage Area	18
	3.2.7.1	History	18
	3.2.7.2	Supplemental Investigation	18
3.2.8	Feature	9 – Former Disposal Area A	19
	3.2.8.1	History	19
	3.2.8.2	Supplemental Investigation	19
3.2.9	Feature	10 – Former Hazardous Waste Storage Area	20
	3.2.9.1	History	20
	3.2.9.2	Supplemental Investigation	20
3.2.10	Feature	11 – Former Disposal Area B	22
	3.2.10.1	History 22	
	3.2.10.2	Supplemental Investigation	22
3.2.11	Feature Operatio	12 and 47 – Former Railroad Spur and Former Coal	23
	3.2.11.1	History 23	
	3.2.11.2	Supplemental Investigation	23
3.2.12	Feature	16 – Former Gasoline, Sunoco Spirits and Pryoxlin USTs.	24
	3.2.12.1	History 24	

Table of Contents

3.2.12.2 Supplemental Investigation	25
3.2.13 Feature 20 – Former Oil Fill Area	26
3.2.13.1 History 26	
3.2.13.2 Supplemental Investigation	27
3.2.14 Feature 21 – 1996 Glycol Release from Underground Piping	27
3.2.14.1 History 27	
3.2.14.2 Supplemental Investigation	27
3.2.15 Feature 23 – Former Brake Fluid UST	28
3.2.15.1 History 28	
3.2.15.2 Supplemental Investigation	28
3.2.16 Feature 24 – Unleaded Gasoline USTs	28
3.2.16.1 History 28	
3.2.16.2 Supplemental Investigation	29
3.2.17 Feature 27 – Oil/Water Separator Trench	29
3.2.17.1 History 29	
3.2.17.2 Supplemental Investigation	29
3.2.18 Feature 35, 36, 37 and 46 – Waste Solvent USTs	30
3.2.18.1 History 30	
3.2.18.2 Supplemental Investigation	30
3.2.19 Feature 41 – Former Fuel Oil UST	30
3.2.19.1 History 30	
3.2.19.2 Supplemental Investigation	31
3.2.20 Feature 42 – Former Fuel Oil ASTs	31
3.2.20.1 History 31	
3.2.20.2 Supplemental Investigation	31
3.2.21 Feature 44, 134 and 140 – Wastewater Collection ASTs, Wastewater Treatment Area, Former Waste Disposal Area	32

3.2.21.1 History 32

Table of Contents

		3.2.21.2	Supplemental Investigation	33
	3.2.22	Feature	49 – Former Hazardous Waste Storage Areas	33
		3.2.22.1	History 33	
		3.2.22.2	Supplemental Investigation	33
	3.2.23	Feature	121 – Exterior Locations Adjacent to Sludge Pits	34
		3.2.23.1	History 34	
		3.2.23.2	Supplemental Investigation	34
	3.2.24	Feature	138 – Former 20,000 Gallon Gasoline AST	34
		3.2.24.1	History 34	
		3.2.24.2	Supplemental Investigation	35
	3.2.25	Feature	152 – Former Fuel Oil AST	35
		3.2.25.1	History 35	
		3.2.25.2	Supplemental Investigation	36
	3.2.26	Feature	153 - Former Coal Gasification Plant	37
		3.2.26.1	History 37	
		3.2.26.2	Supplemental Investigation	37
	3.2.27	Feature	154 – Former Tar Decantor Building	38
		3.2.27.1	History 38	
		3.2.27.2	Supplemental Investigation	38
4.	Summary of F	indings		39
5.	References			41

5. References

Table of Contents

Tables

Table 1	Summary of Supplemental Phase II – Exterior Investigation Activities
Table 2	Field Screening Headspace Summary
Table 3	Monitoring Well Construction
Table 4	Groundwater Elevation Data
Table 5	Monitoring Well Field Parameters
Table 6	Summary of Detected Constituents in Soil Samples
Table 7	Summary of Detected Constituents in Groundwater Samples
Table 8	Summary of Available Background Data
Figures	
Figure 1	Site Location/Property Layout
Figure 2	Boring Locations and Soil Exceedances Above Industrial SRVs
Figure 3	Groundwater Sample Locations and Exceedances Above EPA Maximum Contaminant Levels and MDH Health Based Water Guidance
Appendices	
Appendix A	Soil Boring Logs
Appendix B	Borehole Sealing Records and MDH Well Logs
Appendix C	Groundwater Sampling Logs

Appendix D Laboratory Analytical Reports

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

Executive Summary

A total of 86 direct push soil borings, nine temporary wells and eight permanent wells were completed to investigate 19 Features for soil and groundwater impacts during the Supplemental Phase II Exterior Investigation completed in August through November 2011 at the Ford Twin Cities Assembly Plant (TCAP). Four areas (Feature 7, Feature 23, Feature 49 and Feature 121) were not investigated due to utility interference or other obstructions. The following nine Features had exceedances of Soil Reference Values (SRVs) or groundwater Maximum Contaminant Limits (MCLs) or Health Risk Limits (HRLs) detected during the Supplemental Phase II Exterior Investigation.

Feature Name	Feature	SRV Exceedances			HRL/MCL	Analytaa	
	Number	Industrial	Residential	Recreational	Exceedances	Analytes	
North Parking Area	NPA	Yes	Yes	Yes	Yes	VOCsMetals	
Former Area of Impacted Soil – Leak #10700	4	No	No	No	Yes	• VOCs	
Former Location of Gasoline and Diesel Fuel Underground Piping	5	Yes	Yes	Yes	Yes	VOCsSVOCs	
Former Disposal Area A	9	Yes	Yes	Yes	NA	VOCsMetals	
Former Hazardous Waste Storage Area	10	Yes	Yes	Yes	Yes	SVOCsMetals	
Former Disposal Area B	11	Yes	Yes	Yes	NA	VOCsMetals	
Former Gasoline, Sunoco Spirits, and Pryoxlin USTs	16	Yes	Yes	Yes	Yes	VOCsSVOCsMetals	
Former Fuel Oil AST	152	No	No	No	Yes	VOCsMetals	
Former Coal Gasification Plant	153	Yes	Yes	Yes	NA	SVOCs	

Note:

NPA = North Parking Area

VOC = Volatile Organic Compound

SVOC = Semi-volatile Organic Compound

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

1. Introduction

This Supplemental Phase II Exterior Investigation was conducted by ARCADIS on behalf of Ford Motor Company (Ford) for the Twin Cities Assembly Plant (TCAP) (Site). The Supplemental Phase II Exterior Investigation was conducted in accordance with the Supplemental Phase II – Exterior Investigation Work Plan (ARCADIS 2008a) that was submitted to the Minnesota Pollution Control Agency (MPCA) on May 13, 2008 and the Addendum to the work plan that was submitted to the MPCA on May 19, 2008 (ARCADIS 2008b). The supplemental work plan and addendum to the work plan were approved by the MPCA in letters dated March 15, 2010 and July 8, 2009 respectively.

The Supplemental Phase II Exterior Investigation was conducted in August through November 2011 to provide delineation of impacts that were observed during the Initial Phase II Exterior Investigation and to investigate additional Features not addressed during the initial mobilization. The Features that were investigated were identified during the Phase I Environmental Site Assessment (ESA) (ARCADIS 2007a) completed in June 2007.

The scope of services performed by ARCADIS during this Supplemental Phase II Exterior Investigation is described below.

- Utility clearance consisting of a public utility locate, private utility locate and review of Ford utility drawings was conducted prior to initiating any subsurface work. All boring locations were also manually cleared using a hand auger or hydro-vacuum to a depth of five feet below ground surface (bgs).
- A total of 86 soil borings (ASB-115 through ASB-200) were completed to delineate impacts observed during the Initial Phase II Exterior Investigation using a direct push geoprobe drill rig. Soil borings were logged by an ARCADIS geologist using the United Soil Classification System (USCS) and field screened using a photoionization detector (PID). Soil samples from up to three depth intervals at each soil boring were submitted for laboratory analysis. Groundwater samples were collected from temporary wells installed in nine of the 86 boreholes. All soil borings and temporary wells were abandoned in accordance with Minnesota Department of Health (MDH) regulations upon completion of sample collection.
- Eight permanent groundwater monitoring wells were installed in the unconsolidated materials above bedrock using a hollow stem auger to evaluate long term groundwater quality. The wells were installed, developed and sampled according

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

to the Supplemental Phase II Exterior Investigation Work Plan submitted in May 2008 (ARCADIS 2008a and 2008b).

- All monitoring well and soil boring locations were surveyed by Sunde Land Surveyors.
- Soils, drilling water, and monitoring well purge and development water were analyzed and characterized as investigative-derived waste (IDW) for disposal.

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

2. Site Background

This section provides a description of the Site, a summary of the site history, and a description of the site geology and hydrogeology.

2.1 Property Location and Description

The TCAP is located at 966 South Mississippi River Boulevard in St. Paul, Ramsey County, Minnesota at approximate Latitude (north) 44° 54' 50.8" and Longitude (west) 93° 11' 31.9". The Site is located in a mixed industrial, commercial and residential use area on the eastern shore of the Mississippi River, along the east side of South Mississippi River Boulevard, south of Ford Parkway and west of South Cleveland Avenue in St. Paul, Minnesota. The Site is accessed from the west via two entrances on South Mississippi River Boulevard and from the north via three entrances on Ford Parkway.

Operations at the TCAP formerly consisted of the assembly and painting of light duty trucks (Ford Ranger) using parts that are manufactured elsewhere. Assembly processes included welding, metal cleaning, painting and curing, windshield and trim installation and preparation of the vehicles for final delivery. In addition, a wastewater treatment plant and steam plant are still in operation at the TCAP and were associated with the current assembly operations, which were all investigated during the Phase I ESA. The TCAP was shutdown on December 16, 2011.

The property location and layout are depicted on Figure 1. The exterior Features are depicted on Figures 2 through 5 and are summarized in Table 1.

2.2 Site History

The subject property was vacant undeveloped land prior to construction of the assembly plant. Construction of the original portion of the main assembly building (MAB) began in 1923 and several additions to the MAB have occurred throughout the years, mainly between 1960 and 1978, which added 300,000 square feet to the original building. The paint building was constructed in 1985 and is connected to the main assembly building via a 625-foot bridge. The steam plant was constructed in 1923 and is approximately 10,400 square feet. A historical structure with unknown use was located near the southeastern corner of the steam plant, but was demolished prior to 1974. The wastewater treatment plant is located adjacent to the steam plant, and was

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

constructed in 1984. Additional details on the history of the property are available in the Phase I ESA (ARCADIS 2007a).

2.3 Site Geology and Hydrogeology

The general geology and hydrogeology of the Site, based on information identified during the Phase I ESA (ARCADIS 2007a), and Initial and Supplemental Phase II Exterior Investigations, is outlined in the following sections.

2.3.1 Geology

At the surface of the Site, a thin mantle of unconsolidated sediments exists over bedrock terraces. Underlying the unconsolidated material are sedimentary bedrock units which were deposited during the middle of the Ordovician geologic period. The sedimentary units are, in descending order, Decorah Shale, Platteville Limestone/Dolostone, Glenwood Shale and St. Peter Sandstone.

The soil mantle consists of predominately sandy clay and clayey sand. Weathered shale cobbles are common and in some areas there is two to five feet of peat. In some of the areas investigated at the Site much of the native material has been disturbed and is mixed with fill material such as building rubble, glass, scrap metal and ash. The Platteville formation lies on top of the Glenwood Shale formation and the contact is gradational. The Glenwood Shale is composed of dark green to gray shale and sandy shale. The formation is thinly laminated and moderately fissile (cleavable) and is approximately seven feet thick in the areas investigated. The St. Peter Sandstone outcrops along the bluffs of the Mississippi River and continues below the elevation of the river bed. The sandstone is composed of medium-grained, well-sorted and well-rounded quartzite. It is white to buff in color and is medium to weakly indurated (hardened). The St. Peter formation is as much as 150 feet thick in the Twin Cities area.

2.3.2 Hydrogeology

Perched groundwater is found in the highly heterogeneous unconsolidated sediments overlying bedrock. Groundwater is encountered in the St. Peter formation which is a high yielding aquifer. The perched groundwater is generally isolated from the groundwater by the Decorah/Platteville/Glenwood Formation which is an aquitard/aquiclude.

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

The apparent groundwater flow direction at the Site is generally to the southwest towards the Mississippi River but can be locally variable particularly in the unconsolidated sediments and close to the river.

Additional information on the geology and hydrogeology of the Site can be found in the Phase I ESA (ARCADIS 2007a) and the Initial Phase II – Exterior Investigation Report (ARCADIS 2007b).

2.4 Previous Investigations

Several site investigations and reports have been completed for the Ford TCAP. The following is a brief summary of previous investigations.

On June 26, 1990 the MPCA issued a Request for Response Action (RFRA) due to the historical waste handling and disposal practices at the Site. In accordance with the RFRA, a Remedial Investigation/Feasibility Study (RI/FS) was completed by Conestoga-Rovers & Associates Limited (CRA), which included a Remedial Investigation/Alternatives Analysis (RI/AA) of three areas designated by the MPCA adjacent to the paint building and main assembly building (Area A, Area B and a UST site), that was completed in May 1992 (CRA 1992).

A Phase I ESA was completed by ARCADIS in 2007 to identify Features and obtain information regarding environmental activities and conditions at the Site (ARCADIS 2007a). An Initial Exterior Phase II Investigation was completed in June and July 2007 and the Initial Phase II – Exterior Investigation Report was submitted to the MPCA in October 2007 (ARCADIS 2007b). An Initial Interior Phase II Investigation was completed in August 2010 and the Initial Phase II – Interior Investigation Report was submitted to the MPCA in March 2011 (ARCADIS 2011a).

3. Supplemental Phase II Exterior Investigation

The following sections detail the work that was completed as part of the Supplemental Phase II Exterior Investigation. Any deviations from the approved work plan are noted.

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

3.1 Methods

3.1.1 Utility Clearance

A utility clearance consisting of a public utility locate, private utility locate and a review of utility drawings with Ford personnel was performed prior to initiating any subsurface work at the Site. Gopher One Call was notified to mark all public utility lines servicing the Site. Additionally, a private utility locator, Hance Utility Service, Inc. of Buffalo, Minnesota was retained to locate private utilities in the area of subsurface work. Finally, a surface inspection was completed and Ford personnel with access to Ford utility maps were consulted for each specific boring location. After removing any surficial debris such as asphalt or concrete a hydro-vacuum unit was used to excavate the upper five feet of the subsurface and manually clear the area.

3.1.2 Soil Borings and Temporary Wells

Eighty six soil borings (ASB-115 through ASB-200) were completed using a direct push geoprobe® rig. Each boring was logged continuously by an ARCADIS field geologist and screened using a PID with an 11.7 electron-volt (eV) lamp. A summary of all PID readings collected in the field is available in Table 2. Soil boring logs were created in the field and all soils were classified using the USCS. Soil borings logs are provided in Appendix A. Samples were collected in accordance with the Field Sampling Plan (ARCADIS 2007c) and Supplemental Phase II – Exterior Investigation Work Plan (ARCADIS 2008a). Borings were advanced until the target depth was reached or refusal due to shallow bedrock was encountered. When the boring was complete it was sealed with a bentonite grout. If the borehole was classified as a regulated hole according to MDH guidelines, a Borehole Sealing Record was prepared, see Appendix B. The surface disturbance of each borehole was repaired to match surrounding materials.

Water samples were collected from temporary wells installed at nine of the 86 soil borings. Groundwater samples were collected using either a stainless steel check valve or a peristaltic pump with disposable polyethylene tubing. The temporary wells were purged to clear the wells and tubing before collecting samples.

3.1.3 Permanent Monitoring Wells

Eight permanent monitoring wells (AMW-11 through AMW-18) were installed using a hollow stem auger rig with 4 $\frac{1}{4}$ -inch inner diameter and 8 $\frac{1}{4}$ inch outer diameter

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

augers. Well construction details are included in Table 3 and MDH Well Logs are included in Appendix B. Monitoring wells were constructed with two-inch diameter five foot long slotted polyvinyl chloride (PVC) screens and sufficient PVC riser to reach ground surface (for flush mount wells) or above ground surface (for stickup wells). Each well had a filter sand pack extended approximately one to 2.5 feet above the top of the screened interval. A two foot bentonite seal was placed over the sand pack and the remaining well annulus was sealed with a cement grout to the surface.

Each new permanent monitoring well was developed using over-pumping techniques and a whale pump. Between 11 and 33 well volumes of water were removed from each monitoring well during development to remove sediment and ensure the well was hydraulically connected with the surrounding aquifer.

The newly installed monitoring wells were sampled on October 31 and November 7 of 2011. Prior to performing sampling activities, depth to water measurements were collected from all the wells on-site. The recorded water elevations are shown in Table 4. Monitoring wells were purged of a minimum of three well volumes using a disposable polyethylene bailer prior to sample collection. After the wells were purged, field parameters (pH, conductivity, turbidity, temperature, dissolved oxygen and oxidation reduction potential [ORP]) were collected by submerging the sensors of a Horiba U-52 in a cup of purged groundwater. The monitoring well field parameters that were collected are included in Table 5. All groundwater sampling logs are included in Appendix C. Bailers were utilized to collect samples. Readings for dissolved oxygen and ORP from bailed groundwater samples are not considered reliable and are not included in Table 5 but are reported on the sampling logs in Appendix C. All groundwater samples analyzed for metals were field filtered using a 0.45 micron disposable filter prior to sample collection.

3.1.4 Surveying

All borings and monitoring wells were surveyed for X, Y and Z coordinates. The repaired ground surface was surveyed for soil borings and ground surface and top of casing was surveyed for new monitoring wells. Surveying was completed by Sunde Land Surveying, LLC of Bloomington, Minnesota and referenced the National Geodetic Vertical Datum of 1929 (NGVD 29).

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

3.1.5 Background Metals Analysis and Petroleum Impacts

Several of the metals (arsenic, copper, iron and lead) detected at the Site are elements that are naturally present in Minnesota soils. For those metals, Site specific data collected during this Supplemental Phase II Exterior Investigation were compared to both the SRV standards and to Minnesota-representative background data sets to determine whether the concentrations present at the Site are consistent with ubiquitous and naturally occurring conditions or if they are indicative of an impacted area. If detections exceeded both the SRV standards and background data sets, that data is discussed below. The full data set for determining background values was published by the United States Geological Survey (USGS) (Boerngen and Shacklette 1981) and included in the Additional Soil Investigation and Surface Soil Risk Assessment Report – Baseball Fields – Feature 139 (ARCADIS 2007d). If detections of the metals listed above fall outside the range of naturally occurring concentrations in Minnesota the Features where they were detected were retained for additional investigation.

Soil samples collected from several of the Features described below were analyzed for Gasoline Range Organics (GRO) and Diesel Range Organics (DRO). Any detected concentrations of GRO and DRO are discussed below as well. There are no SRVs for those constituents; however, they are used as indicator parameters to determine if a more focused compound specific delineation is required. Additionally, the remedial action required to address soil impacted with petroleum compounds such as GRO and DRO is dependent on the future re-use of the impacted property. Therefore, recommendations on further investigation and delineation of the petroleum impacts detected at the Site will be withheld until future land use has been determined.

3.2 Summary of Investigation Results

The following is a summary of all Features investigated during the Supplemental Phase II Exterior Investigation. Feature 13 – Former Disposal Area C will be analyzed in a separate report. Analytical results for soil and groundwater from this investigation are discussed in the following sections, and are included in Table 6 and Table 7. Historical analytical results, although referenced, are not discussed in the text below. Soil and groundwater exceedances are illustrated on Figures 2 and 3, respectively, and contain detections from this investigation and from historical investigations as well. A summary of all PID readings collected are included in Table 2. Laboratory reports are included in Appendix D. A summary of the borings completed and samples collected at each Feature is shown in Table 1.

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

3.2.1 North Parking Area

3.2.1.1 History

The North Parking Area consists of approximately 29 acres of paved parking lot and was mainly used for employee parking, as well as storage for newly built Ford Ranger and Mazda B-series trucks prior to shipment off-site. An addendum to the *Supplemental Phase II – Exterior Investigation Work Plan* that covered the work to be completed in the North Parking Area was submitted to the MPCA on May 19, 2008 (ARCADIS 2008b).

3.2.1.2 Supplemental Investigation

Soil

The North Parking Area was divided into 1-acre grids and one boring was installed in each grid with the exception of those grids that already had a boring or well installed or where a boring or well was already planned per the Supplemental Phase II - Exterior Investigation Work Plan. In total, 19 borings (ASB-115 to -118, ASB-123 to -126, ASB-128 to -132, ASB-134, ASB-136 to -137 and ASB 141 to -143) were completed to depths ranging from three to 13 feet bgs before encountering refusal due to bedrock. One or two samples were collected from each borehole with the exception of ASB-130, where no sample was collected because soils were saturated immediately below the ground surface. Each sample was analyzed for Resource Conservation and Recovery Act (RCRA) metals, Polynuclear Aromatic Hydrocarbons (PAHs) and DRO. Additionally, if PID readings at a borehole were greater than 10 parts per million (ppm) the samples were analyzed for GRO and VOCs. Soil borings completed in the North Parking Area and exceedances of any SRVs are shown on Figure 2.

PID readings above 10 ppm were noted in ASB-115, ASB-116, ASB-118, ASB-123 and ASB-136. As stipulated in the Supplemental Phase II – Exterior Investigation Workplan, soil samples were collected from the locations with the highest PID readings unless the soil at that location was saturated. Additional samples were collected from just above the saturated zone.

Samples collected at 17 of the 19 borings ASB-115 to 118, ASB-124 to 126, ASB-129, ASB-131 and 132, ASB-134, ASB-136 and 137, and ASB-141 to 143 did not detect any constituents at or above any SRVs. GRO was detected in three of the five samples it was analyzed for at a maximum concentration of 12 milligrams per kilogram

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

(mg/kg). DRO was detected in six of 19 samples it was analyzed for at a maximum concentration of 550 mg/kg. There is no SRV for DRO or GRO.

Samples were collected from ASB-123 at depths of 2 to 4 feet bgs and 6 to 8 feet bgs. The sample collected from 2 to 4 feet bgs did not have any constituents detected at or above any SRVs, but the sample collected from 6 to 8 feet bgs detected benzene and xylenes at concentrations above the Residential SRV, 1,3,5-trimethylbenzene (1,3,5-TMB) above the Recreational SRV and 1,2,4-TMB above the Industrial SRV. GRO was detected at 390 mg/kg and DRO was detected at 46 mg/kg, although there is no SRV for those constituents.

Samples were collected from ASB-128 at depths of 0 to 2 feet bgs and 6 to 8 feet bgs. The sample collected from 6 to 8 feet bgs did not have any constituents detected above any SRVs, but the sample collected from 0 to 2 feet bgs contained arsenic at an estimated concentration of 17 mg/kg which is above the Recreational SRV and slightly above the range of arsenic concentrations found in naturally in soil (Table 8). GRO was not analyzed in either sample and DRO was not detected at or above method detection limits in both samples.

Groundwater

Groundwater samples were collected from six temporary wells set at ASB-115, ASB-118, ASB-128, ASB-129, ASB-130 and ASB-137. Samples were analyzed for VOCs, PAHs, GRO, DRO, RCRA metals and polychlorinated biphenyls (PCBs). Groundwater sample locations collected in the North Parking Area and exceedances of any HRLs or MCLs are shown on Figure 3.

ASB-115 had two VOCs (benzene and ethylbenzene) detected at concentrations over their respective MCLs and HRLs. No other constituents were detected above either set of standards. DRO was detected at 3,400 ug/L but there are no MCLs or HRLs for those constituents.

ASB-118 had benzene detected at a concentration over both the MCL and HRLs. No other constituents were detected above either set of standards. GRO was detected at 770 ug/L and DRO was detected at 450 ug/L.

ASB-128 had arsenic detected at a concentration greater than the MCL, but there is not HRL for that constituent. No other constituents were detected above either set of

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

standards. GRO was less than the method detection limit and DRO was detected at 380 ug/L.

ASB-129 and ASB-130 did not have any constituents detected above either set of standards. GRO was less than the method detection limit in both water samples and DRO was detected at 410 ug/L and 270 ug/L in both samples.

ASB-137 did not have any constituents detected above either set of standards and both GRO and DRO were below method detection limits.

3.2.2 Feature 1 – Former Test Track

3.2.2.1 History

Based on a review of aerial photographs, the former test track was historically used to test vehicles from prior to 1953 until prior to 1974. The test track was sprayed with oil for dust control, based on information provided through interviews with the TCAP personnel. Two borings (ASB-033 and ASB-046) were completed in the area during the Initial Phase II Exterior Investigation. Samples from the initial borings had detected concentrations of DRO; however, no constituents exceeded the Industrial SRVs. No temporary wells were set due to lack of water observed in the boreholes.

3.2.2.2 Supplemental Investigation

Soil

Six additional borings (ASB-127, ASB-133, ASB-144, ASB-178, ASB-184, ASB-187) out of seven planned borings were completed during the Supplemental Phase II Exterior Investigation. One boring was not installed during this investigation due to conflict with ongoing operations at the TCAP at the time of the field investigation activities. In general, borings were completed to a total depth of 12 feet bgs or until refusal due to bedrock was encountered. No boreholes had PID readings above 10 ppm so samples were collected from zero to four feet bgs. Samples were analyzed for VOCs, SVOCs, DRO, RCRA metals and PCBs. Soil borings completed in Feature 1 and exceedances of any SRVs are shown on Figure 2.

No constituents were detected in any of the soil samples above Residential SRVs. The sample from ASB-133 was not analyzed for VOCs because the methanol preservation

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

was lost during sample shipment due to a leaky container, thereby reducing the preservative-to-soil ratio necessary for proper analysis.

Groundwater

Four temporary monitoring wells were planned for the area but none were installed due to lack of groundwater observed in the boreholes.

3.2.3 Feature 3 - Former Convoy UST

3.2.3.1 History

A confirmed release (Leak #5343) from the former Convoy 2,000 gallon diesel UST was reported during UST removal activities in 1992. Approximately 150 cubic yards of soil was excavated during the remedial action. A soil boring program was implemented at the request of the MPCA to define the extent of impacts. Seven samples were collected from the sidewalls and bottom of the tank excavation and five samples were collected from boreholes completed to delineate the horizontal extent of impacts. Approximately 125 cubic yards of impacted soil were left in place beneath the clean fill used to replace the UST excavation. The release was closed in September 1992 because the impacts were delineated and vertical migration of the impacts was limited by the bedrock approximately 10 feet bgs.

3.2.3.2 Supplemental Investigation

Soil

Three additional borings (ASB-138, ASB-139 and ASB-140) were completed during the Supplemental Phase II Exterior Investigation to validate historical results and confirm that petroleum impacts are limited and delineated. Borings were completed to eight feet bgs where refusal was encountered due to bedrock. A PID reading of 11.3 ppm was detected in ASB-139 from 6 to 8 feet bgs, but all other headspace readings were below 10 ppm. Samples were analyzed for VOCs, DRO, GRO, and lead. No constituents were detected in any of the soil samples above Residential SRVs. Soil borings completed in Feature 3 are shown on Figure 2.

Groundwater

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

One temporary monitoring well was planned for the area but was not installed due to lack of groundwater observed in the boreholes.

3.2.4 Feature 4 – Former Area of Impacted Soil – Leak 10700

3.2.4.1 History

An area of soil impacted with gasoline and diesel was reported in 1997 during construction of the training center. The impacts were the results of leakage from product lines running to gasoline and diesel USTs that were removed in 1993. The area was entered into the Voluntary Petroleum Investigation and Cleanup program (now called Petroleum Brownfields program) in December 1997. The impacted soils were excavated and the release was closed in February 1998. A Development Response Action Plan (DRAP) was approved in February 1997 for construction of a training center in the area. During construction of the training center a total volume of 3,078 cubic yards of impacted soil was disposed of and 50,693 gallons of groundwater generated from dewatering of the excavation was discharged to the sanitary sewer system via a permit from the City of St. Paul.

A total of 31 soil borings were completed during historical investigations in the area. Twenty soil samples and 11 groundwater samples were collected and submitted to a laboratory for analysis. No investigation of this area was completed during the Initial Phase II Investigation.

3.2.4.2 Supplemental Investigation

Soil

Two additional borings (ASB-119, ASB-120) were completed during the Supplemental Phase II Exterior Investigation to provide additional assessment and delineation of the soil in the area. The boreholes were completed to depths of 12 feet bgs and 11.5 feet bgs, respectively. No PID readings above 10 ppm were observed from either borehole. Two soil samples were collected from each borehole and analyzed for VOCs, lead, GRO and DRO. No constituents were detected in soil samples at or above Residential SRVs. Soil borings completed in Feature 4 are shown on Figure 2.

Groundwater

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

One temporary well was also installed at ASB-120. A groundwater sample was collected and analyzed for VOCs, dissolved lead and GRO and DRO. Benzene was detected at an estimated concentration of 17 ug/L, which is above the MDH HRL of 2 ug/L and above the EPAMCL of 5 ug/L. GRO and DRO were detected at 88 and 760 ug/L respectively, but there are no HRLs or MCLs for those constituents. No other constituents, including lead, were detected at or above their applicable standards. Groundwater samples collected in Feature 4 and exceedances of any HRLs or MCLs are shown on Figure 3.

3.2.5 Feature 5 – Former Location of Gasoline and Diesel Fuel Underground Piping

3.2.5.1 History

Underground steel piping was formerly utilized in conjunction with former gasoline and diesel fuel USTs in the area, which were removed in 1993. The piping had been in place since approximately 1977. Some piping may still be in place below the ground surface. A release occurred from the piping which impacted subsurface soils. Remedial activities were completed in the area of the piping, which included extensive soil removal. However, in 2004-2005 during a water main repair in the area of the piping, a subsequent release was reported. The releases have been closed per the MPCA; however, based on the recurrent releases identified, impacted soil may still be present in the area of the underground piping. Five hollow stem auger borings (ASB-029, ASB-030, ASB-045, ASB-047, and ASB-048) were completed during the Initial Phase II Exterior Investigation. ASB-047 had slightly elevated PID readings over background concentrations. The sample from ASB-030 had an estimated detectable concentration of GRO and samples from all borings had detectable DRO concentrations. No constituents were detected over Industrial SRVs. Groundwater samples were collected from temporary well locations at ASB-030 and ASB -047. GRO and DRO were detected in samples from both boreholes but there are no HRLs for those constituents.

3.2.5.2 Supplemental Investigation

Soil

Four additional borings (ASB-121, ASB-122, ASB-199 and ASB-200) were completed to collect additional data along the areal extent of the feature for characterization and delineation purposes. One proposed boring could not be completed at the time of the supplemental investigation due to utility interference. The boreholes were completed to depths of seven to 12 feet bgs before encountering refusal due to bedrock. ASB-

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

121 had elevated PID readings throughout the boring, with a maximum reading of 794 ppm from 2 to 4 feet bgs. ASB-122 also had elevated PID readings throughout the boring with a maximum reading of 495 from 7 to 8 feet bgs. No elevated PID readings were detected in ASB-199 or ASB-200. Two samples were collected from each boring and analyzed for VOCs, PAHs, GRO, DRO and lead. Soil borings completed in Feature 5 and exceedances of any SRVs are shown on Figure 2.

No constituents were detected at or above Residential SRVs in soil samples collected from ASB-199 or ASB-200.

Samples from ASB-121 were collected from 5 to 7 feet bgs and 8 to 10 feet bgs. Both samples had concentrations of VOCs (e.g., 1,2,4-TMB, 1,3,5-TMB, xylenes) that exceeded their respective Industrial SRVs. Additionally, one PAH (benzo(a)pyrene) was detected in the 8 to 10 feet bgs sample above Industrial SRVs. GRO was detected at a concentration of 820 and 4,000 mg/kg for the shallower and deeper sample respectively and DRO was detected at a concentration of 42 and 12 mg/kg respectively, but there are no SRVs for those constituents. Lead was below all the SRVs in both samples collected from ASB-121.

Samples from ASB-122 were collected from 2 to 4 and 6 to 8 feet bgs. The sample from 2 to 4 feet bgs did not have any constituents detected at or above SRVs. GRO was detected at 57 mg/kg and DRO was below method detection limits. The sample from 6 to 8 feet bgs had three VOCs (1,2,4-TMB, 1,3,5-TMB and xylenes) detected above their respective Industrial SRVs. Additionally, benzene was detected above the Residential SRV. No other constituents exceeded SRVs in the sample collected from 6 to 8 feet bgs. GRO was detected at 2,300 mg/kg and DRO was detected at 26 mg/kg respectively but there are no SRVs for those constituents.

Groundwater

Two permanent groundwater monitoring wells (AMW-16 and AMW-17) were installed to further evaluate the groundwater exceedances of benzene, lead and benzo(a)pyrene identified at ASB-030 and ASB-047 during the Initial Phase II Exterior Investigation. The wells were sampled for VOCs, PAHs, GRO, DRO and dissolved lead. The dissolved lead sample was field filtered. Groundwater samples collected Feature 5 and exceedances of any HRLs or MCLs are shown on Figure 3.

AMW-16 had six VOCs (1,2,4-TMB, 1,3,5-TMB, ethylbenzene, m&p-xylene, o-xylene and total xylenes) that were detected above HRLs. Ethylbenzene was also detected

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

above its respective MCL. There is no MCL for TMB compounds. No other constituents were detected at or above their respective groundwater standards. GRO was detected at 15,000 ug/L and DRO was detected at 1,200 ug/L but there are no MCLs or HRLs for those constituents.

AMW-17 had two VOCs (benzene and ethylbenzene) that were detected above HRLs. Benzene was also detected above its respective MCL. No other constituents were detected at or above their respective groundwater standards. GRO was detected at 3,200 ug/L and DRO was detected at 820 ug/L but there are no MCLs or HRLs for those constituents.

3.2.6 Feature 7 - Railroad Spurs

3.2.6.1 History

Railroad spurs are utilized for the delivery and loading of parts and other items to and from the assembly plant via rail cars. In addition, railcars are used to transfer final products to their retail destinations. Some areas of staining were observed within the vicinity of the railroad spurs. Five borings (ASB-017, ASB-021, ASB-022, ASB-031 and ASB-043) were completed during the Initial Phase II Exterior Investigation. Samples from ASB-022 and ASB-031 had detectable concentrations of DRO, however, no constituents from any of the borings exceeded the Industrial SRVs. No temporary wells were set due to lack of water observed in the boreholes.

3.2.6.2 Supplemental Investigation

Eight borings were planned for further investigation along the railroad spurs to further delineate the detections of DRO, but the borings could not be completed during this phase of investigation due to conflict with ongoing rail operations at the time of the field investigation activities. Three temporary monitoring wells were also not installed during this investigation for the same reason. In preparation for post-plant shutdown investigations, ARCADIS inspected the tracks and Sunde Land Surveying surveyed the locations where surface staining was observed on November 2, 2011.

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

3.2.7 Feature 8 - Former Hazardous Waste Storage Area

3.2.7.1 History

Based on historical documentation reviewed, a former hazardous waste storage area was identified in the area. The documentation did not include any reported spills; however, based on the general usage of the area to store hazardous waste materials the area was investigated. Two borings (ASB-034 and ASB-044) were completed during the Initial Phase II Exterior Investigation. No constituents from any of the borings exceeded the Industrial SRVs. No temporary wells were installed due to lack of water observed in the boreholes.

3.2.7.2 Supplemental Investigation

Soil

Two additional borings (ASB-179 and ASB-180) were completed during the Supplemental Phase II Exterior Investigation for further investigation of the former hazardous waste storage area. The two borings were completed to a depth of 4.5 and 4 feet bgs respectively before hitting refusal due to bedrock. No elevated PID readings above 10 ppm were detected in either boring. Because refusal was encountered at such a shallow depth only one of the two planned soil samples was collected from each borehole. Soil samples were analyzed for VOCs, SVOCs, Target Analyte List (TAL) metals, PCBs, GRO and DRO. Soil borings completed in Feature 8 and exceedances of any SRVs are shown on Figure 2.

No other constituents were detected at concentrations above any SRVs and GRO and DRO were below method detection limits in both samples.

Groundwater

One temporary monitoring well was planned for the area but was not installed due to lack of water observed in the boreholes.



Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

3.2.8 Feature 9 - Former Disposal Area A

3.2.8.1 History

This area was utilized as a historical disposal site for waste materials along with Former Disposal Area B (Feature 11) generated from the assembly and painting operations. Samples collected from six soil borings completed in 1992 indicated VOCs and metals were present at concentrations that exceeded 1992 remediation criteria. The areas with soil exceedances were excavated from 1992 to 1993 and relocated to Area C. Confirmation samples collected from the excavated areas and confirmed that the cleanup goals had been achieved. The Response Action Final Completion Report that documented the remediation activities was accepted by the MPCA in April 1993 and the area was delisted from the PLP in July 1993.

3.2.8.2 Supplemental Investigation

Soil

Four additional soil borings (ASB-177, ASB-181, ASB-182 and ASB-183) were completed during the Supplemental Phase II Exterior Investigation to provide additional assessment of the former disposal area. Borings were completed to depths of between seven and 11.5 feet bgs before refusal due to bedrock. Elevated PID readings over 10 ppm were measured throughout ASB-181 with a maximum reading of 103 ppm detected from 8 to 9 feet bgs. Elevated PID readings were also detected throughout ASB-182 with a maximum reading of 724 ppm detected from 2 to 4 feet bgs. One soil sample was collected from each borehole and analyzed for VOCs, TAL metals, GRO and DRO. Soil borings completed in Feature 9 and exceedances of any SRVs are shown on Figure 2.

ASB-182 had concentrations of five VOCs (1,2,4-TMB, 1,3,5-TMB, butylbenzene, naphthalene and xylenes) that exceeded Industrial SRVs. . The lead concentration of 700 mg/kg was above the Recreational SRV and outside the range of naturally occurring lead (Table 8). GRO and DRO were detected at 6,200 mg/kg and 3,600 mg/kg respectively but there are no standards for those constituents.

Groundwater

One temporary monitoring well was planned for the area but was not installed due to lack of water observed in the boreholes.

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

3.2.9 Feature 10 - Former Hazardous Waste Storage Area

3.2.9.1 History

Based on historical documentation reviewed, a former hazardous waste storage area was identified in the area. The documentation did not include any reported spills from this area; however based on the general usage of the area to store hazardous waste materials this area was investigated. Two borings (ASB-013 and ASB-014) were completed during the Initial Phase II Exterior Investigation. Arsenic was detected in ASB-014 above the Industrial SRV. No other constituents from either of the borings exceeded the Industrial SRVs. A groundwater sample was collected from ASB-013 but no constituents were detected above HRLs.

3.2.9.2 Supplemental Investigation

Soil

Six additional borings (ASB-164, ASB-165, ASB-166, ASB-167, ASB-170 and ASB-171) were completed during the Supplemental Phase II Exterior Investigation to further define horizontal and vertical extent of the arsenic impacts detected in ASB-014. The borings were completed to depths of 10.5 to 12.25 feet bgs before hitting refusal due to bedrock. Slightly elevated PID readings up to approximately 20 ppm were detected throughout the unsaturated portion of ASB-166 but were higher (>600 ppm) in the groundwater saturated interval. A similar trend was observed in ASB-167. The rest of the boreholes did not have PID readings greater than 10 ppm. One to three samples were collected from each boring depending on the thickness of the unsaturated layer and sampled for VOCs, SVOCs, TAL metals, PCBs, GRO, DRO, arsenic and Toxicity Characteristic Leaching Procedure (TCLP) arsenic. The TCLP procedure was used when analyzing for arsenic because if arsenic leaches from the soil it can be an indicator that the arsenic impacts are anthropogenic. No samples were collected from ASB-164 because groundwater saturated soils were encountered near the surface. Two of the samples from each boring were submitted to the laboratory for analysis and the additional samples were held pending results of the initial samples and analyzed if additional delineation was needed. Soil borings completed in Feature 10 and exceedances of any SRVs are shown on Figure 2.

ASB-165 detected total arsenic over the Industrial SRV and outside the range of naturally occurring arsenic in Minnesota (Table 8), however, TCLP arsenic was below detection limits. No other constituents were detected above any SRVs. GRO was

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

detected at an estimated concentration of 2.2 mg/kg and DRO was detected at 100 mg/kg, but there are no SRVs for those constituents.

ASB-166 detected antimony and lead above the Industrial SRV and cadmium above the Recreational SRV. The lead concentration of 720 mg/kg is also above the range for background concentrations detected naturally in the area (Table 8). No other constituents were detected above any SRVs. GRO was detected at 33 mg/kg.

The shallow sample (0 to 2 feet bgs) in ASB-167 detected antimony above the Industrial SRV and lead above both the Recreational SRV and the range for naturally occurring lead (Table 8). No other constituents were detected above any SRVs. Two PCBs (Aroclor 1248 and Aroclor 1260) were detected at concentrations of 84 and 44 micrograms per kilogram (ug/kg) respectively, which are below their respective SRV of 1,200 ug/kg. GRO was detected at an estimated concentration of 6.3 mg/kg and DRO was detected at 170 mg/kg.

The shallow sample (0 to 2 feet bgs) from ASB-170 detected one SVOC (benzo(a)pyrene) above Recreational SRVs. One PCB (Aroclor 1260) was detected at a concentration below its SRV of 1,200 ug/kg. The deep sample (4 to 6 feet bgs) detected no PCBs at or above the method detection limits and GRO and DRO were detected at estimated concentrations of 2.4 mg/kg and 8.2 mg/kg respectively.

ASB-171 detected arsenic above the Industrial SRV and above background concentrations in the naturally occurring range for arsenic (Table 8). No PCBs were detected above the method detection limit. No other constituents were detected above SRVs. GRO and DRO were detected at estimated concentrations of 1.8 mg/kg and 8.2 mg/kg respectively.

Groundwater

One temporary well was installed at ASB-166. A groundwater sample was collected and analyzed for arsenic which was detected at 610 ug/L, above the MCL of 10 ug/L. There is no HRL for arsenic. Groundwater samples collected in Feature 10 and exceedances of any HRLs or MCLs are shown on Figure 3.



Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

3.2.10 Feature 11 - Former Disposal Area B

3.2.10.1 History

This area was utilized as a historical disposal site along with Former Disposal Area A (Feature 9) for waste materials generated from the assembly and painting operations. Samples collected from seventeen soil borings completed in 1992 indicated VOCs and metals were present at concentrations that exceeded remediation criteria. The areas with soil exceedances were excavated from 1992 to 1993 and relocated to Area C. Confirmation samples collected from the excavated areas and confirmed that the cleanup goals had been achieved. The Response Action Final Completion Report that documented the remediation activities was accepted by the MPCA in April 1993 and the area was delisted from the PLP in July 1993.

3.2.10.2 Supplemental Investigation

Soil

Five additional soil borings (ASB-172, ASB-173, ASB-174, ASB-175, ASB-176) were completed to provide additional assessment of Former Disposal Area B. Boreholes were completed to 12 feet bgs before hitting refusal due to bedrock. Elevated PID readings were observed in ASB-172, ASB-173, ASB-175 and ASB-176. The PID readings measured in ASB-172 and ASB-173 (576 ppm and 818 ppm respectively) were below the interval where soils became wet so soil were collected from above the interval with high PID readings. The PID readings measured in ASB-175 and ASB-176 were from the unsaturated portion of the soil so samples were collected from the interval with elevated PID readings. One soil sample was collected from each boring and analyzed for VOCs, TAL metals, GRO and DRO. Soil borings completed in Feature 11 and exceedances of any SRVs are shown on Figure 2.

ASB-172 had concentrations of lead over its Industrial SRV, and antimony over its Recreational SRV. The lead concentration of 3,000 mg/kg is also above the range for background concentrations of lead occurring naturally in the area (Table 8). GRO and DRO were detected at concentrations of 2.9 and 52 mg/kg respectively, but there is no SRV for those constituents. No other constituents were detected over their respective SRVs.

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

ASB-173 had a concentration of GRO that was below method detection limits and DRO was detected at 25 mg/kg. No other constituents were detected over their respective SRVs.

ASB-175 detected lead and mercury above the Industrial SRV, naphthalene above the Residential SRV, and antimony above the Recreational SRV. The lead concentration of 1,000 mg/kg is above the range for background concentrations of lead occurring naturally in the area (Table 8). GRO and DRO were detected at concentrations of 5,800 and 2,600 mg/kg respectively from four to six ft bgs. No other constituents were detected above any of the SRVs.

ASB-176 had two VOCs (1,2,4-TMB and naphthalene) detected above the Industrial SRVs.

Groundwater

Up to three temporary monitoring wells were planned for the area but were not installed due to lack of water observed in the boreholes at 12 ft bgs.

3.2.11 Feature 12 and 47 - Former Railroad Spur and Former Coal Operations

3.2.11.1 History

Railroad spurs were utilized for the delivery and loading of parts and other items to and from the assembly plant via rail cars. Based on their historic use the former railroad spurs were investigated. Five borings (ASB-005, ASB-035, ASB-036, ASB-037 and ASB-040) were completed during the Initial Phase II Exterior Investigation. Samples from ASB-005 and ASB-037 had detected concentrations of DRO, however, no constituents from any of the borings exceeded the Industrial SRVs. Groundwater samples were collected from ASB-005, ASB-036 and ASB-037. Several metals were detected in samples collected from all three boreholes at concentrations that exceeded their respective HRLs.

3.2.11.2 Supplemental Investigation

Soil

One additional soil boring (ASB-162) was installed during the Supplemental Phase II Exterior Investigation to evaluate the exceedances in soil and groundwater that were

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

detected during the Initial Supplemental Phase II Exterior Investigation. ASB-162 was completed to a total depth of 12 feet bgs. No PID readings over 10 ppm were observed. One soil sample was collected from 1 to 3 feet bgs in ASB-162 and analyzed for VOCs, PAHs, DRO, PCBs and RCRA metals. Soil borings completed in Feature 12 and 47 and are shown on Figure 2.

No constituents were detected at concentrations exceeding any SRVs. DRO was detected at an estimated concentration of 2 mg/kg, but there is no SRV for that constituent.

Groundwater

Two permanent groundwater wells (AMW-11 and AMW-18) were installed to further evaluate the groundwater exceedances of metals identified at ASB-005, ASB-036 and ASB-037 during the Initial Phase II Exterior Investigation. The wells were sampled for VOCs, PAHs, RCRA metals, GRO and DRO. Permanent wells installed in Feature 12 and 47 and are shown on Figure 3.

AMW-11 and AMW-18 did not have any constituents detected at or above their respective groundwater standards. GRO was detected at 3,000 ug/L and below method detection limits respectively. DRO was detected at 1,200 ug/L and 1,000 ug/L respectively. There are no MCLs or HRLs for GRO or DRO.

3.2.12 Feature 16 – Former Gasoline, Sunoco Spirits and Pryoxlin USTs.

3.2.12.1 History

Two former 20,000 gallon gasoline USTs were located east of the former oil house and eight 6,000 gallon gasoline, Sunoco spirits and pryoxlin thinner USTs were located north of the former oil house, which were utilized in conjunction with the former paint operations that occurred within the main assembly building. Documentation pertaining to the removal and subsequent closure of the USTs was not found in files maintained at the TCAP or the MPCA. Two borings were completed (ASB-001 and ASB-002) during the Initial Phase II Exterior Investigation. Both boreholes also had detections of VOCs (xylenes, 1,2,4-TMB and 1,3,5-TMB) at concentrations above the Industrial SRV. The sample from ASB-001 had a detectable concentration of GRO and both ASB-001 and ASB-002 had detectable concentrations of DRO but there are no SRVs for those constituents. A groundwater sample was collected from a temporary well at ASB-001. Select VOCs and metals were also detected at concentrations greater than

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

their respective HRLs. GRO and DRO were detected in samples from both boreholes but there are no HRLs for those constituents.

3.2.12.2 Supplemental Investigation

Soil

Five borings (ASB-157, ASB-158, ASB-159, ASB-160 and ASB-161) were completed as part of the Supplemental Phase II Exterior Investigation to confirm and delineate the exceedances detected during the Initial Phase II Exterior Investigation. Two borings were removed from the Supplemental scope because they are located inside the Main Assembly Building, and are covered under a separate scope of work. The borings were completed to 12 feet bgs. Elevated PID readings over 10 ppm were detected in all boreholes. In ASB-157, ASB-158 and ASB-161 the highest PID readings occurred in soils below the saturated zone so samples were collected from above the interval with high PID readings. In ASB-159 and ASB-160 elevated PID readings were detected in the unsaturated zone so soil samples were collected from the interval with high PID readings. One to three samples were collected from each borehole depending on the thickness of unsaturated soil and if the borehole was intended to provide vertical delineation or horizontal delineation of the initial results. One to two samples from each borehole were analyzed for VOCs, PAHs, GRO and DRO and the additional samples were held pending the first round of analysis as described below. Soil borings completed in Feature 16 and exceedances of any SRVs are shown on Figure 2.

Samples analyzed from ASB-157, ASB-158, ASB-160 and ASB-161 did not detect any constituents over any SRVs. GRO was detected in three of six samples at concentrations up to 160 mg/kg and DRO was detected in four of six samples at concentrations up to 150 mg/kg.

Two samples were analyzed from ASB-159 from depths of 2 to 4 and 5 to 7 feet bgs. The shallow samples had detectable concentrations of GRO and DRO (53 mg/kg and 100 mg/kg respectively) as did the deeper sample (790 mg/kg and 290 mg/kg respectively) but there is no SRV for those constituents. The deep sample had a concentration of 1,2,4-TMB that was greater than the Industrial SRV. No other constituents were detected in either borehole above SRVs.

In ASB-159 soil was saturated below the 5 to 7 foot sampling interval so no additional samples were collected to vertically delineate the 1,2,4-TMB impacts that were

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

observed in that borehole. None of the additional delineation samples were analyzed because there were no SRV exceedances in the other boreholes.

Groundwater

Two permanent groundwater wells (AMW-14 and AMW-15) were installed to further evaluate the groundwater exceedances of VOCs and metals detected at ASB-001 during the Initial Phase II Exterior Investigation. The wells were sampled for VOCs, PAHS, dissolved RCRA metals, GRO and DRO. The sample analyzed for RCRA metals was field filtered. Monitoring well locations in Feature 16 and exceedances of any HRLs or MCLs are shown on Figure 3.

AMW-14 had four VOCs (1,2,4-TMB, ethylbenzene, m&p-xylene, and total xylenes) that were detected above HRLs. No VOCs were detected at or above their respective MCLs, but there is no MCL for trimethylbenzene compounds. GRO was detected at 7,600 ug/L and DRO was detected at 1,100 ug/L but there are no MCLs or HRLs for those constituents.

AMW-15 had seven VOCs (1,2,4-TMB, 1,3,5-TMB, benzene, ethylbenzene, naphthalene, m&p-xylene and total xylenes) that were detected above HRLs. Benzene and ethylbenzene were also detected above their respective MCLs but there is no MCL for trimethylbenzene compounds. Arsenic was detected above the MCL standard but there is no HRL for arsenic. No other constituents were detected over their respective groundwater standards. GRO was detected at 15,000 ug/L and DRO was detected at 640 ug/L but there are no MCLs or HRLs for those constituents.

3.2.13 Feature 20 - Former Oil Fill Area

3.2.13.1 History

A review of historical drawings indicated the presence of a former oil fill location along the eastern portion of the main assembly building. Two borings (ASB-006 and ASB-007) were completed during the Initial Phase II Exterior Investigation. DRO was detected in samples collected from both boreholes, but there is no SRV for that constituent. There were no constituents detected in the soil samples that exceeded their respective SRVs. A groundwater sample was collected from a temporary well at ASB-006. Select metals were detected at concentrations greater than their respective HRLs.



3.2.13.2 Supplemental Investigation

Groundwater

No additional soil borings were planned for the Supplemental Phase II Exterior Investigation, but one permanent monitoring well (AMW-13) was installed near ASB-006 to evaluate the metals exceedances that were detected at that location in the groundwater during the Initial Phase II Exterior Investigation. AMW-13 was sampled for PAHS, RCRA metals, DRO and GRO. Monitoring well location of AMW-13 in Feature 20 is shown on Figure 3.

AMW-13 did not have any constituents detected above MCLs or HRLs. GRO was below method detection limits and DRO was detected at 220 ug/L but there are no MCLs or HRLs for those constituents.

3.2.14 Feature 21 – 1996 Glycol Release from Underground Piping

3.2.14.1 History

In 1996 a leak occurred from underground piping used to transfer glycol along the eastern portion of the main assembly building. Based on available documentation reviewed, remediation activities were completed in the area of the release; however there was no documentation indicating that the release had been adequately remediated per the MPCA. Therefore, the glycol release represents a Feature. Two borings (ASB-008 and ASB-009) were completed during the Initial Phase II Exterior Investigation. A sheen was noted on the soil from ASB-008 and samples were collected for analysis of ethylene glycol. No constituents from either of the borings exceeded the Industrial SRVs. No temporary wells were set due to lack of water observed in the boreholes.

3.2.14.2 Supplemental Investigation

Soil

One additional soil boring (ASB-168) was completed to investigate the sheen observed at two intervals from ASB-008, zero to two feet bgs and four to six feet bgs. The borehole was completed to a depth of 12 feet bgs before hitting refusal due to bedrock. No PID readings greater than 10 ppm were detected. Two soil samples were collected

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

from the soil boring and analyzed for VOCs, GRO and DRO. The soil boring completed in Feature 21 is shown on Figure 2.

The shallow sample collected from zero to two feet bgs had 1.4 mg/kg of GRO and 110 mg/kg of DRO. The deep sampled collected from four to six feet bgs had 3.9 mg/kg of GRO and 16 mg/kg of DRO. The third sample specified in the work plan was not collected because the soil was saturated below six feet bgs. There is no SRV for DRO or GRO. No VOCs were detected in the soil samples above any SRVs.

3.2.15 Feature 23 - Former Brake Fluid UST

3.2.15.1 History

A former 6,000-gallon brake fluid UST was used in fluid fill operations at the TCAP. The UST was installed in 1968 and removed in 1990. The UST was of steel construction. A review of available documentation indicated that there were no reported releases from this UST; however, no documentation pertaining to removal activities or closure sampling was found in files maintained at the TCAP or the MPCA. No borings were completed during the Initial Phase II Exterior Investigation due to utility interferences.

3.2.15.2 Supplemental Investigation

Four soil borings and two temporary wells were planned to investigate the area but could not be completed due to utility interference. These soil borings and wells will be completed along with the Supplemental Phase II Interior Investigation.

3.2.16 Feature 24 - Unleaded Gasoline USTs

3.2.16.1 History

Two 20,000-gallon unleaded gasoline USTs were utilized in conjunction with the fluid fill operations on the assembly line. The USTs were of STI-P3 construction with cathodic protection. A review of available documentation indicated that there were no reported releases from the USTs. Once these USTs are no longer in use the area will be addressed in accordance with applicable regulations. One boring (ASB-028) was completed during the Initial Phase II Exterior Investigation. No constituents were detected above the Industrial SRVs. No groundwater samples were collected due to a lack of water observed in the borehole.

3.2.16.2 Supplemental Investigation

No additional subsurface investigation was planned for the area. The supplemental investigation will be completed after the tanks have been removed from the ground, following guidance recommended by the Petroleum Remediation Program.

3.2.17 Feature 27 - Oil/Water Separator Trench

3.2.17.1 History

An approximate 3,000-gallon oil/water separator collects an oil/water mixture from a 100-foot long collection trench. Since this subsurface structure collects oil and water mixture and the integrity of the structure could not be inspected it is considered a Feature. Once the oil/water separator has been emptied and cleaned, the integrity of the structure will be evaluated. Three borings (ASB-010, ASB-011 and ASB-012) were completed during the Initial Phase II Exterior Investigation. DRO was detected in ASB-011 and ASB-012 but no constituents were detected at concentrations above the SRVs. No temporary wells were set due to lack of water observed in the boreholes.

3.2.17.2 Supplemental Investigation

Soil

One additional soil boring (ASB-169) was completed during the Supplemental Phase II Exterior Investigation to further investigate potential impacts associated with the oil/water separator trench. The boring was completed to a depth of 12 feet bgs before hitting refusal on bedrock. No PID readings over 10 ppm were observed. One soil sample was collected from three to five feet bgs and analyzed for VOCs, SVOCs, RCRA metals and DRO. The soil boring completed in Feature 27 is shown on Figure 2.

No constituents were detected at or above the relative SRVs. DRO was detected in the sample at 68 mg/kg, but there is no SRV for that constituent.

Groundwater

One temporary well was planned if potential soil impacts appeared to extend to groundwater, but no impacts were observed in the soil boring and no groundwater was encountered before refusal; therefore no temporary well was installed.

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

3.2.18 Feature 35, 36, 37 and 46 - Waste Solvent USTs

3.2.18.1 History

This feature addresses an area with current and former solvent USTs, underground piping and sumps. Historical releases of solvent have been reported in the area and three monitoring wells were installed in 1989. The wells were sampled annually until 2003 when the MPCA approved discontinuing the sampling program.

Three borings (ASB-018, ASB-019 and ASB-020) were completed during the Initial Phase II Exterior Investigation. Elevated PID readings were detected in ASB-019, but no constituents were detected in any of the samples above the Industrial SRVs. No groundwater samples were collected due to a lack of water observed in the boreholes.

3.2.18.2 Supplemental Investigation

Soil

Two additional soil borings (ASB-185 and ASB-186) were completed to a depth of eight feet bgs before encountering refusal due to bedrock. No elevated PID readings above 10 ppm were detected in either soil boring. Two soil samples were collected from each location and analyzed for VOCs, SVOCs and RCRA metals. Soil borings completed in Feature 35/36/37/46 are shown on Figure 2.

No constituents were detected in either sample above any SRVs.

Groundwater

One temporary well was planned if potential soils impacts appeared to extend to groundwater, but no impacts were observed in the soil boring and no groundwater was encountered before refusal; therefore no temporary well was installed.

3.2.19 Feature 41 - Former Fuel Oil UST

3.2.19.1 History

A 26,500 gallon fuel oil UST was installed near the steam plant in approximately 1950. When it was no longer in use it was determined that it could not be closed without compromising the structural integrity of the steam plant so it was closed in place in

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

1990. A release from the UST was reported during closure activities (Leak 3262). A subsurface investigation was conducted in 1991 which detected some impacts to both soil and groundwater in the area. Additional groundwater monitoring was conducted until the MPCA issued a closure letter for the release in December 1994.

3.2.19.2 Supplemental Investigation

No additional subsurface investigation was planned for this area as part of the Supplemental Phase II Exterior Investigation. However, the closure of the UST release will be supplemented by investigations in conjunction with samples collected for colocated Features 13, 42 and 153.

3.2.20 Feature 42 - Former Fuel Oil ASTs

3.2.20.1 History

Former fuel oil ASTs were located south of the Steam Plant. The ASTs were removed from service in 2000 and corrective actions including removal of the remaining fuel oil from the in service AST, cleaning of the AST and associated piping and dismantling of the two ASTs for recycling were completed between August 1, 2000 and October 16, 2000. One boring (ASB-026) was completed during the Initial Phase II Exterior Investigation. Iron and copper were detected above Residential SRVs but at concentrations that are typical of other areas of the Site and within the naturally occurring range of those metals. No constituents were detected above Industrial SRVs. No groundwater samples were collected due to a lack of water observed in the borehole.

3.2.20.2 Supplemental Investigation

Soil

Three additional soil borings (ASB-196, ASB-197 and ASB-198) were completed during the Supplemental Phase II Exterior Investigation to provide additional assessment of this feature. The borings were completed to a depth of 15 feet bgs before encountering refusal due to bedrock. No elevated PID readings greater than 10 ppm were detected in the soil borings. One soil sample was collected from each location and analyzed for VOCs, SVOCs, PCBs, TAL metals, DRO and GRO. Soil borings completed in Feature 42 and exceedances of any SRVs are shown on Figure 2.

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

ASB-198 detected one SVOC (benzo(a)pyrene) above the Industrial SRV.

Groundwater

One temporary well was planned if potential soils impacts appeared to extend to groundwater, but no impacts were observed in the soil boring and no groundwater was encountered before refusal; therefore a temporary well was not installed.

3.2.21 Feature 44, 134 and 140 – Wastewater Collection ASTs, Wastewater Treatment Area, Former Waste Disposal Area

3.2.21.1 History

Wastewater Collection ASTs - Feature 44: Three approximate 139,000-gallon wastewater treatment tanks are utilized to store and treat process wastewater generated by the assembly and painting processes at the TCAP. The phosphate process generates the majority of the wastewater at the TCAP. Since the ASTs contain and hold process industrial wastewater prior to and during treatment, this area was investigated.

Wastewater Treatment Area - Feature 134: The wastewater treatment area houses operations including transferring, containing, storing, and treating process wastewater generated from the assembly process. Based on current and historic use this area was investigated.

Former Waste Disposal Area – Feature 140: In what appears to be an isolated disposal incident in 1966, paint waste solvent and sludge was disposed of north of the Steam Plant. Visibly contaminated soils in the area were excavated and sent to a hazardous waste landfill. The reviewed documentation stated that the waste materials excavated were deemed non-hazardous; however, no analytical data of the material disposed of or description of materials excavated and disposed were included.

Four borings (ASB-023, ASB-024, ASB-025 and ASB-027) were completed during the Initial Phase II Exterior Investigation. Lead was detected at four to six feet bgs in ASB-027 above the SRVs (Industrial, Recreational, and Residential), but no other constituents were detected in any of the samples above those standards. No temporary wells were set due to lack of water observed in the boreholes.



Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

3.2.21.2 Supplemental Investigation

Soil

Five additional soil borings (ASB-188, ASB-189, ASB-190, ASB-191, ASB-192) were completed during the Supplemental Phase II Exterior Investigation to further define the horizontal and vertical extent of lead impacts at ASB-027. Borings were completed to depths of between 12 and 15 feet bgs. No elevated PID readings above 10 ppm were detected in any of the boreholes. Three samples were collected from each boring to delineate lead impacts. The two upper samples from each borehole were analyzed and the third was held at the lab pending results of the initial round of sampling and determination about whether additional delineation was required. Soil borings completed in Feature 44/134/140 are shown on Figure 2.

None of the analyzed samples had lead detected at concentrations greater than the Residential SRV so the additional delineation samples that were collected from deeper soil intervals were not analyzed.

Groundwater

No temporary wells were set due to lack of water observed in the boreholes.

3.2.22 Feature 49 – Former Hazardous Waste Storage Areas

3.2.22.1 History

Based on historical documentation reviewed, a former hazardous waste storage area was identified to have been located east of the main assembly building. Based on the general usage of the area to store hazardous waste materials, the former hazardous storage area was investigated. Two borings (ASB-038 and ASB-039) were completed during the Initial Phase II Exterior Investigation. The sample from ASB-038 contained DRO, but no constituents were detected above SRVs. No temporary wells were set due to lack of water observed in the boreholes.

3.2.22.2 Supplemental Investigation

One additional boring was planned for the Supplemental Phase II Exterior Investigation, but was not completed because it was located in an area over a cave

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

that had been filled in with expandable concrete. This boring will be completed along with the Supplemental Phase II Interior Investigation.

3.2.23 Feature 121 - Exterior Locations Adjacent to Sludge Pits

3.2.23.1 History

Two waste paint sludge pits are used to store paint sludge generated from the painting process. The pits are of concrete construction. Overspray from the painting process is captured by sheeting action of water in trenches underneath the paint booths, which is transferred into the paint sludge pits for separation. The northern paint sludge pit was observed to be in good condition; however, the southern paint sludge pit was currently full of water and could not be inspected. Since the southern pit could not be inspected, the Feature was investigated. Three borings (ASB-015, ASB-016 and ASB-032) were completed during the Initial Phase II Exterior Investigation. No constituents from the borings exceeded the Industrial SRVs. No temporary wells were set due to lack of water observed in the boreholes.

3.2.23.2 Supplemental Investigation

Two additional borings and one temporary groundwater well were planned for the Supplemental Phase II Exterior Investigation but were not completed due to utility interferences. The area will be investigated during a future investigation after plant shutdown.

3.2.24 Feature 138 - Former 20,000 Gallon Gasoline AST

3.2.24.1 History

A former 20,000-gallon gasoline AST was removed from south of the former oil house as identified during interviews with TCAP personnel. Based on the interviewee, when the AST was removed stained soil and odors were identified. However, actions for remediation of the soil were apparently not completed in the area. It is unknown if the UST stored leaded or unleaded gasoline. Two borings (ASB-041 and ASB-042) were completed during the Initial Phase II Exterior Investigation. GRO was detected in ASB-041 but no constituents were present at concentrations over SRVs. No groundwater samples were collected due to a lack of water observed in the borehole.



Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

3.2.24.2 Supplemental Investigation

Soil

Two additional borings (ASB-145 and ASB-146) were completed to provide additional assessment of the Former 20,000 gallon UST. The boreholes were completed to a depth of 12 feet bgs before encountering refusal due to bedrock. A PID reading over 10 ppm was detected in ASB-145 (31 ppm from 10 to 12 feet bgs) but was below the saturated soil so soil samples were collected from the interval above the elevated PID readings. Elevated PID readings (>900 ppm from 6 to 10 feet bgs) were detected both above and below the saturated soil so one soil sample from ASB-146 (6 to 8 feet bgs) was collected from soil with elevated PID readings. Two soil samples were collected from each borehole and analyzed for VOCs, lead and GRO. Soil borings completed in Feature 138 are shown on Figure 2.

No constituents were detected in the soil samples at or above any SRVs. GRO was detected in the sample from 6 to 8 feet bgs at ASB-146 at a concentration of 780 mg/kg but was below method detection limits in all other samples. There is not SRV for GRO.

Groundwater

One temporary well was installed at ASB-145 but no water was encountered at ASB-146. A groundwater sample was collected and analyzed for VOCs, lead and dissolved GRO. The groundwater sample location in Feature 138 is shown on Figure 3.

No constituents were detected in the groundwater sample above HRLs or MCLs. GRO was detected at 510 ug/L, but there is no HRL or MCL for that constituents.

3.2.25 Feature 152 - Former Fuel Oil AST

3.2.25.1 History

The 27,000-gallon UST may have been utilized to provide fuel as a heating source in the main assembly building. The UST was installed at an unknown date and no documentation pertaining to its removal was found through research activities; therefore, the UST may still be in place at the TCAP. Two borings (ASB-003 and ASB-004) were completed during the Initial Phase II Exterior Investigation. The sample from ASB-003 had detectable concentrations of GRO and samples from both borings had

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

detectable concentrations of DRO, but there are no SRVs for those constituents. 1,2,4-TMB was detected in ASB-003 above the SRV but no other constituents were detected above their relative standards. A groundwater sample was collected from a temporary well installed at ASB-003. GRO and DRO were both detected in the groundwater sample, but there is no HRL for those constituents. Select VOCs, SVOCs and metals were also detected at concentrations exceeding their respective HRLs.

3.2.25.2 Supplemental Investigation

Soil

Four additional borings (ASB-135, ASB-147, ASB-148 and ASB-163) were completed during the Supplemental Phase II Exterior Investigation to delineate the exceedances of VOCs at ASB-003 and to collect additional data on extent of DRO and GRO impacts. The borings were completed to depths of between nine and 16 feet bgs before encountering refusal due to bedrock. All soil borings detected elevated PID readings greater than 10 ppm. In ASB-135 and ASB-146 intervals with high PID readings were detected above saturated soils so samples were collected from intervals with elevated PID readings. In ASB-148 and ASB-163 the highest PID readings were detected soils so soil samples were collected from intervals just above the saturated zone. Two to three samples were collected from each of the four borings surrounding ASB-003 depending on the thickness of the unsaturated zone and depth to bedrock. The samples were analyzed for VOCs, PAHs, GRO and DRO. Soil borings completed in Feature 152 are shown on Figure 2.

None of the borings had any constituents detected at concentrations at or above their respective SRVs. GRO and DRO were detected in all the samples at concentrations as high as 3,000 mg/kg and 32 mg/kg respectively but there are no SRVs for those constituents.

No soil samples were collected from the boring that was co-located with ASB-003 and converted to a permanent monitoring well so no additional vertical delineation data for the vadose zone can be provided, however, the samples collected from ASB-003 during the Initial Phase II Exterior Investigation were collected from 6 to 8 feet bgs and 10 to 12 feet bgs and indicate the impacts extend through that full interval.

Groundwater

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

One permanent monitoring well (AMW-12) was installed to evaluate the VOC, SVOC and metals exceedances that were detected in ASB-003 during the Initial Phase II Exterior Investigation. AMW-12 was sampled for VOCs, PAHs, RCRA metals, GRO and DRO. Groundwater samples collected in Feature 152 and exceedances of any HRLs or MCLs are shown on Figure 3.

AMW-12 had seven VOCs (1,2,4-TMB, 1,3,5-TMB, benzene, ethylbenzene, m&pxylene, and total xylenes) that were detected above HRLs. Benzene and ethylbenzene were also detected above their MCLs, but there is no MCL for TMB compounds. Arsenic was detected above the MCL, but no HRL exists for that metal. No other compounds were detected over any MCLs or HRLs. GRO was detected at 13,000 ug/L and DRO was detected at 620 ug/L, but there are no MCLs or HRLs for those constituents.

3.2.26 Feature 153 - Former Coal Gasification Plant

3.2.26.1 History

A coal gasification plant was located near the steam plant where coal was used to generate gas. Based on the historical gasification activities in the area, it was considered a Feature and in need of investigation. This feature was added after the Initial Phase II Exterior Investigation was completed.

3.2.26.2 Supplemental Investigation

Soil

Two soil borings (ASB-193 and ASB-195) were completed as part of the Supplemental Phase II Exterior Investigation to evaluate if any residual impacts exist from historic coal gasification issues. Two additional planned boreholes could not be completed due to utility interference. ASB-193 hit refusal at two feet bgs due to what appeared to be large chunks of rubble beneath the existing concrete slab. ASB-195 was completed to ten feet bgs before hitting refusal. No elevated PID readings above 10 ppm were detected in either borehole. One sample was collected from ASB-193 and two samples were collected from ASB-195 and analyzed for VOCS, SVOCs, RCRA metals and free cyanide. Soil borings completed in Feature 153 and exceedances of any SRVs are shown on Figure 2.

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

No constituents were detected above their relative SRVs in the sample collected from ASB-193. Benzo(a)pyrene was detected above the Industrial standard in the shallow sample collected from 6 to 8 feet bgs in ASB-195, but no other constituents were detected above any SRV in either sample collected from that borehole.

Groundwater

Due to a lack of groundwater, no temporary wells were installed.

3.2.27 Feature 154 – Former Tar Decantor Building

3.2.27.1 History

A tar decanter house was present along with the coal gasification plant investigated in Feature 153. Based on the historical gasification activities in the area, it was considered a Feature and in need of investigation. This feature was added after the Initial Phase II Exterior Investigation was completed.

3.2.27.2 Supplemental Investigation

Soil

One soil borings (ASB-194) was completed as part of the Supplemental Phase II Exterior Investigation to evaluate if any residual impacts exist from historic coal gasification issues. Three additional planned boreholes could not be completed due to utility interference. ASB-194 was completed to a total depth of 15 feet bgs. No elevated PID readings were detected. Two samples were collected from ASB-194 and analyzed for VOCs, SVOCs, RCRA metals and free cyanide. Soil borings completed in Feature 154 are shown on Figure 2.

No constituents were detected at or above any SRVs.

Groundwater

No temporary well was set due to lack of water observed in the borehole.

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

4. Summary of Findings

A total of 86 direct push soil borings, nine temporary wells and eight permanent wells were completed to investigate 21 Features for soil and groundwater impacts during the Supplemental Phase II Exterior Investigation. Four areas (Feature 7, 23, 49 and 121) were not investigated due to utility interferences or other obstructions, but are planned to be completed along with the Supplemental Phase II Interior Investigation. As shown in the summary table below eight Features had soil exceedances of at least one SRV (excluding naturally occurring elements when they were they were detected at concentrations within the range of naturally occurring concentrations) and six Features had groundwater exceedances of at least one groundwater standard. Additionally, 15 of the 16 Features analyzed for petroleum impacts had detectable concentrations of GRO or DRO. An evaluation of the petroleum impacts will be made after future land use has been determined.

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

Feature Name	Feature		equency of ceedances	SF	RV Exceedances		_HRL/MCL	Analytes
		Soil	Groundwater	Residential	Recreational	Industrial	Exceedances	
North Parking Area	NPA	2/19	3/6	Yes	Yes	Yes	Yes	VOCsMetals
Former Test Track	1	0/6	NA	No	No	No	NA	
Former Convoy UST	3	0/3	NA	No	No	No	NA	
Former Area of Impacted Soil – Leak #10700	4	0/2	1/1	No	No	No	Yes	• VOCs
Former Location of Gasoline and Diesel Fuel Underground Piping	5	2/4	2/2	Yes	Yes	Yes	Yes	VOCsSVOCs
Former Hazardous Waste Storage Area	8	0/2	NA	No	No	No	NA	
Former Disposal Area A	9	1/4	NA	Yes	Yes	Yes	NA	VOCsMetals
Former Hazardous Waste Storage Area	10	5/5	1/1	Yes	Yes	Yes	Yes	SVOCsMetals
Former Disposal Area B	11	3/5	NA	Yes	Yes	Yes	NA	VOCsMetals
Former Railroad Spur & Former Coal Operations	12/47	0/1	0/2	No	No	No	No	
Former Gasoline, Sunoco Spirits, and Pryoxlin USTs	16	1/5	2/2	Yes	Yes	Yes	Yes	VOCsSVOCsMetals
Former Oil Fill Area	20	NA	0/1	NA	NA	NA	No	
1996 Glycol Release from Underground Piping	21	0/1	NA	No	No	No	NA	
Oil/Water Separator and Trench	27	0/1	NA	No	No	No	NA	
Waste Solvent USTs	35/36/3 7/46	0/2	NA	No	No	No	NA	
Former Fuel Oil ASTs	42	1/3	NA	Yes	Yes	Yes	NA	SVOCsMetals
Wastewater Collections ASTs, Wastewater Treatment Area, Former Waste Disposal Area	44/134/ 140	0/5	NA	No	No	No	No	
Former 20,000 Gallon Gasoline AST	138	0/2	0/1	No	No	No	No	
Former Fuel Oil AST	152	0/4	1/1	No	No	No	Yes	VOCsMetals
Former Coal Gasification Plant	153	1/2	NA	Yes	Yes	Yes	NA	SVOCs
Former Tar Decanter Building	154	0/1	NA	No	No	No	No	

Supplemental Phase II -Exterior Investigation Report

Twin Cities Assembly Plant (TCAP) 966 South Mississippi River Boulevard St. Paul, Minnesota

5. References

ARCADIS. "Phase I Environmental Site Assessment, Ford Motor Company, Twin Cities Assembly Plant, St. Paul, Minnesota." June 2007a.

ARCADIS. "Initial Phase II – Exterior Investigation Report." October 2007b.

ARCADIS. "Field Sampling Plan." August 2007c.

ARCADIS. "Additional Soil Investigation and Surface Soil Risk Assessment Report – Baseball Fields – Feature 139." December 2007d.

ARCADIS. "Supplemental Phase II - Exterior Investigation Work Plan." May, 2008a.

ARCADIS. "North Parking Area Supplemental Phase II – Exterior Investigation Work Plan." May 2008b.

ARCADIS. "Initial Phase II – Interior Investigation Report." March, 2011.

CRA. "Remedial Investigation/Alternatives Analysis (RI/AA) Report (Draft), Ford Motor Company, Twin Cities Assembly Plant, St. Paul, Minnesota." May 1992.

Boerngen, J.G. and H.T. Shacklette. "Chemical analyses of soils and other surficial materials of the conterminous United States." U.S. Geological Survey Open-File Report 81-197. 1981.

Tables

G:\PROJECTS\Ford-St.Paul\Working\Phase II Supplemental Exterior

Report/text/DRAFT Supplemental Phase II Exterior

Report_042712.doc

Table 1. Summary of Supplemental Phase II-Exterior Investigation ActivitiesTwin Cities Assembly Plant, St. Paul, Minnesota

	Environmer	ntal Concern				
Area of Concern	Background	Supplemental Scope	Field Measurements	Investigation Activities Conducted	Groundwater Assessment	Analytical Requirements
North Parking Area	The North Parking Area consists of approximately 29 acres and is mainly used for employee parking, as well as storage for newly built Ford Ranger and Mazda Series trucks prior to shipment off-site. <u>Initial Investigation:</u> None.	Complete nineteen soil borings in the north parking area to further investigate the area. The area was divided into 1-acre grids, and one boring will be installed within each grid except for those grid locations in which either a well or boring is currently installed or a well or boring will be installed. Two soil samples will be collected from each boring. If potential impacts extend to the water table, convert a maximum of four soil borings to temporary monitoring wells and sample groundwater, if encountered.	Organic Vapors using a PID. PID Exceedances (above 10 ppm): ASB-115, ASB- 116, ASB-118, ASB-123, ASB-136 PID Exceedances (above 10 ppm), entire boring: ASB-115, ASB-123,	Nineteen Geoprobe borings (ASB-115, ASB-116, ASB-117, ASB-118, ASB-123, ASB-124, ASB-125, ASB-126, ASB-128, ASB-129, ASB-130, ASB-131, ASB-132, ASB-134, ASB-136, ASB-137, ASB-141, ABS-142, ASB-143) Soils were continuously logged from the surface to the bottom of each bore hole.	Six temporary groundwater well set and sampled from ASB-115, ASB-118, ASB- 128, ASB-129, ASB-130, ASB-137.	Soil: DRO (Wisconsin Modified Method) RCRA Metals (Method 6010) PAHs (Method 8270C) Soil (Provisional): VOCs (Method 8260B) GRO (Wisconsin Modified Method) PCBs (Method 8082) Groundwater (Provisional): VOCs (Method 8260) PAHs (Method 8270) DRO (Wisconsin Modified Method) GRO (Wisconsin Modified Method) GRO (Wisconsin Modified Method) RCRA Metals (Method 6010),Dissolved PCBs (Method 8082)
Former Test Track Feature 1 Eastern Portion of TCAP Property	Based on a review of aerial photographs, the former test track was historically used to test vehicles from prior to 1953 until prior to 1974. The test track was sprayed with oil for dust control based on information provided through interviews with TCAP personnel. <u>Initial Investigation:</u> Two Hollow Stem Auger borings (ASB-033, ASB-046).	Complete seven soil borings in the area of the former test track to further investigate the area. Eight borings will be located approximately 660 feet apart along the track. If potential impacts extend to the water table, convert a maximum of four soil borings to temporary monitoring wells and sample groundwater, if encountered.	Organic Vapors using a PID. PID Exceedances (above 10 ppm): None.	Six Geoprobe borings (ASB-127, ASB- 133, ASB-144, ASB-178, ASB-184, ABS- 187) Soils were continuously logged from the surface to the bottom of each bore hole.	No temporary wells set.	Soil: VOCs (Method 8260B) SVOCs (Method 8270C) DRO (Wisconsin Modified Method) RCRA Metals (Method 6010) PCBs (Method 8082) Groundwater (Provisional): VOCs (Method 8260B) SVOCs (Method 8260B) SVOCs (Method 8270C) DRO (Wisconsin Modified Method) RCRA Metals (Method 6010),Dissolved PCBs (Method 8082)
Former Convoy UST Feature 3 Located Approximately 200 feet East of the Training Facility	A confirmed release (Leak #5343) from the former Convoy 2,000 gallon diesel UST was reported during UST removal activities in 1992. Approximately 150 cubic yards of soil was excavated during the remedial action. A soil boring program was implemented at the request of the MPCA to define the extent of impacts. Seven samples were collected from the sidewalls and bottom of the tank excavation and five samples were collected from boreholes completed to delineate the horizontal extent of impacts. Approximately 125 cubic yards of impacted soil were left in place beneath the clean fill used to replace the UST excavation. The release was closed in September 1992 because the impacts were delineated and vertical migration of the impacts was limited by the bedrock approximately 10 ft bgs.	Complete three soil borings in the area of the former Convoy UST to provide additional assessment of this feature. Convert one boring to a temporary monitoring well and sample groundwater, if soil impacts extend to groundwater table.	Organic Vapors using a PID. PID Exceedances (above 10 ppm): ASB-139	Three Geoprobe borings (ASB-136, ASB- 137, ASB-140) Soils were continuously logged from the surface to the bottom of each bore hole.	No temporary wells set.	Soil: VOCs (Method 8260B) Lead (Method 6010) GRO and DRO (Wisconsin Modified Method) Groundwater (Provisional): VOCs (Method 8260B) Lead (Method 6010), Dissolved GRO and DRO (Wisconsin Modified Method)

Table 1. Summary of Supplemental Phase II-Exterior Investigation ActivitiesTwin Cities Assembly Plant, St. Paul, Minnesota

	Environmer	ntal Concern				
Area of Concern	Background	Supplemental Scope	Field Measurements	Investigation Activities Conducted	Groundwater Assessment	Analytical Requirements
Former Area of Impacted Soil - Leak #10700 Feature 4 Located in the Area Beneath the Westernmost Portion of the Current Training Center	An area of soil impacted with gasoline and diesel was reported in 1997. The impacts were the results of leakage from product lines running to gasoline and diesel USTs that were removed in 1993. The area was entered into the VPIC program in December 1997. The impacted soils were excavated and the release was closed in February 1998. A Development Response Action Plan (DRAP) was approved in February 1997 for construction of a training center in the area. During construction of the training center a total volume of 3,078 CY of impacted soil was disposed of and 50,693 gallons of groundwater generated from dewatering of the excavation was discharged to the sanitary sewer system via a permit from the City of St. Paul. A total of 31 soil borings were completed during historical investigations in the area. Twenty soil samples and 11 groundwater samples were collected and submitted to a laboratory for analysis.	Complete two soil borings north and west of the former leak to provide additional assessment of this feature. Convert one boring to a temporary monitoring well and sample groundwater, if soil impacts extend to groundwater table.	Organic Vapors using a PID. PID Exceedances (above 10 ppm): None.	Two Geoprobe borings (ASB-119, ASB- 120) Soils were continuously logged from the surface to the bottom of each bore hole.	Temporary groundwater well set and sampled from ASB- 120.	Soil: VOCs (Method 8260B) Lead (Method 6010) GRO and DRO (Wisconsin Modified Method) Groundwater (Provisional): VOCs (Method 8260B) Lead (Method 6010), Dissolved GRO and DRO (Wisconsin Modified Method)
Former Location of Gasoline and Diesel Fuel Underground Piping Feature 5 Along northern potion of main assembly building beneath the current training center and employee parking lot	Underground steel piping was formerly utilized in conjunction with former gasoline and diesel fuel USTs in the area, which were removed in 1993. The piping had been in place since approximately 1977. Some piping may still be in place below the ground surface. The piping is estimated to be present approximately 4 to 8 feet bgs. A release occurred from the piping which impacted subsurface soils. Remedial activities were completed in the area of the piping, which included soil removal. However, in 2004-2005 during a water main repair in the area of the piping, a subsequent release was reported. The releases have been closed per the MPCA; however, based on the recurrent releases identified, impacted soil may still be present in the area of the underground piping. <u>Initial Investigation:</u> Five Hollow Stem Auger borings (ASB-029, ASB-030, ASB- 045, ASB-047 and ASB-048). Temporary groundwater wells set and sampled from ASB-030 and ASB-047.	Complete five soil borings along the former underground piping route. Borings will be placed approximately every 150 feet along the former piping route. Two monitoring wells will be installed to confirm the exceedances identified at boring locations ASB-030 and ASB-047. A groundwater sample from each well will be collected for analysis.	Organic Vapors using a PID. PID Exceedances (above 10 ppm), entire boring: ASB-121, ASB-122	Four Geoprobe borings (ASB-121, ASB- 122, ASB-199, ASB-200) Soil assessment and sampling was conducted utilizing the same methodology described in Feature 1 above.	Two permanent groundwater wells set and sampled from AMW-16 and AMW-17.	Soil: VOCs (Method 8260B) PAHs (Method 8270C) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method) Lead (Pb) (Method 6010) Groundwater: VOCs (Method 8260B) PAHs (Method 8270C) Lead (Method 6010), Dissolved GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method)

Table 1. Summary of Supplemental Phase II-Exterior Investigation ActivitiesTwin Cities Assembly Plant, St. Paul, Minnesota

	Environmer	tal Concern				
Area of Concern	Background	Supplemental Scope	Field Measurements	Investigation Activities Conducted	Groundwater Assessment	Analytical Requirements
Railroad Spurs Feature 7 Central and southern portions of property	Railroad spurs are utilized for the delivery and loading of parts and other items to and from the assembly plant via rail cars. In addition, railcars are used to transfer final products to their retail destinations. Some areas of staining were observed within the vicinity of the railroad spurs. <u>Initial Investigation</u> : Five Hollow Stem Augers borings (ASB-017, ASB-021, ASB- 022, ASB-031, ASB-043).	Complete eight soil borings in the area of the railroad spurs to further investigate potential impacts. Four borings will be located in the rail yard at the center of the site not previously investigated. The other four borings will be completed near the three sets of railroad spurs at the south portion of the plant. If potential impacts extend to the water table, convert soil borings (a maximum of three) to temporary monitoring wells and sample groundwater, if encountered.	Organic Vapors using a PID. PID Exceedances (above 10 ppm): None.	Eight Geoprobe borings will be installed after plant closure. Soil assessment and sampling will be conducted utilizing the same methodology described in Feature 1 above.	No temporary wells set.	Soil: VOCs (Method 8260B) SVOCs (Method 8270C) DRO (Wisconsin Modified Method) PCBs (Method 8082) If staining is present from the 0-2 foot interval, a minimum of two samples will be analyzed for PCBs. RCRA Metals (Method 6010) Groundwater (Provisional): VOCs (Method 8260B) SVOCs (Method 8260B) SVOCs (Method 8270C) DRO (Wisconsin Modified Method) PCBs (Method 8082) RCRA Metals (Method 6010), Dissolved
Former Hazardous Waste Storage Area Feature 8 Southwest of the paint building	Based on historical documentation reviewed, a former hazardous waste storage area was identified. The documentation did not include any reported spills from this area; however, based on the general usage of the area to store hazardous waste materials this area was investigated. <u>Initial Investigation</u> : Two Hollow Stem Auger borings (ASB-034, ASB-044).	Complete three soil borings in the area of the former hazardous waste storage area to provide additional information. Three borings will be located approximately 130 feet apart. If potential impacts extend to the water table, convert soil borings to temporary monitoring wells and sample groundwater, if encountered.	Organic Vapors using a PID. PID Exceedances (above 10 ppm): None.	Two Geoprobe borings (ASB-179, ASB-180). Soil assessment and sampling was conducted utilizing the same methodology described in Feature 1 above.	No temporary wells set.	Soil: VOCs (Method 8260B) SVOCs (Method 8270C) TAL Metals (Method 6010) PCBs (Method 8082) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method) Groundwater (Provisional): VOCs (Method 8260B) SVOCs (Method 8270C) TAL Metals (Method 6010), Dissolved PCBs (Method 8082) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method)
Former Disposal Area A Feature 9 Southwest of the Paint Building	This area was utilized as a historical disposal site for waste materials along with Former Disposal Area B (Feature 11) generated from the assembly and painting operations. Samples collected from six soil borings completed in 1992 indicated VOCs and metals were present at concentrations that exceeded remediation criteria. The areas with soil exceedances were excavated from 1992 to 1993 and relocated to Area C. Confirmation samples collected from the excavated areas and confirmed that the cleanup goals had been achieved. The Response Action Final Completion Report that documented the remediation activities was accepted by the MPCA in April 1993 and the area was delisted from the PLP in July 1993.	Complete four soil borings at Former Disposal Area A to provide additional assessment of this feature. Convert one boring to a temporary monitoring well and sample groundwater, if soil impacts extend to groundwater table.	Organic Vapors using a PID. PID Exceedances (above 10 ppm): ASB-181, ASB- 182 PID Exceedances (above 10 ppm), entire boring: ASB-182	Four Geoprobe borings (ASB-177, ASB-181, ASB-182, ASB-183). Soil assessment and sampling was conducted utilizing the same methodology described in Feature 1 above.	No temporary wells set.	Soil: VOCs (Method 8260B) TAL Metals (Method 6010) GRO and DRO (Wisconsin Modified Method) Groundwater (Provisional): VOCs (Method 8260B) TAL Metals (Method 6010), Dissolved GRO and DRO (Wisconsin Modified Method)

Table 1. Summary of Supplemental Phase II-Exterior Investigation ActivitiesTwin Cities Assembly Plant, St. Paul, Minnesota

	Environmer	ntal Concern				
Area of Concern	Background	Supplemental Scope	Field Measurements	Investigation Activities Conducted	Groundwater Assessment	Analytical Requirements
Former Hazardous Waste Storage Area Feature 10 Near Packer Building	Based on historical documentation reviewed, a former hazardous waste storage area was identified in the area. The documentation did not include any reported spills from this area; however based on the general usage of the area to store hazardous waste materials this area was investigated. <u>Initial Investigation</u> : Two Hollow Stem Auger borings (ASB-013, ASB-014). Temporary groundwater well set and sampled from ASB-013.	Complete six soil borings in the area of the former hazardous waste storage area. Three step-out borings will be positioned in a manner to delineate the exceedances from ASB-014. In addition, one boring will be positioned near the location of ASB-014 location to provide vertical delineation of the exceedance. Also, two borings will be installed in the area of the former hazardous waste storage area to provide additional information. Convert boring near ASB-014 to a temporary monitoring well and sample groundwater, if sufficient groundwater is present.	Organic Vapors using a PID. PID Exceedances (above 10 ppm): ASB-166, ASB- 167	Six Geoprobe borings (ASB-164, ASB- 165, ASB-166, ASB-167, ASB-170, ASB- 171) Soil assessment and sampling was conducted utilizing the same methodology described in Feature 1 above.	Temporary groundwater well set and sampled from ASB- 166.	Soil: VOCs (Method 8260B) SVOCs (Method 8270C) TAL Metals (Method 6010) PCBs (Method 8082) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method) Arsenic (Method 6010) TCLP – Arsenic See other considerations for individual boring analytical requirements. Groundwater (Provisional): Arsenic (Method 6010), Dissolved
Former Disposal Area B Feature 11 Southeast of Main Assembly Building	This area was utilized as a historical disposal site along with Former Disposal Area A (Feature 9) for waste materials generated from the assembly and painting operations. Twenty-six (26) samples collected from seventeen soil borings completed in 1992 indicated VOCs and metals were present at concentrations that exceeded remediation criteria. In addition, groundwater samples were collected from 10 monitoring wells at Former Disposal Area B and verification samples were collected from the sidewalls and bottom of excavations. The areas with soil exceedances were excavated from 1992 to 1993 and relocated to Area C. Confirmation samples collected from the excavated areas and confirmed that the cleanup goals had been achieved. The Response Action Final Completion Report that documented the remediation activities was accepted by the MPCA in April 1993 and the area was delisted from the PLP in July 1993.	Complete five soil borings at Former Disposal Area B to provide additional assessment of this feature. Convert up to three borings to temporary monitoring wells and sample groundwater, if soil impacts extend to groundwater table.	Organic Vapors using a PID. PID Exceedances (above 10 ppm): ASB-172, ASB- 173, ASB-175, ASB-176	Five Geoprobe borings (ASB-172, ASB- 173, ASB-174, ASB-175, ASB-176) Soil assessment and sampling was conducted utilizing the same methodology described in Feature 1 above.	No temporary wells were set.	Soil: VOCs (Method 8260B) TAL Metals (Method 6010) GRO and DRO (Wisconsin Modified Method) Groundwater (Provisional): VOCs (Method 8260B) TAL Metals (Method 6010), Dissolved GRO and DRO (Wisconsin Modified Method)

Table 1. Summary of Supplemental Phase II-Exterior Investigation ActivitiesTwin Cities Assembly Plant, St. Paul, Minnesota

	Environmen	tal Concern				
Area of Concern	Background	Supplemental Scope	Field Measurements	Investigation Activities Conducted	Groundwater Assessment	Analytical Requirements
Former Railroad Spurs Feature 12 Along eastern portion of main assembly building Former Coal Operations Feature 47 East of main assembly	 Former Railroad Spurs Feature 12 Railroad spurs were utilized for the delivery and loading of parts and other items to and from the assembly plant via rail cars. Based on their historic use the former railroad spurs were investigated. Former Coal Operations Feature 47 The coal hopper building was utilized to store coal for use at the Steam Plant. Coal was delivered via rail and was transferred into the coal hopper building for storage. A tunnel connecting the coal hopper building and the steam plant runs beneath the main assembly plant, which was utilized to transfer the coal from the hopper to the steam plant. The estimated depth to the base of the coal hopper building is approximately 10 to12 feet bgs. <u>Initial Investigation:</u> Four Hollow Stem Auger borings (Feature 12: ASB-037, ASB- 040; Feature 47: (ASB-005 and ASB-036). Temporary groundwater wells set and sampled from ASB-005, ASB-036 and ASB-037. 	Complete one soil boring and install two monitoring wells in the area to provide additional information. Two monitoring wells will be installed to further evaluate the exceedances identified at boring locations ASB-005, ASB-036, and ASB-037.	Organic Vapors using a PID. PID Exceedances (above 10 ppm): None.	One Geoprobe boring (ASB-162) Soil assessment and sampling was conducted utilizing the same methodology described in Feature 1 above.	No temporary wells were set.	Soil: VOCs (Method 8260B) PAHs (Method 8270C) DRO (Wisconsin Modified Method) PCBs (Method 8082) RCRA Metals (Method 6010) Groundwater: VOCs (Method 8260B) PAHs (Method 8270C) RCRA Metals (Method 6010), Dissolved DRO (Wisconsin Modified Method) GRO (Wisconsin Modified Method)

Table 1. Summary of Supplemental Phase II-Exterior Investigation ActivitiesTwin Cities Assembly Plant, St. Paul, Minnesota

	Environmer	ntal Concern				
Area of Concern	Background	Supplemental Scope	Field Measurements	Investigation Activities Conducted	Groundwater Assessment	Analytical Requirements
Outfall 001 Feature 15 Southwest of TCAP property in Hidden Fall Regional Park	Outfall 001 is regulated under the Site's NPDES permit and discharges into Hidden Falls Regional Park. According to documentation maintained at the MPCA, three separate spill events occurred at the Hidden Falls storm drain Outfall 001 in July, August and September of 1989. Samples were taken from the outfall area by MPCA representatives, which indicated the presence of MIBK and other solvents. During a meeting with MPCA representatives, Ford indicated that the suspected source of the spill was most likely a catch basin around four USTs containing solvents. Ford agreed to complete the requirements to define the extent of contamination surrounding the waste solvent tanks and proposed remediation addressed in the RFRA issued by the MPCA in June 1990. However, documentation pertaining to additional closure sampling at Outfall 001, following the identification of the presence of MIBK, was not found at files maintained at the TCAP or the MPCA. A site reconnaissance was conducted of the area and no visual impacts were observed.	Outfall 001 is regulated under the Site's NPDES permit and discharges into Hidden Falls Regional Park. According to documentation maintained at the MPCA, three separate spill events occurred at the Hidden Falls storm drain outfall (001) in July, August and September of 1989. Samples were collected from the outfall area by MPCA representatives, which indicated the presence of MIBK and other solvents. During a meeting with MPCA representatives, Ford indicated that the suspected source of the spill was most likely a catch basin around four USTs containing solvents. Ford agreed to complete the requirements to define the extent of contamination surrounding the waste solvent tanks and proposed remediation addressed in the RFRA issued by the MPCA in June 1990. However, documentation pertaining to additional closure sampling at Outfall 001, following the identification of the presence of MIBK, was not found at files maintained at TCAP or the MPCA.	None. Considerations: Outfall 001 will be sampled as part of the Mississippi River Sampling activities and is described in the work plan titled <i>Groundwater Seep and</i> <i>Mississippi River</i> <i>Sampling Work Plan</i> dated April 11, 2008.	None.	None.	None.
Former Gasoline, Sunoco Spirits, and Pryoxlin Thinner USTs Feature 16 East of Central Engineering Office	Two former 20,000 gallon gasoline USTs were located east of the former oil house and eight 6,000 gallon gasoline, Sunoco spirits and pryoxlin thinner USTs were located north of the former oil house, which were utilized in conjunction with the former paint operations that occurred within the main assembly building. The estimated depth to the base of the former USTs is approximately 10 to12 feet bgs. Documentation pertaining to the removal and subsequent closure of the USTs was not found in files maintained at TCAP or the MPCA. <u>Initial Investigation</u> : Two Hollow Stem Auger borings (ASB-001, and ASB-002). Temporary groundwater well set and sampled from ASB-001.	Complete seven soil borings in the area of the former gasoline, Sunoco spirits, and pryoxlin USTs to delineate exceedances of criteria at ASB-001 and ASB-002. Seven step-out borings will be positioned in a manner to delineate the exceedances. Install two permanent monitoring wells and collect a groundwater sample for analysis. The wells will be co-located with the original ASB-001 and ASB-002 locations to provide vertical delineation of the exceedances.	Organic Vapors using a PID. PID Exceedances (above 10 ppm): ASB-157, ASB- 158, ASB-159, ASB-160, ASB-161	Five Geoprobe borings (ASB-157, ASB- 158, ASB-159, ASB-160, ASB-161) Soil assessment and sampling was conducted utilizing the same methodology described in Feature 1 above.	Two permanent groundwater wells set and sampled from AMW-14 and AMW-15.	Soil: VOCs (Method 8260B) PAHs (Method 8270C) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method) Groundwater: VOCs (Method 8260B) PAHs (Method 8270C) RCRA Metals (Method 6010), Dissolved GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method)

Table 1. Summary of Supplemental Phase II-Exterior Investigation ActivitiesTwin Cities Assembly Plant, St. Paul, Minnesota

		tal Concern				
Area of Concern	Background	Supplemental Scope	Field Measurements	Investigation Activities Conducted	Groundwater Assessment	Analytical Requirements
Former Oil Fill Area Feature 20 Northeast of the Coal Hopper House	A review of historical drawings indicated the presence of a former oil fill location. Based on the former use of the area the oil fill location was investigated. <u>Initial Investigation</u> : Hollow Stem Auger borings (ASB-006, ASB-007). Temporary groundwater well set and sampled from ASB-006.	One monitoring well will be installed to evaluate the exceedances identified at boring location ASB-006. Install one monitoring well and collect a groundwater sample for analysis.	Organic Vapors using a PID. PID Exceedances (above 10 ppm): None.	Soil assessment was not conducted.	One permanent groundwater well set and sampled from AMW-13.	Groundwater: PAHs (Method 8270C) RCRA Metals (Method 6010), Dissolved DRO (Wisconsin Modified Method) GRO (Wisconsin Modified Method)
1996 Glycol Release From Underground Piping Feature 21 Along eastern portion of main assembly building	In 1996 a leak occurred from underground piping used to transfer glycol along the eastern portion of the main assembly building. The piping is estimated to be present approximately 4 to 8 feet bgs. Based on available documentation reviewed, remediation activities were completed in the area of the release; however there was no documentation indicating that the release had been adequately remediated per the MPCA. Therefore, the glycol release represents a Feature. <u>Initial Investigation</u> : Two Hollow Stem Auger borings (ASB-008, ASB-009).	Complete one soil boring near ASB-008 to provide additional information.	Organic Vapors using a PID. PID Exceedances (above 10 ppm): None.	One Geoprobe boring (ASB-168). Soil assessment and sampling was conducted utilizing the same methodology described in Feature 1 above.	None.	Soil: VOCs (Method 8260B) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method)
Former Brake Fluid UST Feature 23 Near southwest corner of main assembly building	A former 6,000-gallon brake fluid UST was used in fluid fill operations at TCAP. The UST was installed in 1968 and removed in 1990. The UST was of steel construction. The estimated depth to the base of the former UST is approximately 8 to 10 feet bgs. A review of available documentation indicated that there were no reported releases from this UST; however, no documentation pertaining to removal activities or closure sampling was found in files maintained at TCAP or the MPCA. <u>Initial Investigation</u> : No borings installed due to utilities.	Investigation will be completed during the interior investigation. Complete four soil borings in the area of the former brake fluid UST area to investigate potential impacts.	Organic Vapors using a PID. PID Exceedances (above 10 ppm): None.	These soil borings will be completed along with the Supplemental Phase II Interior Investigation after plant shutdown occurs.	These wells will be completed along with the Supplemental Phase II Interior Investigation after plant shutdown occurs.	Soil: VOCs (Method 8260B) SVOCs (Method 8270C) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method) Groundwater (Provisional): VOCs (Method 8260B) SVOCs (Method 8260B) SVOCs (Method 8270C) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method)

Table 1. Summary of Supplemental Phase II-Exterior Investigation ActivitiesTwin Cities Assembly Plant, St. Paul, Minnesota

	Environmer	tal Concern			
Area of Concern	Background	Supplemental Scope	Field Measurements	Investigation Activities Conducted	Groundwater Asses
Unleaded Gasoline USTs Feature 24 West of the warehouse	Two 20,000-gallon unleaded gasoline USTs (Figure 19) are currently utilized in conjunction with the fluid fill operations on the assembly line. The USTs are of STI-P3 construction with cathodic protection. The estimated depth to the base of the USTs is approximately 10 to12 feet bgs. A review of available documentation indicated that there were no reported releases from the USTs. <u>Initial Investigation</u> : One Hollow Stem Auger boring (ASB-028).	None.	None.	None.	None.
Oil/Water Separator and Trench Feature 27 North of packer building	An approximate 3,000-gallon oil/water separator collects an oil/water mixture from a 100-foot long collection trench. Since this subsurface structure collects oil and water mixture and the integrity of the structure could not be inspected it is considered a Feature. Once the oil/water separator has been emptied and cleaned, the integrity of the structure will be evaluated. The depth of this Feature is still being researched. <u>Initial Investigation</u> : Three Hollow Stem Auger borings (ASB-010, ASB-011, ASB- 012).	Complete one soil boring in the area of the oil/water separator and trench to further investigate potential impacts. If potential impacts extend to the water table, convert soil borings to temporary monitoring wells and sample groundwater, if encountered.	Organic Vapors using a PID. PID Exceedances (above 10 ppm): None.	One Geoprobe boring (ASB-168). Soil assessment and sampling was conducted utilizing the same methodology described in Feature 1 above.	No temporary wells se

Assessment	Analytical Requirements
	None.
rells set.	Soil: VOCs (Method 8260B) SVOCs (Method 8270C) RCRA Metals (Method 6010) DRO (Wisconsin Modified Method) Groundwater (Provisional): VOCs (Method 8260B) SVOCs (Method 8260B) SVOCs (Method 8270C) RCRA Metals (Method 6010), Dissolved DRO (Wisconsin Modified Method)

Table 1. Summary of Supplemental Phase II-Exterior Investigation ActivitiesTwin Cities Assembly Plant, St. Paul, Minnesota

	Environmer	ntal Concern				
Area of Concern	Background	Supplemental Scope	Field Measurements	Investigation Activities Conducted	Groundwater Assessment	Analytical Requirements
Waste Solvent	Two 10,000 gallon USTs that store used	Complete two soil borings to provide	Organic Vapors using a	Two Geoprobe borings (ASB-185, ASB-	No temporary wells set.	Soil:
USTs	purge solvent and cleaning solvent	additional assessment of this feature.	PID.	186)		VOCs (Method 8260B)
	generated from the painting process at			,		SVOCs (Method 8270C)
Feature 35	TCAP. The USTs are located in a	If potential impacts extend to the water	PID Exceedances (above	Soil assessment and sampling was		RCRA Metals (Method 6010)
West of the	basin/bunker which is raised approximately	table, convert one soil boring to a	10 ppm): None.	conducted utilizing the same methodology		
Hazardous Waste	3 to 4 feet above ground surface.	temporary monitoring well and a	- 11 /	described in Feature 1 above.		Groundwater (Provisional):
Storage Building		groundwater sample will be collected.				VOCs (Method 8260B)
	During the fall of 1984 the UST area was	3				SVOCs (Method 8270C)
Former Bulk	constructed and four USTs were installed					RCRA Metals (Method 6010), Dissolved
Solvent and Waste	to store paints, resin and new solvents					
Solvent USTs	delivered to TCAP in tanker trucks. The					
	estimated depth to the base of the former					
Feature 36	USTs is approximately 10 to12 feet bgs. A					
West of the	release was reported from the USTs in					
Hazardous Waste	1989 and remedial activities were					
Storage Building	completed in the area as part of the PRP					
eterage 2 anding	investigation completed at TCAP. Three					
Solvent UST	monitoring wells were installed in the area					
Underground	and were sampled annually until 2003,					
Piping	when the MPCA deemed the sampling not					
	necessary. MIBK is still present in the area					
Feature 37	of the former USTs in the sump.					
South of Paint						
Building	Piping is utilized to collect solvent waste					
	generated during the painting process that					
Sump within	is then transferred to the used solvent					
Solvent UST Basin	USTs located south of the paint building.					
	The piping is located in a concrete trench					
Feature 46	which is estimated to be approximately 1 to					
Northwest Corner of	2 feet bgs. Additional piping is utilized to					
the UST Basin	transfer the used solvents from the USTs to					
	unloading ports near the southwestern					
	portion of the paint building for removal.					
	Collection of groundwater from solvent					
	UST basin which gets pumped to paint					
	sludge pits. The sump is monitored					
	annually due to a former release which					
	occurred from the former solvent USTs that					
	were removed from the area in 1992.					
	Based on monitoring results MIBK is still					
	detected above the applicable criteria in the					
	sump and the next monitoring event is					
	scheduled in fall of 2008. The base of the					
	sump is estimated to be approximately 2 to					
	4 ft bgs.					
	Initial Investigation: Three Hollow Stem					
	Auger borings (ASB-018, ASB-019, and					
	ASB-020). No temporary monitoring wells					
	were installed.					
				<u> </u>		l

Table 1. Summary of Supplemental Phase II-Exterior Investigation ActivitiesTwin Cities Assembly Plant, St. Paul, Minnesota

	Environmer	ntal Concern			
Area of Concern	Background	Supplemental Scope	Field Measurements	Investigation Activities Conducted	Groundwater Asse
Former Fuel Oil UST Feature 41 South of Steam Plant	The former 26,500 gallon fuel oil UST was installed south of the steam plant in approximately 1950. Based on the location of the UST it could not be removed without possibly compromising the structural integrity of the steam plant; therefore, it was closed in place in 1990. A release was reported from the UST in 1990 during its in place closure (Leak 3262). A subsurface investigation was conducted in 1991 which detected some impacts to both soil and groundwater in the area. Additional groundwater monitoring was conducted until the MPCA issued a closure letter for the release in December 1994.	None.	None.	None.	None.
Former Fuel Oil ASTs Feature 42 South of Steam Plant	Former fuel oil ASTs were located south of the Steam Plant. The ASTs were removed from service in 2000 and corrective actions were completed between August 1, 2000 and October 16, 2000. The corrective actions included removal of the remaining fuel oil from the in service AST, cleaning of the AST and associated piping and dismantling of the two ASTs for recycling. <u>Initial Investigation</u> : One Hollow Stem Auger boring (ASB-026). No temporary monitoring wells were installed.	Complete up to three soil borings to the south east and west of the former fuel oil ASTs to provide additional assessment of this feature. Convert one boring to a temporary monitoring well and sample groundwater, if soil impacts extend to groundwater table.	Organic Vapors using a PID. PID Exceedances (above 10 ppm): None.	Three Geoprobe borings (ASB-196, ASB- 197, ASB-198) Soil assessment and sampling was conducted utilizing the same methodology described in Feature 1 above.	No temporary wells s

Assessment	Analytical Requirements
	None.
ells set.	Soil: VOCs (Method 8260B) SVOCs (Method 8270C) PCBs (Method 8082) TAL Metals (Method 6010) DRO (Wisconsin Modified Method) GRO (Wisconsin Modified Method) Groundwater (Provisional): VOCs (Method 8260B) SVOCs (Method 8260B) SVOCs (Method 8270C) PCBs (Method 8082) TAL Metals (Method 6010), Dissolved DEO (Misconsin Medified Method)
	DRO (Wisconsin Modified Method) GRO (Wisconsin Modified Method)

Table 1. Summary of Supplemental Phase II-Exterior Investigation ActivitiesTwin Cities Assembly Plant, St. Paul, Minnesota

	Environmer	tal Concern				
Area of Concern	Background	Supplemental Scope	Field Measurements	Investigation Activities Conducted	Groundwater Assessment	Analytical Requirements
Vastewater Collection ASTs	Wastewater Collection ASTs - Feature 44 Three approximate 139,000-gallon	Complete five additional soil borings in the area of the wastewater treatment area	Organic Vapors using a PID.	Five Geoprobe borings (ASB-188, ASB-189, ASB-190, ASB-191, ASB-192)	No temporary wells set.	Soil: Lead (Method 6010)
	wastewater treatment tanks are utilized to	to delineate the exceedance of criteria at				TCLP Lead
eature 44 lorth of the	store and treat process wastewater	ASB-027. Four step-out borings will be	PID Exceedances (above	Soil assessment and sampling was		
astewater	generated by the assembly and painting processes at TCAP. The phosphate	located approximately 25 feet from ASB- 027 and positioned in a manner to	10 ppm): None.	conducted utilizing the same methodology described in Feature 1 above.		Groundwater (Provisional): Lead (Method 6010), Dissolved
eatment building	process generates the majority of the	delineate the exceedance. In addition, one		described in Feature 1 above.		Lead (Method 6010), Dissolved
-	wastewater. Since the ASTs contain and	boring will be co-located with the original				
Vastewater	hold process industrial wastewater prior to	ASB-027 location to provide vertical				
reatment Area	and during treatment, this area was investigated.	delineation of the exceedance.				
eature 134		Convert ASB-027 to a temporary				
/astewater	Wastewater Treatment Area - Features 134	monitoring well and sample groundwater, if				
eatment plant	The wastewater treatment area houses	sufficient groundwater is present.				
	operations including transferring,					
	containing, storing, and treating process					
Former Waste Disposal Area	wastewater generated from the assembly process. Based on current and historic use					
•	this area was investigated.					
eature 140 Iorth of Steam Plant	Former Waste Disposal Area – Feature					
	<u>140</u>					
	In what appears to be an isolated disposal					
	incident in 1966, paint waste solvent and sludge was disposed of north of the Steam					
	Plant. Visibly contaminated soils in the area					
	were excavated and sent to a permitted					
	landfill. The reviewed documentation had					
	no analytical data of the material disposed					
	of or description of materials excavated					
	and disposed.					
	Initial Investigation: Four Hollow Stem					
	Auger borings (ASB-023, ASB-024, ASB-					
	025, ASB-027). No temporary monitoring					
	wells were installed.					
Former Hazardous	Based on historical documentation	Complete one soil boring to provide	Organic Vapors using a	No soil assessment or sampling was	None.	Soil:
Vaste Storage	reviewed, a former hazardous waste	additional assessment of this feature.	PIĎ.	conducted due to construction		VOCs (Method 8260B)
Area	storage area was identified to have been			interference.		SVOCs (Method 8270C)
	located east of the main assembly building.		PID Exceedances (above			PCBs (Method 8082)
eature 49	Based on the general usage of the area to		10 ppm): None.			TAL Metals (Method 6010)
long Eastern	store hazardous waste materials, the					DRO (Wisconsin Modified Method)
ortion of Main	former hazardous storage area was					GRO (Wisconsin Modified Method)
ssembly Building	investigated.					
	Initial Investigation: Two Hollow Stem					
	Auger borings (ASB-038 and ASB-039). No					
	temporary monitoring wells were installed.					

Table 1. Summary of Supplemental Phase II-Exterior Investigation ActivitiesTwin Cities Assembly Plant, St. Paul, Minnesota

	Environmen	tal Concern				
Area of Concern	Background	Supplemental Scope	Field Measurements	Investigation Activities Conducted	Groundwater Assessment	Analytical Requirements
ludge Pits eature 121 /estern Portion of aint Building	The paint sludge pits separate overspray from the painting process that is captured by sheeting action of water in trenches underneath the paint booths. The northern paint sludge pit was observed to be in good condition; however, the southern paint sludge pit was currently full of water and could not be inspected. Since the southern pit could not be inspected, the Feature was investigated. The base of the sludge pits is an approximate elevation of 822 feet mean sea level. <u>Initial Investigation</u> : Three Hollow Stem Auger borings (ASB-015, ASB-016, and ASB-032). No temporary monitoring wells were installed.	Complete two soil borings in the area of the sludge pits to provide additional assessment of this feature. Convert one boring to a temporary monitoring well and sample groundwater, if soil impacts extend to groundwater table	Organic Vapors using a PID. PID Exceedances (above 10 ppm): None.	No soil assessment or sampling was conducted due to utility interference. The area will be completed during a future investigation after plant shutdown.	No temporary wells were set due to utility interference.	Soil: VOCs (Method 8260B) SVOCs (Method 8270C) TAL Metals (Method 6010) Groundwater (Provisional): VOCs (Method 8260B) SVOCs (Method 8270C) TAL Metals (Method 6010), Dissolved
Former 20,000 Sallon Gasoline AST Feature 138 South of Former Oil Jouse	A former 20,000-gallon gasoline AST was removed from south of the former oil house as identified during interviews with TCAP personnel. Based on the interviewee, when the AST was removed stained soil and odors were identified. However, actions for remediation of the soil were apparently not completed in the area. It is unknown if the AST stored leaded or unleaded gasoline. <u>Initial Investigation:</u> Two Hollow Stem Auger borings (ASB-041 and ASB-042). No temporary monitoring wells were installed.	Complete two soil borings in the area of the former 20,000 gallon gasoline AST to provide additional assessment of this feature. Convert one boring to a temporary monitoring well and sample groundwater, if soil impacts extend to groundwater table.	Organic Vapors using a PID. PID Exceedances (above 10 ppm): ASB-145, ASB- 146	Two Geoprobe borings (ASB-145, ASB-146) Soil assessment and sampling was conducted utilizing the same methodology described in Feature 1 above.	Temporary groundwater well set and sampled from ASB- 145.	Soil: VOCs (Method 8260B) Lead (Method 6010) GRO (Wisconsin Modified Method) Groundwater (Provisional): VOCs (Method 8260B) Lead (Method 6010), Dissolved GRO (Wisconsin Modified Method)
Potential Battery Vaste Disposal Trea Teature 139 Baseball Diamonds	Based on documentation reviewed the area was potentially used for disposal of battery waste. The MPCA requested a geophysical study in the area; however, no documentation pertaining to additional investigations into Feature 139 was found. <u>Initial Investigation:</u> 30 Geoprobe borings (ASB-049 to ASB-054 and ASB-071 to ASB-094). 39 surface soil samples (AGM- SS-001, to AGM-SS039) collected from 0 to 6 inches below ground surface. Temporary groundwater well set and sampled from ASB-076 and ASB-087.	None.	None.	None.	None.	None.

Table 1. Summary of Supplemental Phase II-Exterior Investigation ActivitiesTwin Cities Assembly Plant, St. Paul, Minnesota

	Environme	ntal Concern				
Area of Concern	Background	Supplemental Scope	Field Measurements	Investigation Activities Conducted	Groundwater Assessment	Analytical Requirements
Drums Feature 143 Underground Sand Tunnel 1A South and Sand Tunnel 4A	A total of three drums were observed in the sand tunnels. The floor and walls of the sand tunnels consist of sandstone. Two of three drums were empty all drums were rusted and in poor condition with no lids. Staining was not observed in or near the drums observed in these areas. It appeared that the drums may have been historically utilized to mix concrete or mortar. However, due to the presence of the corroded drums of which the former contents is unknown, the area was investigated. <u>Initial Investigation:</u> Two Hand Augers (HA- 055, HA-056).	None.	None.	None.	None.	None.
Utility Tunnel Staining Feature 144 Underground Utility Tunnel	Staining was identified on the concrete floor surface within the utility tunnel. The utility tunnel may have been associated with historical Fluid Fill AST tank farm (UST/AST Feature 52) located in or near the former fuel house which contains product piping. <u>Initial Investigation:</u> Two Hand Augers (HA- 069, HA-070).	None.	None.	None.	None.	None.
Flow Stone Feature 149 Underground Easternmost Portion of Gas Tunnel	At the east end of the gas tunnel, water was observed to be leaking in from the main assembly building above. The floor and walls of the gas tunnel consist of sandstone. Flow stone was observed on the walls within the gas tunnel. <u>Initial Investigation:</u> One Hand Auger (HA- 068).	None.	None.	None.	None.	None.

Table 1. Summary of Supplemental Phase II-Exterior Investigation ActivitiesTwin Cities Assembly Plant, St. Paul, Minnesota

	Environmer	tal Concern				
Area of Concern	Background	Supplemental Scope	Field Measurements	Investigation Activities Conducted	Groundwater Assessment	Analytical Requirements
Potential Film/Staining Feature 151 Underground Sand Tunnels	Several of the mined sand tunnels contain railroad ties (with a limited number having rails still attached) which were used to transport the mined sand from the tunnels for use in the glass manufacturing operations in the main assembly building. A number of these tunnels have had or currently had standing water in them, and a film/staining on the standing water was observed in these areas. The staining may have been related to wood preservation residuals. The film/staining was observed to be dark brown to black in color. <u>Initial Investigation:</u> Seven Hand Augers (HA-057, HA-058, HA-059, HA-060, HA- 061, HA-062, HA-063).	None.	None.	None.	None.	None.
Former Fuel Oil UST Feature 152 East of Central Engineering Office	The 27,000-gallon UST may have been utilized to provide fuel as a heating source in the main assembly building. The UST was installed at an unknown date and no documentation pertaining to its removal was found through research activities; therefore, the UST may still be in place at TCAP. The estimated depth to the base of the former UST is approximately 10 to12 feet bgs. <u>Initial Investigation</u> : Two Hollow Stem Auger borings (ASB-003, ASB-004). Temporary groundwater well set and sampled from ASB-003.	Complete four soil borings in the area of the former fuel oil UST to delineate the exceedances of criteria at ASB-003. Four step-out borings will be positioned in a manner to delineate the exceedance. In addition, one boring will be co-located with the original ASB-003 (and converted to one monitoring well) location to provide vertical delineation of the exceedance. A groundwater sample will be collected for analysis.	Organic Vapors using a PID. PID Exceedances (above 10 ppm): ASB-135, ASB- 147, ASB-148, ASB-163 PID Exceedances (above 10 ppm), entire boring: ASB-163	Four Geoprobe borings (ASB-135, ASB- 147, ASB-148, ASB-163) Soil assessment and sampling was conducted utilizing the same methodology described in Feature 1 above.	No temporary wells were set.	Soil: VOCs (Method 8260B) PAHs (Method 8270C) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method) Groundwater: VOCs (Method 8260B) PAHs (Method 8260B) PAHs (Method 8270C) RCRA Metals (Method 6010), Dissolved GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method)
Former Coal Gasification Plant Feature 153 Near Steam Plant	Historically, a coal gasification plant was located near the steam plant where coal was used to generate gas. The gas was then pumped to the main assembly plant through the gas tunnel. Based on aerial photographs the plant was constructed prior to 1937 and was demolished between 1957 and 1974. <u>Initial Investigation:</u> None.	Complete four soil borings to assess subsurface conditions. One soil boring will be completed and converted to a temporary monitoring well adjacent to the river down gradient from the Former Coal Gasification Plant if groundwater is present.	Organic Vapors using a PID. PID Exceedances (above 10 ppm): None.	Two Geoprobe borings (ASB-193, ASB- 195) Soil assessment and sampling was conducted utilizing the same methodology described in Feature 1 above.	No temporary wells were set.	Soil: VOCs (Method 8260B) SVOCs (Method 8270C) RCRA Metals (Method 6010) Free Cyanide Groundwater (Provisional): VOCs (Method 8260B) SVOCs (Method 8260B) SVOCs (Method 8270C) RCRA Metals (Method 6010), Dissolved Free Cyanide

Table 1. Summary of Supplemental Phase II-Exterior Investigation Activities Twin Cities Assembly Plant, St. Paul, Minnesota

	Environmer	tal Concern				
Area of Concern	Background	Supplemental Scope	Field Measurements	Investigation Activities Conducted	Groundwater Assessment	Analytical Requirements
Former Tar Decanter House Feature 154 Near Steam Plant	Historically, a coal gasification plant was located near the steam plant where coal was used to generate gas. The gas was then pumped to the main assembly plant through the gas tunnel. Based on aerial photographs the plant was constructed prior to 1937 and was demolished between 1957 and 1974. <u>Initial Investigation:</u> None.	Complete four soil borings to assess subsurface conditions. One soil boring will be completed and converted to a temporary monitoring well adjacent to the river down gradient from the Former Coal Gasification Plant if groundwater is present.	Organic Vapors using a PID. PID Exceedances (above 10 ppm): None.	One Geoprobe borings (ASB-194) Soil assessment and sampling was conducted utilizing the same methodology described in Feature 1 above.	No temporary wells were set.	Soil: VOCs (Method 8260B) SVOCs (Method 8270C) RCRA Metals (Method 6010) Free Cyanide Groundwater (Provisional): VOCs (Method 8260B) SVOCs (Method 8270C) RCRA Metals (Method 6010), Dissolved Free Cyanide

Area of Concern	Environmental Concern	Field Measurements	Investigation Activities Conducted	Groundwater Assessment	Analytical Requirements
Disposal of Investiga	ation-Derived Waste				
Characterization of Investigation- Derived Waste (IDW)	All soil and groundwater IDW were containerized and properly labeled. One composite soil sample was collected from the soil staging roll off box, and one composite soil sample was collected from soil 55-gallon steel drums.		One soil sample collected from the soil staging roll off box. One soil sample collected from the soil 55-gallon steel drums.	Two water samples taken from the 1000 gallon staging poly tanks.	Base Scope SOIL: TCLP VOCs TCLP SVOCs TCLP RCRA Metals PCBs GROUNDWATER: VOCs (Method 8260) SVOCs (Method 8270) RCRA Metals (Method 6010)

Notes:

- Investigation Derived Wastes (IDWs): IDWs were managed and disposed in accordance with applicable State regulations. As part of the base scope of work, soil cuttings and purge water was containerized as appropriate, temporarily staged at a location authorized 1. by plant personnel, and disposed at an appropriate off-site facility.
- 2. Features 35, 36, 37, and 46 were co-located during Phase II exterior field investigation.
- Features 44, 134, and 140 were co-located during Phase II exterior field investigation. 3.

MONITORING WELL INSTALLATION AND DEVELOPMENT:

Monitoring wells and piezometers shall be installed according to MDH well codes.

All wells completed 5 feet or more in limestone or dolomite will be completed as single cased wells with open bore hole or as double cased wells with stainless steel screens.

All wells materials used for well construction will meet the MDH well codes.

The wells shall be secured with a locking expandable cap.

All wells completed in roadway, sidewalk, driveway, or a parking area will be completed at grade with a flush-mount protective cover set inside a 48-inch thick concrete pad. The concrete pad shall be sloped to facilitate runoff drainage away from the well. All wells completed in areas other than those listed above will be completed as above grade monitoring wells with a steel protective casing and protective posts as required by MDH wells code. The wells shall be pad-tagged or otherwise permanently labeled to indicate the well identification.

Each monitoring well shall be developed using typical and appropriate methods. Development water shall be considered an IDW and managed appropriately.

Monitoring wells may be sampled only a minimum of 48 hours after development.

ACRONYMS:

AUNON					
ASB	ARCADIS Soil Boring	HSA	Hollow-Stem Auger	PAH	Polycyclic Aromatic Hydrocarbons
AST	Above Ground Storage Tank	HRL	Health Risk Limit	PCB	Polychlorinated Biphenyls
CRA	Conestoga Rovers & Associates	IDW	Investigative Derived Waste	PID	Photo-Ionization Detector
ft bgs	Feet Below Ground Surface	MDH	Minnesota Department of Health	PLP	Permanent List of Priorities
DRAP	Development Response Action Plan	MIBK	Methyl Isobutyl Ketone	ppm	Parts per million
DRO	Diesel Range Organics	MTBE	Methyl Tert-Butyl Ethet	PRP	Potentially Responsible Parties
GRO	Gasoline Range Organics	mg/kg	Milligram per Kilogram	RCRA	Resource Conservation and Recovery Act
HA	Hand Auger	MPCA	Minnesota Pollution Control Agency	SRV	Soil Reference Value
HASP	Health and Safety Plan	MS/MSI	D Matrix Spike/Matrix Spike Duplicate	SVOC	Semi-Volatile Organic Compound

TAL	Target Analyte List
TCAP	Twin Cities Assembly Plant
TMB	Trimethylbenzenes
USCS	United Soil Classification System
VIC	Voluntary Investigation and CleanupProgram
VOC	Volatile Organic Compound

Field Screening Headspace Summary

Table 2.

Feature Number	Location	Start Depth (ft)	Finish Depth (ft)	PID Reading (ppm)	DTW (ft)	Sampled Interval	Sample Collection Rationale
NPA	ASB-115 ASB-115 ASB-115 ASB-115 ASB-115	0 1 5 6 8	1 2 6 8 10	28.4 36.3 26.7 524.1 327.2	6.5	2-4 4-6	Collected per work plan Collected unsaturated sample above water table Saturated at interval specified in work plan (6' to 8')
NPA	ASB-116 ASB-116 ASB-116 ASB-116	0 1 4.5 6	1 2 6 8	3 2.8 54.8 1.8	0	4-6 6-8	Inadequate recovery at interval specified in work plan (2' to 4') Collected per work plan
NPA	ASB-117 ASB-117 ASB-117	0 1 2.5	1 2.5 4	2.7 3 2.4		0-2 2-4	Collected unsaturated sample above water table Collected per work plan
NPA	ASB-117 ASB-118 ASB-118 ASB-118 ASB-118 ASB-118 ASB-118 ASB-118	6 0 2 5 6 7 8 10	8 2 4 6 7 8 10 12	1.4 1.9 0 0.1 0 3.7 11.4 0.1	7	2-4 5-7	Saturated at interval specified in work plan (6' to 8') Collected per work plan Saturated at interval specified in work plan (6' to 8')
4	ASB-119 ASB-119 ASB-119 ASB-119	0 2 5 6	2 4 6 8	0 0 0 0		5-7	Inadequate recovery at interval specified in work plan (4' to 6')
4	ASB-120 ASB-120 ASB-120 ASB-120	0 5 6 8	5 6 8 10	0.3 0.1 0.2	8	8-10 4-6 6-8	Collected per work plan Collected per work plan Collected per work plan
5	ASB-121 ASB-121 ASB-121 ASB-121 ASB-121 ASB-121	0 2 5 6 8	2 4 6 8 10	 794 775.6 657.2 515.6		5-7 8-10	Inadequate recovery at interval specified in work plan (highest Pl Collected per work plan
5	ASB-121 ASB-122 ASB-122 ASB-122 ASB-122	10 0 2 4 6	12 2 4 6 7	400.9 133.7 149.2 166.9	10	2-4 6-8	Collected per work plan Collected per work plan
Ū	ASB-122 ASB-122 ASB-122 ASB-122	7 8 10	8 10 12	494.6 454.1 271.8	7		
NPA	ASB-123 ASB-123 ASB-123 ASB-123 ASB-123	2 5 7 8	4 7 8 10	153.2 142 600.3 627.3	8	2-4 6-8	Collected per work plan Collected per work plan
NPA	ASB-124 ASB-124 ASB-124 ASB-124 ASB-124	0 1 3 5	1 3 5 6	0.4 0		2-4	Collected per work plan
NPA	ASB-124 ASB-125 ASB-125 ASB-125 ASB-125	6 0 1 3 5	8 1 3 5 6	0 0 0 0		6-8 3-5	Collected per work plan Inadequate recovery at interval specified in work plan (2' to 4')
NPA	ASB-125 ASB-126 ASB-126 ASB-126	6 0 2 4	8 2 4 6	0 0 0 0		6-8 2-4	Collected per work plan
1	ASB-126 ASB-127 ASB-127 ASB-127 ASB-127	6 0 2 5 6	8 2 4 6 8	0 5 1.2 0.3 0		6-8 0-2	Collected per work plan Collected per work plan
	NUMBER NPA NPA A A 4 4 5 5 5 NPA NPA	NumberLocationNPAASB-115 ASB-115 ASB-115 ASB-115 ASB-115 ASB-115 ASB-115 ASB-115 ASB-116 ASB-117 ASB-117 ASB-117 ASB-117 ASB-117 ASB-117 ASB-118 ASB-118 ASB-118 ASB-118 ASB-118 ASB-118 ASB-118 ASB-118 ASB-118 ASB-118 ASB-118 ASB-119 ASB-119 ASB-119 ASB-120 ASB-120 ASB-120 ASB-120 ASB-121 ASB-121 ASB-121 ASB-121 ASB-121 ASB-121 ASB-121 ASB-121 ASB-121 ASB-121 ASB-121 ASB-122 ASB-122 ASB-122 ASB-122 ASB-122 ASB-123 ASB-123 ASB-123 ASB-124 ASB-124 ASB-124 ASB-125 ASB-125 ASB-126 ASB-126 ASB-126 ASB-126 ASB-126 ASB-126 ASB-127	Peature NumberDepth LocationDepth (ft)NPAASB-1150ASB-11510ASB-1155ASB-11510ASB-11510ASB-11510ASB-11510ASB-11510ASB-11510ASB-1161ASB-1164.5ASB-1164.5ASB-1168ASB-1168ASB-1168ASB-1171NPAASB-117ASB-1175ASB-1180ASB-1185NPAASB-118ASB-1186ASB-11810ASB-1186ASB-11810ASB-1186ASB-11810ASB-11810ASB-11810ASB-1186ASB-11810ASB-1186ASB-1192ASB-11910ASB-11910ASB-1200ASB-12010ASB-12110ASB-12110ASB-12110ASB-12110ASB-12110ASB-12110ASB-12110ASB-12110ASB-12110ASB-1222ASB-12310ASB-12410ASB-12410ASB-12510ASB-12410ASB-12510ASB-12510AS	Peature NumberLocationDepth (ft)Depth (ft)NPAASB-11501ASB-115101ASB-11556ASB-1151012NPAASB-11601ASB-1151012NPAASB-11601ASB-11612NPAASB-11668ASB-116121ASB-11689ASB-11689ASB-11712.5ASB-11802ASB-11756ASB-11802ASB-11867ASB-11802ASB-1181012ASB-11878ASB-1181012ASB-11924ASB-11924ASB-11924ASB-11924ASB-11956ASB-11924ASB-11956ASB-12056ASB-12056ASB-12005ASB-1201011.5ASB-1211012ASB-1211012ASB-1211012ASB-1211012ASB-1211012ASB-12278ASB-12357ASB-12378ASB-1231012A	Peature NumberLocationDepth (ft)Depth (ft)Reading (ppm)NPAASB-1150128.4ASB-1151236.3ASB-1155626.7ASB-115101298.2ASB-115101298.2ASB-116122.8ASB-116122.8ASB-116681.8ASB-116681.8ASB-116681.8ASB-117012.7ASB-117012.7ASB-117012.7ASB-117012.7ASB-117012.7ASB-118670ASB-118020ASB-118020ASB-118560.1ASB-118783.7ASB-118670ASB-119020ASB-119560.3ASB-119560.3ASB-119560.3ASB-119680ASB-119680ASB-120560.3ASB-12102ASB-120680.1ASB-12102ASB-12102ASB-12168657.2ASB-122 <td< td=""><td>Peature NumberLocationDepth (ft)Depth (ft)Reading (ft)DTW (ft)NPAASB-1150128.4ASB-1151236.3ASB-115686524.1ASB-115810327.2ASB-115810327.2ASB-1161228.4ASB-1161228.4ASB-116122.8ASB-116665.4.8ASB-116712.7ASB-117012.7ASB-1172.542.4ASB-1172.533ASB-1172.542.4ASB-117560.1ASB-118240ASB-118240ASB-118783.7ASB-18781.1ASB-18101.1.4ASB-18101.1.4ASB-19560.1ASB-19560.3ASB-19560.3ASB-19560.3ASB-19680.1ASB-19680.1ASB-19680.1ASB-19680.1ASB-19680.1ASB-19680.1ASB-19680.1ASB-19680.1ASB-19</td><td>Peature NumberLocationDepth (t)Reading (pm)DTW (pm)Sampled (m)NPAASB-1150128.4ASB-1151236.32.4ASB-1156852.416.5ASB-115101298.26.5ASB-11510122.84.6ASB-1160134.6ASB-1164.5654.84.6ASB-1164.5654.84.6ASB-11612.532.4ASB-117012.70.2ASB-1180202.4ASB-117561.45ASB-117012.70.2ASB-1180202.4ASB-1180202.4ASB-1180202.4ASB-1180205ASB-1180205ASB-1180208ASB-11810120.11.1ASB-11810120.18ASB-119560.38ASB-11810120.18ASB-1192408ASB-119560.38ASB-12005ASB-1201011.50ASB-121247ASB-</td></td<>	Peature NumberLocationDepth (ft)Depth (ft)Reading (ft)DTW (ft)NPAASB-1150128.4ASB-1151236.3ASB-115686524.1ASB-115810327.2ASB-115810327.2ASB-1161228.4ASB-1161228.4ASB-116122.8ASB-116665.4.8ASB-116712.7ASB-117012.7ASB-1172.542.4ASB-1172.533ASB-1172.542.4ASB-117560.1ASB-118240ASB-118240ASB-118783.7ASB-18781.1ASB-18101.1.4ASB-18101.1.4ASB-19560.1ASB-19560.3ASB-19560.3ASB-19560.3ASB-19680.1ASB-19680.1ASB-19680.1ASB-19680.1ASB-19680.1ASB-19680.1ASB-19680.1ASB-19680.1ASB-19	Peature NumberLocationDepth (t)Reading (pm)DTW (pm)Sampled (m)NPAASB-1150128.4ASB-1151236.32.4ASB-1156852.416.5ASB-115101298.26.5ASB-11510122.84.6ASB-1160134.6ASB-1164.5654.84.6ASB-1164.5654.84.6ASB-11612.532.4ASB-117012.70.2ASB-1180202.4ASB-117561.45ASB-117012.70.2ASB-1180202.4ASB-1180202.4ASB-1180202.4ASB-1180205ASB-1180205ASB-1180208ASB-11810120.11.1ASB-11810120.18ASB-119560.38ASB-11810120.18ASB-1192408ASB-119560.38ASB-12005ASB-1201011.50ASB-121247ASB-

G\PROJECTS\Ford-SLPaul\Working\Phase II Supplemental Exterior Report\Tables\v5\Table 2 - PID_dtt_20120530.xis 5/31/2012

Forth 11	Feature	1	Start Depth	Finish Depth	PID Reading	DTW	Sampled	Sample Collection Rationale
Feature Name	Number	Location	(ft)	(ft)	(ppm)	(ft)	Interval	
		ASB-128	0	2			0-2	Inadequate recovery at interval specified in work plan (2' to 4'
North Doding Area	NDA	ASB-128	2	4	0			
North Parking Area	NPA	ASB-128 ASB-128	4 6	6 8	0 0		6-8	Collected per work plan
		ASB-128	8	10.5	0	8	0-0	
		ASB-129	0	2	0.1			
		ASB-123 ASB-129	2	4	0.1		2-4	Collected per work plan
North Parking Area	NPA	ASB-129	4	6	0	4		
North Funding / Tea		ASB-129	6	8	0		NS	Saturated at interval specified in work plan (6' to 8')
		ASB-129 ASB-129	8 10	10 12	0 0			
						•		
		ASB-130 ASB-130	0 2	2 4	0 0	0	NS	Saturated at interval specified in work plan (2' to 4')
North Parking Area	NPA	ASB-130	4	6	0.2		NO	
		ASB-130	6	8	0		NS	Saturated at interval specified in work plan (6' to 8')
		ASB-131	0	2	0			
North Parking Area	NPA	ASB-131	2	4	0		2-4	Collected per work plan
		ASB-131	4	6	0	5	NO	Sofurcted at interval appealfied in work along (2) to (1)
		ASB-131	6	8	0		NS	Saturated at interval specified in work plan (6' to 8')
North Parking Area	NPA	ASB-132	0	2	0		2.4	
-		ASB-132	2	4	0		2-4	Collected per work plan
		ASB-133	0	2	0		2.4	
Former Test Track	1	ASB-133 ASB-133	2 4	4 6	0		2-4	Collected per work plan
		ASB-133	6	8	0			
		ASB-134	0	1	0			
		ASB-134	1	2	0.5			
North Parking Area	NPA	ASB-134	2	4	0		2-4	Collected per work plan
North Funding / Tota		ASB-134	4	5	0	4		
		ASB-134 ASB-134	5 6	6 8	0		NS	Saturated at interval specified in work plan (6' to 8')
							NO	baturated at interval specified in work plan (0 to 0)
		ASB-135 ASB-135	0 2	2 4	7 329.3		2-4	Inadequate recovery at intervals specified in work plan (0' to
Former Fuel Oil UST	152	ASB-135	4	6	14			······································
		ASB-135	6	8	694.4		6-8	Collected per work plan
		ASB-135	8	9	393.2		8-9	Refusal before interval specified in work plan (10' to 12')
		ASB-136	0	2	2		1-3	Collected per work plan
		ASB-136 ASB-136	2 4	4 5	0.4 8.2			
orth Parking Area and	NPA and 3		5	6	5.3			
Former Convoy UST		ASB-136	6	8	14.5	6	NS	Saturated at interval specified in work plan (6' to 8')
		ASB-136	8	10	1.7			
		ASB-136	10	11	0.7			
		ASB-137 ASB-137	0 2	2 4	0.2 0.3		2-4	Collected per work plan
orth Parking Area and		ASB-137	4	6	0.5	5	2-4	
Former Convoy UST	NPA and 3	ASB-137	6	8	0		NS	Saturated at interval specified in work plan (6' to 8')
		ASB-137	8	9	0.3			
		ASB-137	9	11	0.4			
Former Convoy UST	3	ASB-138 ASB-138	0 2	2 4	0 0		2-4	Collected per work plan
onner convey cor	0	ASB-138	4	8			2 7	
		ASB-139	0	2	0			
Former Convoy UST	3	ASB-139	2	4	2.1			
5	5	ASB-139	4	6	3.1		~ ~	Collected per work plat
		ASB-139	6	8	11.3		6-8	Collected per work plan
		ASB-140 ASB-140	0 2	2 4	2.8 1.6			
Former Convoy UST	3	ASB-140 ASB-140	4	6	2			
		ASB-140	6	8	2.2		6-8	Collected per work plan
		ASB-141	0	2	1			
North Parking Area	NPA	ASB-141	2	4	1.8		2-4	Collected per work plan
		ASB-141	4	6	2.8		0.0	
		ASB-141	6	8	5.9		6-8	Collected per work plan
North Parking Area	NPA	ASB-142	0	2 4	2.2		2 /	Collected per work plan
		ASB-142	2		3.2		2-4	Collected per work plan
		ASB-143	0 1	1 2	4 4.7		1-3	Inadequate recovery at interval specified in work plan (2' to 4
North Parking Area	NPA	ASB-143						

Feature Name	Feature Number	Location	Start Depth (ft)	Finish Depth (ft)	PID Reading (ppm)	DTW (ft)	Sampled Interval	Sample Collection Rationale
Former Test Track	1	ASB-144 ASB-144 ASB-144 ASB-144	0 2 4 6	2 4 6 8	3.7 4.1 3.6 1.6		2-4	Collected per work plan
		ASB-145 ASB-145	0 2	2 4	2.1 2.8		0-2	Collected per work plan
Former 20,000 Gallon Gasoline AST	138	ASB-145 ASB-145 ASB-145 ASB-145 ASB-145	4 5 6 8 10	5 6 8 10 12	2.9 4.8 4.1 4.5 31.1	4.5	NS	Saturated at interval specified in work plan (6' to 8')
		ASB-146 ASB-146 ASB-146	0 2 4	2 4 6	3 4.4 3.5		0-2	Collected per work plan
Former 20,000 Gallon Gasoline AST	138	ASB-146 ASB-146 ASB-146 ASB-146 ASB-146	6 8 10 11	8 10 11 12	973.1 940.8 99.8 18.2	8	6-8	Collected per work plan
		ASB-140 ASB-147 ASB-147 ASB-147	0 2 4	2 4 6	13.6 5.3 14.8		0-2	Collected per work plan
Former Fuel Oil UST	152	ASB-147 ASB-147 ASB-147	6 8 9	8 9 11	427.4 421.3 849.9	8	6-8 NS	Collected per work plan Saturated at interval specified in work plan (10' to 12')
		ASB-147 ASB-148 ASB-148	11 0	12 2 4	24.8 2.4 2.3		0-2	Collected per work plan
Former Fuel Oil UST	152	ASB-148	2 4	4 6 8	2.3 3.2 1060	7	4-6	Saturated at interval specified in work plan (6' to 8')
Former Fuel OII US1	152	ASB-148 ASB-148 ASB-148 ASB-148	6 8 12 14	8 12 14 16	1651 138 301.9	/	NS	Saturated at interval specified in work plan (10' to 12')
Former Gasoline Sunoco		ASB-157 ASB-157 ASB-157	0 2 4	2 4 6	0 0 0		0-2	Collected per work plan
pirits, and Pryoxlin Thinner USTs	16	ASB-157 ASB-157 ASB-157 ASB-157	6 8 10 11	8 10 11 12	0 0 33.4 473.3	6	NS NS	Saturated at interval specified in work plan (8' to 10') Saturated at interval specified in work plan (10' to 12')
		ASB-158 ASB-158	0 2	2 4	0		0-2	Collected per work plan
Former Gasoline Sunoco pirits, and Pryoxlin Thinner USTs	16	ASB-158 ASB-158 ASB-158	4 6 8	6 8 9	187.4 490.5 631.5	6	4-6	Saturated at interval specified in work plan (6' to 8')
		ASB-158 ASB-158 ASB-158	9 10 11	10 11 12	25.8 2.1 10.7		NS	Saturated at interval specified in work plan (10' to 12')
Former Gasoline Sunoco pirits, and Pryoxlin Thinner USTs	16	ASB-159 ASB-159 ASB-159 ASB-159	0 2 4 6	2 4 6 8	1.2 92.4 1057 842.5	7.5	2-4 5-7	Inadequate recovery at intervals specified in work plan (0' to 2') Saturated at interval specified in work plan (8' to 10')
		ASB-159 ASB-159	8 10	10 12	1264 77		NS	Saturated at interval specified in work plan (10' to 12')
Former Gasoline Sunoco		ASB-160 ASB-160	0 2	2 4	2.4 13.8		2-4	Inadequate recovery at intervals specified in work plan (0' to 2')
pirits, and Pryoxlin Thinner USTs	16	ASB-160 ASB-160 ASB-160	4 6 8	6 8 10	534.3 1363 1200	7	5-7	Saturated at interval specified in work plan (8' to 10')
		ASB-160 ASB-161	10 0	12 2	51.4 1.4		NS 1-3	Saturated at interval specified in work plan (10' to 12') Inadequate recovery at intervals specified in work plan (0' to 2')
Former Gasoline Sunoco pirits, and Pryoxlin Thinner	16	ASB-161 ASB-161 ASB-161	2 4 6	4 6 8	0.5 178.4 	4	NS	Saturated at interval specified in work plan (6' to 8')
USTs		ASB-161 ASB-161	8 10	10 12			NS	Saturated at interval specified in work plan (0 to 0)
		ASB-161 ASB-162 ASB-162	0	12 2 4	6.8 0.3		1-3	Inadequate recovery at intervals specified in work plan (0' to 2' or 2' to 4')
Former Railroad Spurs and	12 and 47	ASB-162 ASB-162	4 6	6 8	0.5 0.4	6		• • • • •
Former Coal Operations		ASB-162 ASB-162	8 9	9 10	0.7 0.3			
		ASB-162 ASB-162	9 10	10 12	0.3 0.4			

Page 3 of 7

Field Screening Headspace Summary

Table 2.

Feature Name	Feature Number	Location	Start Depth	Finish Depth	PID Reading	DTW	Sampled	Sample Collection Rationale
r eature Name	Number	Location	(ft)	(ft)	(ppm)	(ft)	Interval	
		ASB-163	0	2	21.6			
		ASB-163	2	4	177.8		2-4	Inadequate recovery at intervals specified in work plan (0' to 2'
Former Fuel Oil UST	152	ASB-163 ASB-163	4 6	6 7	143.7 668.2	6	4-6	Saturated at interval specified in work plan (6' to 8')
Former Fuel OII 031	152	ASB-163 ASB-163	7	8	920.7	0		
		ASB-163	8	10	862.1			
		ASB-163	10	12	70.2		NS	Saturated at interval specified in work plan (10' to 12')
		ASB-164	0	4	0	0.5	NS	Saturated at interval specified in work plan (0' to 2')
Former Hazardous Waste	10	ASB-164	4	8	0.1		NS	Saturated at interval specified in work plan (4' to 6')
Storage Area	10	ASB-164	8	10	0		NS	Saturated at interval specified in work plan (8' to 10')
		ASB-164	10	11.5	0			
		ASB-165	0	1	0.6		0-2	Collected per work plan
Former Hazardous Waste		ASB-165 ASB-165	1 2	2 4	0 0	2		
Storage Area	10	ASB-165 ASB-165	4	4 6	4	2	NS	Saturated at interval specified in work plan (4' to 6')
otorago / «ou		ASB-165	6	8	0.4		NS	Saturated at interval specified in work plan (6' to 8')
		ASB-165	8	10.5	0.1		NS	Saturated at interval specified in work plan (8' to 10')
		ASB-166	0	2	2.7			
		ASB-166	2	4	19.5		2-4	Inadequate recovery at intervals specified in work plan (0' to 2'
Former Hazardous Waste	10	ASB-166	4	6	5.8	4	NS	Saturated at interval specified in work plan (4' to 6')
Storage Area	10	ASB-166	6	8	19.8		NS	Saturated at interval specified in work plan (6' to 8')
		ASB-166	8	10	632.6		NS	Saturated at interval specified in work plan (8' to 10')
		ASB-166	10	12	636.6			
		ASB-167	0	2	3.8		0-2	Collected per work plan
		ASB-167	2	4	10.4			
Former Hazardous Waste Storage Area	10	ASB-167 ASB-167	4 6	6 8	2.3 10.4		6-8	Collected per work plan
ololage Alea		ASB-167	8	10	656.7		8-10	Collected per work plan
		ASB-167	10	12	480.1	10		
		ASB-168	0	2	1.3		0-2	Collected per work plan
1996 Glycol Release From		ASB-168	2	4	0.7			
Underground Piping and		ASB-168	4	6	0.9		4-6	Collected per work plan
Oil/Water Separator and	21 and 27	ASB-168	6	8	0.2	0		Inadequate recovery at interval specified in work plan (6' to 8')
Trench		ASB-168 ASB-168	8 9	9 10	0.2 0	8		
		ASB-168	10	12	0			
		ASB-169	0	2	0			
		ASB-169	2	4	0		3-5	Saturated at interval indicated in work plan
Oil/Water Separator and		ASB-169	4	5	0			(below oil/water separator)
Trench	27	ASB-169	5	6	0	5		
		ASB-169	6	8	0			
		ASB-169 ASB-169	8 10	10 12	0 0			
		ASB-170 ASB-170	0 1	1 2	 1.4		0-2	Collected per work plan
		ASB-170 ASB-170	2	4	0.8			
Former Hazardous Waste	10	ASB-170	4	6	1.6		4-6	Collected per work plan
Storage Area		ASB-170	6	8	1.4	6		
		ASB-170	8	10	0.8		NS	Saturated at interval specified in work plan (8' to 10')
		ASB-170	10	12	1			
		ASB-171	0	2	0.8		1-3	Inadequate recovery at intervals specified in work plan (0' to 2'
		ASB-171	2	4	0.6	-		
Former Hazardous Waste Storage Area	10	ASB-171 ASB-171	4 6	6 8	0.7 0.5	5	NS NS	Saturated at interval specified in work plan (4' to 6') Saturated at interval specified in work plan (6' to 8')
Storage Area		ASB-171 ASB-171	8	8 10	0.5		NS	Saturated at interval specified in work plan (6 to 8) Saturated at interval specified in work plan (8' to 10')
		ASB-171 ASB-171	10	12	0.3		110	
		ASB-172	0	2	4.5		1-3	Collected per work plan
		ASB-172 ASB-172	2	4	4.5	3	1-0	
	11	ASB-172	4	8	212	-		
Former Disposal Area B		ASB-172	8	10	575.7			
Former Disposal Area B		ASB-172	10	12	0			
Former Disposal Area B				2	1		1-3	Collected per work plan
Former Disposal Area B		ASB-173	0			3		
Former Disposal Area B		ASB-173	0 2	4	2.5			
	11	ASB-173 ASB-173	2 4	4 6	386.2			
Former Disposal Area B Former Disposal Area B	11	ASB-173 ASB-173 ASB-173	2 4 6	4 6 8	386.2 398.3			
	11	ASB-173 ASB-173 ASB-173 ASB-173	2 4 6 8	4 6 8 10	386.2 398.3 817.6			
	11	ASB-173 ASB-173 ASB-173 ASB-173 ASB-173	2 4 6 8 10	4 6 8 10 12	386.2 398.3 817.6 373.7			
	11	ASB-173 ASB-173 ASB-173 ASB-173 ASB-173 ASB-174	2 4 6 8 10 0	4 6 8 10 12 4	386.2 398.3 817.6 373.7 1			
	11	ASB-173 ASB-173 ASB-173 ASB-173 ASB-173	2 4 6 8 10	4 6 8 10 12	386.2 398.3 817.6 373.7	6	4-6	Collected per work plan

able 2.		ning Headsp Assembly P			esota				
Feature Name	Feature Number	Location	Start Depth (ft)	Finish Depth (ft)	PID Reading (ppm)	DTW (ft)	Sampled Interval	Sample Collection Rationale	
Former Disposal Area B	11	ASB-175 ASB-175 ASB-175 ASB-175 ASB-175 ASB-175	0 2 4 6 8 10	2 4 6 8 10 12	5.3 730.5 902.8 18.1 70.8 7		4-6	Collected per work plan	
Former Disposal Area B	11	ASB-176 ASB-176 ASB-176 ASB-176	0 4 8 10	4 8 10 12	1.5 1.6 861.6 840.5	10	8-10	Collected per work plan	
Former Disposal Area A	9	ASB-177 ASB-177 ASB-177	0 4 6	4 6 7	0.9 0.9 1.4	6	4-6	Collected per work plan	
Former Test Track	1	ASB-178 ASB-178	0 2	2 4	0 0		0-2	Collected per work plan	
Former Hazardous Waste Storage Area	8	ASB-179 ASB-179	0 2	2 4	0		0-2	Collected per work plan	
Former Hazardous Waste Storage Area	8	ASB-173 ASB-180 ASB-180	0	2 4	0		0-2 2-4	Collected per work plan Collected per work plan	
Former Disposal Area A	9	ASB-181 ASB-181 ASB-181 ASB-181 ASB-181 ASB-181	0 2 4 6 8 9	2 4 6 8 9 11	0.7 40.1 28.6 87.6 102.6 5.3	8	6-8	Collected per work plan	
Former Disposal Area A	9	ASB-182 ASB-182 ASB-182 ASB-182 ASB-182 ASB-182	0 2 4 6 8 10	2 4 6 8 10 11.5	29.3 723.9 719.3 419 95.2 91.8		2-4	Collected per work plan	
Former Disposal Area A	9	ASB-182 ASB-183 ASB-183 ASB-183 ASB-183 ASB-183	0 1 2 4 6	1 2 4 6 7	0.3 0 0 0 0		0-2	Collected per work plan	
Former Test Track	1	ASB-184 ASB-184 ASB-184 ASB-184 ASB-184	0 2 4 6 8	2 4 6 8 10	0 0 0 0		2-4	Collected per work plan	
Vaste Solvent USTs, Former Bulk Solvent and Waste	35, 36, 37,	ASB-185 ASB-185	0 2	2 4	0		0-2	Collected per work plan	
Solvent USTs, Undergound Piping and Sump	46	ASB-185 ASB-185	4 6	6 8	0		4-6	Collected per work plan	
/aste Solvent USTs, Former Bulk Solvent and Waste	35, 36, 37,	ASB-186 ASB-186	0 2	2 4	0 0		0-2	Collected per work plan	
Solvent USTs, Undergound Piping and Sump	46	ASB-186 ASB-186	4 6	6 8	0		4-6	Collected per work plan	
Former Test Track	1	ASB-187 ASB-187 ASB-187 ASB-187 ASB-187 ASB-187	0 2 4 6 8 9	2 4 6 8 9 10.5	0 0 0 0 0	8	2-4	Collected per work plan	
Waste Collection ASTs,		ASB-188 ASB-188 ASB-188	0 2.5 3	2.5 3 4	0.4 0.7 0.8		0-2	Collected per work plan	
Wastewater Treatment Area, and Former Waste Disposal Area	44, 134, 140	ASB-188 ASB-188 ASB-188 ASB-188 ASB-188	4 6 8 10 12	6 8 10 12 14	1.3 1.4 0.7 0.3 0.2		4-6	Collected per work plan	

Page 5 of 7

Feature Name	Feature Number	Location	Start Depth (ft)	Finish Depth (ft)	PID Reading (ppm)	DTW (ft)	Sampled Interval	Sample Collection Rationale
		ASB-189	0	2	0.6		NS	Inadequate recovery at intervals specified in work plan (0' to 2
Waste Collection ASTs, Wastewater Treatment Area, and Former Waste Disposal	44, 134, 140	ASB-189 ASB-189 ASB-189 ASB-189	2 4 6 8	4 6 8 10	0.7 0.5 0.8 0.5		4-6	Collected per work plan
Area	140	ASB-189 ASB-189 ASB-189 ASB-189	10 12 14	12 14 15	0.5 0.3 0.5			
Waste Collection ASTs,		ASB-190 ASB-190 ASB-190	0 2 4	2 4 6	0.5 0.2 0.7		0-2	Collected per work plan
Waste Collection Acrs, Wastewater Treatment Area, and Former Waste Disposal Area	44, 134, 140	ASB-190 ASB-190 ASB-190 ASB-190	6 8 10	8 10 12	0.4 0.2 0.3		8-10	Collected per work plan
		ASB-190 ASB-190	12 14	14 15	0.1 0.4		0.2	
Waste Collection ASTs,		ASB-191 ASB-191 ASB-191	0 2 4	2 4 6	0.3 0.1 1		0-2 4-6	Collected per work plan
Wastewater Treatment Area, and Former Waste Disposal Area	44, 134, 140	ASB-191 ASB-191 ASB-191 ASB-191	4 6 8 10	8 10 12	0.8 0.9 0.6		4-0	Collected per work plan
		ASB-191 ASB-192	12 0	15 2	0.2 0		0-2	Collected per work plan
Waste Collection ASTs, Wastewater Treatment Area,	44, 134,	ASB-192 ASB-192	2 4	4	0 0.1		4-6	Collected per work plan
and Former Waste Disposal Area	140	ASB-192 ASB-192 ASB-192	6 8 10	8 10 12	0 0 0			
Former Coal Gasification Plant	153	ASB-193	0	2	0.1		1-2	Collected per work plan
		ASB-194 ASB-194	0 2	2 4	0.4 0			
		ASB-194 ASB-194	4 6	6 8	0 0			
Former Tar Decanter House	154	ASB-194	8	10	0.3			
		ASB-194 ASB-194	10 12	12 13	3.1 0.1		10-12	Collected per work plan
		ASB-194 ASB-195	13 0	15 2	0.1 0		13-15	Collected per work plan
Former Coal Gasification Plant	153	ASB-195 ASB-195	2 4	4 6	0.1 0			
	100	ASB-195 ASB-195	6	8 10	3.4 0.5		6-8 8-10	Collected per work plan Collected per work plan
		ASB-196	0	1			0.10	
		ASB-196 ASB-196 ASB-196	1 4	4 6	0.1		4-6	Collected per work plan
Former Fuel Oil ASTs	42	ASB-196 ASB-196	6 8	8 10	0.1 0.1			
		ASB-196 ASB-196	10 12	12 14	0.1 0.2			
		ASB-196	14	15	1			
		ASB-197 ASB-197	0 1.5	1.5 4	0.1			
		ASB-197 ASB-197	4 6	6 8	0.1 0.1		4-6	Collected per work plan
Former Fuel Oil ASTs	42	ASB-197 ASB-197	8	10	0.1			
		ASB-197 ASB-197	10 12	12 14	0.1 0.1			
		ASB-197 ASB-198	14 0	15 0.5	0.1			
		ASB-198 ASB-198	0.5 4	4	0.1 0.5			
Former Fuel Oil ASTs	42	ASB-198	6	8	0.9		6-8	Collected per work plan
	72	ASB-198 ASB-198	8 10	10 12	0.4 0.3			
		ASB-198 ASB-198 ASB-198	10 12 14	12 14 15	0.3 0.6 0.1			
Former Location of Gasoline		ASB-198 ASB-199	0	2	0.1		0-2	Collected per work plan
and Diesel Fuel Underground Piping	5	ASB-199 ASB-199	2 4	4 7	0.1 0.1		2-4	Collected per work plan

Page 6 of 7

Feature Name	Feature Number	Location	Start Depth (ft)	Finish Depth (ft)	PID Reading (ppm)	DTW (ft)	Sampled Interval	Sample Collection Rationale
Former Location of Gasoline and Diesel Fuel Underground Piping		ASB-200	0	2	0.1		0-2	Collected per work plan
	5	ASB-200	2	4	0		4.0	
		ASB-200 ASB-200	4 6	6 8	0		4-6	Collected per work plan
lotes:								
ISB	ARCADIS S	oil Borina.						
MW	ARCADIS Monitoring Well.							
IA	Hand Auger.							
IS	Not Sampled							
t	Feet below ground surface.							
pm	Parts per mi							
		e or bedrock rea	ading.					
PID	Photoionizat	tion Detector.						

Page 7 of 7

Table 3.Monitoring Well ConstructionTwin Cities Assembly Plant, St. Paul, Minnesota

Well ID	Unique Well Number	Date Installed (2" Diameter)	Well Diameter (inches)	Surface Elevation ¹ (ft msl)	Top Of Casing Elevation ¹ (ft msl)	Bottom of Well Elevation (ft msl)	Screen Interval (Elev Elev.) (ft msl)	Surface Completion Type
AMW-11	784720	13-Sep-11	2	808.99	808.86	799.47	804.47 - 799.47	Flush Mount
AMW-12	784724	13-Sep-11	2	808.83	808.74	797.3	802.30 - 797.30	Flush Mount
AMW-13	784723	14-Sep-11	2	809.93	809.89	797.92	802.92 - 797.92	Flush Mount
AMW-14	784726	14-Sep-11	2	809.57	809.57	797.57	802.57 - 797.57	Flush Mount
AMW-15	784725	14-Sep-11	2	809.91	809.84	796.79	801.79 - 796.79	Flush Mount
AMW-16	784721	14-Sep-11	2	812.157	811.94	801.28	806.28 - 801.28	Flush Mount
AMW-17	784722	14-Sep-11	2	808.898	811.04	801.15	806.15 - 801.15	Above Ground
AMW-18	784719	15-Sep-11	2	812.83	812.7	798.22	803.22 - 798.22	Flush Mount

Notes:

1

ft msl Feet above mean sea level.

AMW ARCADIS Monitoring Well.

Elev. Elevation.

Surface Elevation and Well Top of Casing Elevation surveyed by Sunde Land Surveying, LLC on November, 2011.

ARCADIS

Table 4.Groundwater Elevation DataTwin Cities Assembly Plant, St. Paul, Minnesota

AMW-0131-Oct-11813.03AMW-0231-Oct-11812.86AMW-03A31-Oct-11811.80	26.31 25.39 17.85 99.67	786.72 787.47 793.95 712.05
	17.85	793.95
AMW-03A 31-Oct-11 811.80		
	99.67	712.05
AMW-03B 31-Oct-11 811.72		112.00
AMW-04 31-Oct-11 829.92	36.74	793.18
AMW-05 31-Oct-11 725.25	Dry	<725.25
AMW-05B 31-Oct-11 723.99	31.76	692.23
AMW-06 31-Oct-11 814.06	26.36	787.70
AMW-07 31-Oct-11 733.48	42.20	691.28
AMW-08 31-Oct-11 830.80	37.63	793.17
AMW-09 31-Oct-11 858.13	79.71	778.42
AMW-10 31-Oct-11 811.27	19.55	791.72
AMW-11 7-Nov-11 808.86	5.79	803.07
AMW-12 7-Nov-11 808.74	6.45	802.29
AMW-13 7-Nov-11 809.89	6.80	803.09
AMW-14 7-Nov-11 809.57	6.72	802.85
AMW-15 7-Nov-11 809.84	6.70	803.14
AMW-16 7-Nov-11 811.94	5.60	806.34
AMW-17 7-Nov-11 811.04	5.85	805.19
AMW-18 7-Nov-11 812.7	10.24	802.46
AMW-19 7-Nov-11 707.84	20.39	687.45
AMW-20 7-Nov-11 710.02	22.60	687.42

ARCADIS

Table 4.Groundwater Elevation DataTwin Cities Assembly Plant, St. Paul, Minnesota

Well ID	Date	Top of Casing Elevation (ft msl)	Depth to Water (ft bls)	Groundwater Elevation (ft msl)
MW-4	31-Oct-11	833.66	7.78	825.88
MW-5	31-Oct-11	827.76	2.90	824.86
MW-6	31-Oct-11	827.76	2.61	825.15

Notes:

AMW	ARCADIS Monitoring Well.
MW	Monitoring Well.
ft msl	Feet above mean sea level.
ft bls	Feet below land surface.
	Not Applicable.
ft	Feet.

ARCADIS

Table 5.Monitoring Well Field ParametersTwin Cities Assembly Plant, St. Paul, Minnesota

Well ID	Date	Temperature (°C)	рН	Field Specific Conductivity (mS/cm)	Turbidity (NTU)
AMW-11	31-Oct-11	12.88	6.93	0.855	233
AMW-12	7-Nov-11	14.30	6.70	0.989	782
AMW-13	31-Oct-11	11.64	7.21	1.110	>800
AMW-14	7-Nov-11	15.17	7.58	2.520	>800
AMW-15	7-Nov-11	11.89	7.05	1.270	337
AMW-16	7-Nov-11	15.12	7.59	0.338	>800
AMW-17	7-Nov-11	11.99	7.16	1.080	458
AMW-18	31-Oct-11	12.13	6.89	0.597	>800

Notes:

°C	Degrees Celsius.
mS/cm	milli-Siemens per centimeter.
NTU	Nephelometric Turbidity Units.
AMW	ARCADIS Monitoring Well.

Table 6. Summary of Detected Constituents in Soil Samples	
Twin Cities Assembly Plant, St. Paul, Minnesota	

Feature Location ID Sample ID Sample Date	Unit	Tier 1 Residential SRV	Tier 2 Recreational SRV	Tier 2 Industrial SRV	TCLP Criteria	North Parking Area ASB-115 ASB-115_2-4(20110822) 8/22/2011	8/22/2011	8/22/2011	North Parking Area ASB-116 ASB-116_6-8(20110822) 8/22/2011 6-8 ft	8/23/2011	8/23/2011	8/23/2011	North Parking Area ASB-118 ASB-118_5-7(20110823) 8/23/2011 5-7 ft
Depth Interval VOCs						2-4 ft	4-6 ft	4-6 ft	0-0 IL	0-2 ft	2-4 ft	2-4 ft	0-7 It
1,2,4-Trimethylbenzene	ug/kg	8000	20000	25000	NA	24 J	9 J	< 250	< 350	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg		10000	6000	NA	< 270	< 270	12 J	< 350	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg		8000	10000	NA	10 J	< 270	< 250	< 350	NA	NA	NA	NA
2-Butanone (MEK)	ug/kg		5500000	19000000	NA	< 1100	< 1100	< 990	< 1400	NA	NA	NA	NA
Benzene	ug/kg ug/kg		14000	10000	NA	< 270	< 270	< 990 < 250	< 350	NA	NA	NA	NA
					NA		< 270			NA		NA	NA
Butylbenzene	ug/kg		70000	92000		< 270		11 J	< 350		NA		
Carbon disulfide cis-1,2-Dichloroethene	ug/kg		160000	190000	NA NA	< 270 < 270	< 270 < 270	< 250 < 250	< 350 < 350	NA NA	NA NA	NA NA	NA NA
,	ug/kg		19000 NG	22000	NA		< 270 50 J			NA			NA
Cyclohexane Ethylbenzene	ug/kg ug/kg		NS 200000	NS 200000	NA	< 540 7.1 J	< 270	55 J 12 J	< 690 < 350	NA	NA NA	NA NA	NA
Isopropylbenzene	ug/kg ug/kg	30000	74000	87000	NA	< 270	< 270	< 250	< 350	NA	NA	NA	NA
Methyl acetate	ug/kg		NS	NS	NA	69 J	95 J	< 230 94 J	< 690	NA	NA	NA	NA
Methylcyclohexane	ug/kg		NS	NS	NA	33 J	32 J	35 J	< 690	NA	NA	NA	NA
Methylene chloride	ug/kg		270000	158000	NA	< 270	< 270	< 250	120 J	NA	NA	NA	NA
Naphthalene	ug/kg		24000	28000	NA	< 270	< 270	< 250	< 350	NA	NA	NA	NA
n-Propylbenzene	ug/kg		70000	93000	NA	< 270	< 270	24 J	< 350	NA	NA	NA	NA
p-lsopropyltoluene	ug/kg		NS	93000 NS	NA	< 270	< 270	< 250	< 350	NA	NA	NA	NA
sec-Butylbenzene	ug/kg		55000	70000	NA	< 270	< 270	< 250	< 350	NA	NA	NA	NA
Styrene	ug/kg		500000	600000	NA	< 270	< 270	< 250	< 350	NA	NA	NA	NA
Tetrachloroethene	ug/kg		145000	131000	NA	< 270	< 270	< 250	< 350	NA	NA	NA	NA
Tetrahydrofuran	ug/kg		NS	NS	NA	< 1100	< 1100	< 990	< 1400	NA	NA	NA	NA
Toluene	ug/kg		260000	305000	NA	< 270	< 270	< 250	< 350	NA	NA	NA	NA
Trichloroethene	ug/kg		82000	46000	NA	< 270	< 270	< 250	< 350	NA	NA	NA	NA
m-Xylene & p-Xylene**	ug/kg		110000	110000	NA	60 J	22 J	10 J	< 690	NA	NA	NA	NA
Xylene, -o**	ug/kg		110000	110000	NA	14 J	< 270	< 250	< 350	NA	NA	NA	NA
Total Xylenes*	ug/kg		110000	110000	NA	74	22	10	ND	NA	NA	NA	NA
SVOCs													
2-Methylnaphthalene	ug/kg		120000	369000	NA	< 1900	< 410	15 J	< 390	65 J	< 400	< 380	< 400
Acenaphthene	ug/kg		1860000	5260000	NA	< 1900	< 410	< 380	< 390	< 1800	< 400	< 380	< 400
Acenaphthylene	ug/kg		NS	NS	NA	< 1900	< 410	< 380	< 390	24 J	< 400	< 380	< 400
Acetophenone	ug/kg		NS	NS	NA	NA	NA	NA 1 380	NA 1 200	NA	NA - 100	NA 1 280	NA 1 400
Anthracene	ug/kg		1000000	45400000	NA	23 J	< 410	< 380	< 390	30 J	< 400	< 380	< 400
Benzaldehyde	ug/kg		NS	NS	NA	NA - 1000	NA	NA 1 380	NA 1 200	NA . 1800	NA - 100	NA 1 280	NA 1 400
Benzo (g,h,i) perylene	ug/kg		NS	NS	NA	< 1900	< 410	< 380	< 390	< 1800	< 400	< 380	< 400
Benzo(a)anthracene	ug/kg		NS	NS	NA	33 J	< 410	< 380	< 390	70 J	< 400	< 380	8.6 J
Benzo(a)pyrene	ug/kg		2000	3000	NA	< 1900	< 410	< 380	< 390	63 J	< 400	< 380	9.3 J
Benzo(b)fluoranthene	ug/kg		NS	NS	NA	25 J	< 410	< 380	< 390	92 J	< 400	< 380	12 J
Benzo(k)fluoranthene	ug/kg		NS	NS	NA	< 1900	< 410	< 380	< 390	50 J	< 400	< 380	6.8 J
bis(2-Ethylhexyl)phthalate	ug/kg		690000 720000	2100000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg		720000	1310000	NA	NA 59 J	NA 14 J	NA - 280	NA - 200	NA	NA - 100	NA - 280	NA 12 I
Chrysene Dibenzo(a.h)anthracene	ug/kg		NS	NS	NA		14 J	< 380	< 390	98 J	< 400	< 380	12 J
Dibenzo(a,n)anthracene Dibenzofuran	ug/kg		NS 130000	NS 810000	NA NA	< 1900 NA	< 410 NA	< 380 NA	< 390 NA	< 1800 NA	< 400 J NA	< 380 NA	< 400 NA
Fluoranthene	ug/kg ug/kg		1290000	6800000	NA	93 J	31 J	< 380	< 390	150 J	8.9 J	< 380	18 J
Fluorene			1290000	4120000	NA	< 1900	< 410	< 380	< 390 < 390	< 1800	< 400	< 380	< 400
Indeno(1,2,3-cd)pyrene	ug/kg ug/kg		1200000 NS	4120000 NS	NA	< 1900 < 1900	< 410 < 410	< 380 < 380	< 390 < 390	< 1800	< 400 < 400	< 380 < 380	< 400 < 400
Naphthalene	ug/kg ug/kg		24000	28000	NA	< 1900	< 410	< 380	< 390 < 390	< 1800 25 J	< 400 < 400	< 380	< 400 < 400
Phenanthrene	ug/kg ug/kg		24000 NS	28000 NS	NA	< 1900 87 J	29 J	< 380	< 390	25 J 83 J	< 400 < 400	< 380	< 400 9.3 J
Pyrene Metals	ug/kg ug/kg		1060000	5800000	NA	66 J	23 J	< 380	< 390	110 J	6.9 J	< 380	9.3 J 15 J
Aluminum	mg/kg	30000	40000	100000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg		16	100	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg		11	20	NA	5.7	3.5	4.4	3.5	4.1	2.5	3.8	4
Barium	mg/kg	-	1100	18000	NA	51	54	61	25	35	64	69	78
Sanan	шу/ку	1100	1100	10000	11/7	51	7	01	20		т	00	10

Feature						North Parking Area							
Location ID		Tier 1	Tier 2	Tier 2	TCLP	ASB-115	ASB-115	ASB-116	ASB-116	ASB-117	ASB-117	ASB-118	ASB-118
Sample ID		Residential	Recreational	Industrial	Criteria	ASB-115_2-4(20110822)	ASB-115_4-6(20110822)	ASB-116_4-6(20110822)	ASB-116_6-8(20110822)	ASB-117_0-2(20110823)	ASB-117_2-4(20110823)	ASB-118_2-4(20110823)	ASB-118_5-7(20110823)
Sample Date	Unit	SRV	SRV	SRV		8/22/2011	8/22/2011	8/22/2011	8/22/2011	8/23/2011	8/23/2011	8/23/2011	8/23/2011
Depth Interval						2-4 ft	4-6 ft	4-6 ft	6-8 ft	0-2 ft	2-4 ft	2-4 ft	5-7 ft
Beryllium	mg/kg	55	75	230	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	25	35	200	NA	< 0.22	< 0.24	0.097 J	< 0.23	0.1 J	0.079 J	0.039 J	< 0.23
Calcium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium, Total***	mg/kg	87/44000	120/60000	650/100000	NA	16	18	14	17	15	13	17	15
Cobalt	mg/kg	600	800	2600	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	100	100	9000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	9000	12000	75000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	300	300	700	NA	5.5	5.5	4.2	5.6	7.1	6.6	5.3	11
Magnesium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	3600	5000	8100	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.5	1.2	1.5	NA	0.023 J	0.022 J	0.014 J	0.024 J	0.03 J	0.022 J	0.023 J	0.019 J
Nickel	mg/kg	560	800	2500	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	160	200	1300	NA	0.55 J	0.69	< 0.56	< 0.57	0.74	0.84	< 0.55	2.2
Silver	mg/kg	160	200	1300	NA	< 0.56	0.27 J	< 0.56	< 0.57	< 0.52	< 0.55	< 0.55	< 0.57
Sodium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	3	3	21	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	30	40	250	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	8700	12000	75000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals - TCLP													
Arsenic	mg/l	NA	NA	NA	5	NA							
PCBs													
Aroclor 1248	ug/kg	1200	1400	8000	NA	< 39	< 41	< 38	< 39	< 37	< 40	< 38	< 40
Aroclor 1260	ug/kg	1200	1400	8000	NA	< 39	< 41	< 38	< 39	< 37	< 40	< 38	< 40
Total Detected PCBs	ug/kg	1200	1400	8000	NA	< 39	< 41	< 38	< 39	< 37	< 40	< 38	< 40
Other													
Gasoline Range Organics	mg/kg	NS	NS	NS	NA	2.8 J	12	7.1 J	NA	NA	NA	NA	NA
Diesel Range Organics	mg/kg	NS	NS	NS	NA	< 11	< 11	< 8.8	< 9.9	< 9.5	< 10	< 9.5	< 10

Notes:

Micrograms per kilogram. ug/kg

Milligrams per kilogram. mg/kg

mg/l Milligrams per liter.

Not detected. <

ASB ARCADIS Soil Boring.

NA Not applicable/not analyzed.

ND Not detected.

NS No standard.

J Estimated result.

Bold Result value is above the MPCA Tier 1 Residential SRV.

Shade Result value is above the MPCA Tier 2 Recreational SRV.

Result value is above the MPCA Tier 2 Industrial SRV. Box

Reporting limit for non detect result exceeds one or more of the SRVs. Italics

VOCs Volatile organic compounds.

SVOCs Semi-volatile organic compounds.

PCBs Polychlorinated biphenyls.

SRV Soil reference value. MPCA

Minnesota Pollution Control Agency. TCLP

Toxicity characteristic leaching procedure. * Sum of detected xylene results (m,p,o).

**

Criteria for total xylenes used.

*** SRVs are for Chromium VI and Chromium III respectively, reported data is for total chromium and is therefore compared to the lower of the SRVs.

Samples ASB-195_6-8(20110912) (240-3807-26)[25X], ASB-195_8-10(20110912) (240-3807

27)[50X] and ASB-194_10-12(20110912) (240-3807-29)[10X] required dilution prior to

Table 6. Summary of Detected Constituents in Soil Samples	
Twin Cities Assembly Plant, St. Paul, Minnesota	

Feature						North Parking Area	North Parking Area	North Parking Area	North Parking Area	North Parking Area	North Parking Area	North Parking Area	North Parking Area
Location ID		Tier 1	Tier 2	Tier 2	TCLP	ASB-123	ASB-123	ASB-124	ASB-124	ASB-125	ASB-125	ASB-126	ASB-126
Sample ID		Residential	Recreational	Industrial	Criteria	= (,	· · ·	ASB-124_2-4(20110824)	· · ·	ASB-125_3-5(20110825)	ASB-125_6-8(20110825)	• • •	ASB-126_6-8(20110825)
Sample Date	Unit	SRV	SRV	SRV		8/24/2011	8/24/2011	8/24/2011	8/24/2011	8/25/2011	8/25/2011	8/25/2011	8/25/2011
Depth Interval						2-4 ft	6-8 ft	2-4 ft	6-8 ft	3-5 ft	6-8 ft	2-4 ft	6-8 ft
VOCs								_					
1,2,4-Trimethylbenzene	ug/kg	8000	20000	25000	NA	120 J	31000	< 330	< 290	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	4000	10000	6000	NA	< 300	< 1300	< 330	< 290	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	3000	8000	10000	NA	110 J	9500	< 330	< 290	NA	NA	NA	NA
2-Butanone (MEK)	ug/kg	5500000	5500000	19000000	NA	< 1200	< 5400	< 1300	< 1200	NA	NA	NA	NA
Benzene	ug/kg	6000	14000	10000	NA	< 300	8400	< 330	< 290	NA	NA	NA	NA
Butylbenzene	ug/kg	30000	70000	92000	NA	13 J	2700	< 330	< 290	NA	NA	NA	NA
Carbon disulfide	ug/kg	65000	160000	190000	NA	< 300	< 1300	83 J	< 290	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	8000	19000	22000	NA	< 300	< 1300	< 330	< 290	NA	NA	NA	NA
Cyclohexane	ug/kg	NS	NS	NS	NA	670	11000	< 660	< 580	NA	NA	NA	NA
Ethylbenzene	ug/kg	200000	200000	200000	NA	150 J	15000	< 330	< 290	NA	NA	NA	NA
Isopropylbenzene	ug/kg	30000	74000	87000	NA	42 J	1200 J	< 330	< 290	NA	NA	NA	NA
Methyl acetate	ug/kg	NS	NS	NS	NA	140 J	< 2700	510 J	< 580	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NS	NS	NS	NA	520 J	6400	< 660	< 580	NA	NA	NA	NA
Methylene chloride	ug/kg	97000	270000	158000	NA	< 300	< 1300	< 330	< 290	NA	NA	NA	NA
Naphthalene	ug/kg	10000	24000	28000	NA	< 300	3600	< 330	< 290	NA	NA	NA	NA
n-Propylbenzene	ug/kg	30000	70000	93000	NA	170 J	6400	< 330	< 290	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NS	NS	NS	NA	< 300	240 J	< 330	< 290	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	25000	55000	70000	NA	< 300	580 J	< 330	< 290	NA	NA	NA	NA
Styrene	ug/kg	210000	500000	600000	NA	< 300	< 1300	< 330	< 290	NA	NA	NA	NA
Tetrachloroethene	ug/kg	72000	145000	131000	NA	< 300	< 1300	< 330	< 290	NA	NA	NA	NA
Tetrahydrofuran	ug/kg	NS	NS	NS	NA	< 1200	< 5400	< 1300	< 1200	NA	NA	NA	NA
Toluene	ug/kg	107000	260000	305000	NA	41 J	24000	< 330	< 290	NA	NA	NA	NA
Trichloroethene	ug/kg	29000	82000	46000	NA	< 300	< 1300	< 330	< 290	NA	NA	NA	NA
m-Xylene & p-Xylene**	ug/kg	45000	110000	110000	NA	150 J	47000	< 660	< 580	NA	NA	NA	NA
Xylene, -o**	ug/kg	45000	110000	110000	NA	73 J	16000	< 330	< 290	NA	NA	NA	NA
Total Xylenes*	ug/kg	45000	110000	110000	NA	223	63000	ND	ND	NA	NA	NA	NA
SVOCs	ug/ng	40000	110000	110000	1.0.1	220	00000		NB				10/1
2-Methylnaphthalene	ug/kg	100000	120000	369000	NA	5.4 J	1400	22 J	< 440	< 400	< 420	< 420	< 420
Acenaphthene	ug/kg	1200000	1860000	5260000	NA	15 J	< 920	< 420	< 440 < 440	< 400 < 400	< 420	< 420	< 420
Acenaphthylene	ug/kg	NS	NS	5200000 NS	NA	< 420	< 920	4.5 J	< 440 < 440	< 400	< 420	< 420	< 420
Acetophenone	ug/kg		NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	ug/kg	7880000	10000000	45400000	NA	< 420	< 920	22 J	< 440	< 400	< 420	< 420	< 420
Benzaldehyde	ug/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo (g,h,i) perylene	ug/kg	NS	NS	NS	NA	< 420	< 920	16 J	< 440	< 400	< 420	< 420	< 420
Benzo(a)anthracene	ug/kg	NS	NS	NS	NA	< 420	< 920	18 J	< 440	< 400	< 420	< 420	< 420
Benzo(a)pyrene	ug/kg	2000	2000	3000	NA	5.3 J	< 920	15 J	< 440	< 400	< 420	< 420	< 420
Benzo(b)fluoranthene		NS	NS	NS	NA	< 420	< 920	27 J	< 440	< 400	< 420	< 420	< 420
Benzo(k)fluoranthene	ug/kg	NS	NS	NS	NA	< 420 < 420	< 920 < 920	27 J 15 J	< 440 < 440	< 400 < 400	< 420 < 420	< 420 < 420	< 420 < 420
bis(2-Ethylhexyl)phthalate	ug/kg	570000	690000	2100000	NA	< 420 NA	< 920 NA	NA	< 440 NA	< 400 NA	< 420 NA	< 420 NA	< 420 NA
••••	ug/kg							NA					NA
Carbazole	ug/kg	700000	720000	1310000	NA NA	NA < 420	NA	NA 27 J	NA < 440	NA < 400	NA - 120	NA - 120	< 420
Chrysene	ug/kg	NS	NS	NS		< 420 < 420	< 920	< 420			< 420	< 420	
Dibenzo(a,h)anthracene Dibenzofuran	ug/kg	NS 104000	NS 130000	NS 810000	NA NA	< 420 NA	< 920 NA	< 420 NA	< 440 NA	< 400 NA	< 420 NA	< 420 NA	< 420 NA
Fluoranthene	ug/kg	104000	1290000	6800000	NA	16 J	31 J	55 J	< 440	< 400	< 420	< 420	< 420
	ug/kg	850000				8.6 J	18 J		< 440 < 440	< 400 < 400	< 420 < 420		
Fluorene	ug/kg	850000 NS	1200000 NS	4120000 NS	NA NA	8.6 J < 420	< 920	5.9 J 14 J	< 440 < 440	< 400 < 400	< 420 < 420	< 420 < 420	< 420 < 420
Indeno(1,2,3-cd)pyrene Naphthalene	ug/kg			NS 28000		< 420 8.8 J	< 920 980		< 440 < 440	< 400 < 400			
Phenanthrene	ug/kg	10000 NS	24000 NS	28000 NS	NA NA	8.8 J 13 J	980 41 J	16 J 43 J	< 440 < 440	< 400 < 400	< 420 < 420	< 420 < 420	< 420 < 420
	ug/kg			NS 5800000			41 J 32 J	43 J 44 J	< 440 < 440	< 400 < 400	< 420 < 420		
Pyrene Metals	ug/kg	890000	1060000	000000	NA	11 J	J∠ J	44 J	< 440	< 400	< 420	< 420	< 420
Aluminum	malka	30000	40000	100000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	mg/kg												
Antimony	mg/kg	12	16	100	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	9	11	20	NA	4	3.4	4.9	1.3	4.7	4.8	5.8	4.7
Barium	mg/kg	1100	1100	18000	NA	99	88	130	45	23	18 J	110	17 J

Feature						North Parking Area							
Location ID		Tier 1	Tier 2	Tier 2	TCLP	ASB-123	ASB-123	ASB-124	ASB-124	ASB-125	ASB-125	ASB-126	ASB-126
Sample ID		Residential	Recreational	Industrial	Criteria	ASB-123_2-4(20110824)	ASB-123_6-8(20110824)	ASB-124_2-4(20110824)	ASB-124_6-8(20110824)	ASB-125_3-5(20110825)	ASB-125_6-8(20110825)	ASB-126_2-4(20110825)	ASB-126_6-8(20110825)
Sample Date	Unit	SRV	SRV	SRV		8/24/2011	8/24/2011	8/24/2011	8/24/2011	8/25/2011	8/25/2011	8/25/2011	8/25/2011
Depth Interval						2-4 ft	6-8 ft	2-4 ft	6-8 ft	3-5 ft	6-8 ft	2-4 ft	6-8 ft
Beryllium	mg/kg	55	75	230	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	25	35	200	NA	0.068 J	0.3	0.26	< 0.25	< 0.22	< 0.24	< 0.23	< 0.22
Calcium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium, Total***	mg/kg	87/44000	120/60000	650/100000	NA	15	11	17	16	11	14	19	15
Cobalt	mg/kg	600	800	2600	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	100	100	9000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	9000	12000	75000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	300	300	700	NA	7.6	12	24	2.5	6.9	2.7	4	2.6
Magnesium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	3600	5000	8100	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.5	1.2	1.5	NA	0.022 J	0.036 J	0.095	0.018 J	< 0.12	0.016 J	0.025 J	0.019 J
Nickel	mg/kg	560	800	2500	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	160	200	1300	NA	0.66	0.55 J	0.94	< 0.64	< 0.54	< 0.6	< 0.58	< 0.56
Silver	mg/kg	160	200	1300	NA	< 0.53	< 0.56	< 0.63	< 0.64	< 0.54	< 0.6	< 0.58	< 0.56
Sodium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	3	3	21	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	30	40	250	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	8700	12000	75000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals - TCLP													
Arsenic	mg/l	NA	NA	NA	5	NA							
PCBs													
Aroclor 1248	ug/kg	1200	1400	8000	NA	< 42	< 45	NA	< 44	NA	NA	NA	NA
Aroclor 1260	ug/kg	1200	1400	8000	NA	< 42	< 45	NA	< 44	NA	NA	NA	NA
Total Detected PCBs	ug/kg	1200	1400	8000	NA	< 42	< 45	NA	< 44	NA	NA	NA	NA
Other													
Gasoline Range Organics	mg/kg	NS	NS	NS	NA	39	390	< 13	< 13	NA	NA	NA	NA
Diesel Range Organics	mg/kg	NS	NS	NS	NA	< 12	46	29	< 12	< 11	< 10	< 11	< 11
Notes:	-												

Notes:

Micrograms per kilogram. ug/kg

Milligrams per kilogram. mg/kg

mg/l Milligrams per liter.

Not detected. <

ASB ARCADIS Soil Boring.

NA Not applicable/not analyzed.

ND Not detected.

NS No standard.

J Estimated result.

Bold Result value is above the MPCA Tier 1 Residential SRV.

Shade Result value is above the MPCA Tier 2 Recreational SRV.

Result value is above the MPCA Tier 2 Industrial SRV. Box

Reporting limit for non detect result exceeds one or more of the SRVs. Italics

VOCs Volatile organic compounds.

SVOCs Semi-volatile organic compounds.

PCBs Polychlorinated biphenyls.

SRV Soil reference value.

MPCA Minnesota Pollution Control Agency.

Toxicity characteristic leaching procedure. TCLP *

Sum of detected xylene results (m,p,o). **

Criteria for total xylenes used.

*** SRVs are for Chromium VI and Chromium III respectively, reported data is for total chromium and is therefore compared to the lower of the SRVs.

Samples ASB-195_6-8(20110912) (240-3807-26)[25X], ASB-195_8-10(20110912) (240-3807

27)[50X] and ASB-194_10-12(20110912) (240-3807-29)[10X] required dilution prior to

Table 6. Summary of Detected Constituents in Soil Samples	
Twin Cities Assembly Plant, St. Paul, Minnesota	

Feature Location ID Sample ID Sample Date Depth Interval	Unit	Tier 1 Residential SRV	Tier 2 Recreational SRV	Tier 2 Industrial SRV	TCLP Criteria	North Parking Area ASB-128 ASB-128_0-2(20110825) 8/25/2011 0-2 ft	North Parking Area ASB-128 ASB-128_6-8(20110825) 8/25/2011 6-8 ft	North Parking Area ASB-129 ASB-129_2-4(20110826) 8/26/2011 2-4 ft	North Parking Area ASB-131 ASB-131_2-4(20110826) 8/26/2011 2-4 ft	North Parking Area ASB-132 ASB-132_2-4(20110826) 8/26/2011 2-4 ft	North Parking Area ASB-134 ASB-134_2-4(20110826) 8/26/2011 2-4 ft	North Parking Area ASB-136 ASB-136_1-3(20110829) 8/29/2011 1-3 ft
VOCs												
1,2,4-Trimethylbenzene	ug/kg	8000	20000	25000	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	4000	10000	6000	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	3000	8000	10000	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone (MEK)	ug/kg	5500000	5500000	1900000	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	ug/kg	6000	14000	10000	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzene	ug/kg	30000	70000	92000	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	65000	160000	190000	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	8000	19000	22000	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	ug/kg	200000	200000	200000	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	30000	74000	87000	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	ug/kg	97000	270000	158000	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	ug/kg	10000	24000	28000	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	30000	70000	93000	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	25000	55000	70000	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	210000	500000	600000	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	72000	145000	131000	NA	NA	NA	NA	NA	NA	NA	NA
Tetrahydrofuran	ug/kg	NS	NS	NS 205000	NA	NA	NA	NA	NA	NA	NA	NA
Toluene Trichloroethene	ug/kg	107000 29000	260000 82000	305000 46000	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
	ug/kg	29000 45000	110000	110000	NA	NA	NA	NA	NA	NA	NA	NA
m-Xylene & p-Xylene**	ug/kg											
Xylene, -o**	ug/kg	45000	110000	110000	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylenes* SVOCs	ug/kg	45000	110000	110000	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	ug/kg	100000	120000	369000	NA	< 400	< 410	< 410	< 380	< 370	< 2000	190 J
Acenaphthene	ug/kg	1200000	1860000	5260000	NA	< 400	< 410	< 410	< 380	< 370	< 2000	< 7300
Acenaphthylene	ug/kg	NS	NS	NS	NA	< 400	< 410	< 410	< 380	< 370	< 2000	< 7300
Acetophenone	ug/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	ug/kg	7880000	1000000	45400000	NA	< 400	< 410	< 410	< 380	< 370	< 2000	< 7300
Benzaldehyde	ug/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA
Benzo (g,h,i) perylene	ug/kg	NS	NS	NS	NA	< 400	< 410	< 410	< 380	13 J	140 J	160 J
Benzo(a)anthracene	ug/kg	NS	NS	NS	NA	< 400	< 410	< 410	< 380	12 J	140 J	130 J
Benzo(a)pyrene	ug/kg	2000	2000	3000	NA	< 400	< 410	< 410	< 380	12 J	140 J	140 J
Benzo(b)fluoranthene	ug/kg	NS	NS	NS	NA	< 400	< 410	< 410	< 380	17 J	190 J	200 J
Benzo(k)fluoranthene	ug/kg	NS	NS	NS	NA	< 400	< 410	< 410	< 380	9 J	53 J	110 J
bis(2-Ethylhexyl)phthalate	ug/kg	570000	690000	2100000	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	700000	720000	1310000	NA	NA - 100	NA	NA	NA 1380	NA 16 J	NA 100 l	NA 220 J
Chrysene	ug/kg	NS	NS NS	NS	NA	< 400	< 410	< 410 < 410	< 380	16 J	190 J	230 J
Dibenzo(a,h)anthracene Dibenzofuran	ug/kg	NS 104000	130000	NS 810000	NA NA	< 400 NA	< 410 NA	< 410 NA	< 380 NA	< 370 NA	< 2000 NA	< 7300 NA
Fluoranthene	ug/kg	104000	1290000	6800000	NA	< 400	< 410	< 410	< 380	24 J	280 J	230 J
Fluorene	ug/kg	850000	1290000	4120000	NA	< 400 < 400	< 410	< 410	< 380	< 370	< 2000	< 7300
Indeno(1,2,3-cd)pyrene	ug/kg ug/kg	850000 NS	NS	4120000 NS	NA	< 400 < 400	< 410 < 410	< 410 < 410	< 380 < 380	< 370 < 370	< 2000 71 J	< 7300 < 7300
Naphthalene	ug/kg	10000	24000	28000	NA	< 400 < 400	< 410	< 410	< 380	< 370	< 2000	94 J
Phenanthrene	ug/kg	NS	24000 NS	28000 NS	NA	8.7 J	< 410	< 410	< 380	11 J	< 2000 110 J	94 J 270 J
Pyrene Metals	ug/kg	890000	1060000	5800000	NA	< 400	< 410	< 410	< 380	25 J	260 J	210 J
Aluminum	mg/kg	30000	40000	100000	NA	NA	NA	NA	NA	NA	NA	NA
Antimony		12	40000	100000	NA	NA	NA	NA	NA	NA	NA	NA
Animony Arsenic	mg/kg		10		NA	17 J		5.3	5.1	3.4		
	mg/kg	9		20			4.3				4.3	4.4
Barium	mg/kg	1100	1100	18000	NA	83 J	100	110	39	47	88	59

Feature						North Parking Area						
Location ID		Tier 1	Tier 2	Tier 2	TCLP	ASB-128	ASB-128	ASB-129	ASB-131	ASB-132	ASB-134	ASB-136
Sample ID		Residential	Recreational	Industrial	Criteria	ASB-128_0-2(20110825)	ASB-128_6-8(20110825)	ASB-129_2-4(20110826)	ASB-131_2-4(20110826)	ASB-132_2-4(20110826)	ASB-134_2-4(20110826)	ASB-136_1-3(20110829)
Sample Date	Unit	SRV	SRV	SRV		8/25/2011	8/25/2011	8/26/2011	8/26/2011	8/26/2011	8/26/2011	8/29/2011
Depth Interval						0-2 ft	6-8 ft	2-4 ft	2-4 ft	2-4 ft	2-4 ft	1-3 ft
Beryllium	mg/kg	55	75	230	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	25	35	200	NA	< 0.23	0.049 J	0.11 J	< 0.21	< 0.2	0.12 J	0.46
Calcium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA
Chromium, Total***	mg/kg	87/44000	120/60000	650/100000	NA	8.5	14	18	8.7	10	14	7.7
Cobalt	mg/kg	600	800	2600	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	100	100	9000	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	9000	12000	75000	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	300	300	700	NA	10 J	9.3	9.4	3.9	4.6	7.8	47
Magnesium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	3600	5000	8100	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.5	1.2	1.5	NA	0.019 J	0.042 J	0.029 J	0.025 J	0.024 J	0.019 J	0.065 J
Nickel	mg/kg	560	800	2500	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	160	200	1300	NA	< 0.57	< 0.59	< 0.62	< 0.53	< 0.5	< 0.56	< 0.53
Silver	mg/kg	160	200	1300	NA	< 0.57	< 0.59	< 0.62	< 0.53	< 0.5	< 0.56	< 0.53
Sodium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	3	3	21	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	30	40	250	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	8700	12000	75000	NA	NA	NA	NA	NA	NA	NA	NA
Metals - TCLP												
Arsenic	mg/l	NA	NA	NA	5	NA						
PCBs												
Aroclor 1248	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA	NA	NA
Total Detected PCBs	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA	NA	NA
Other												
Gasoline Range Organics	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA
Diesel Range Organics	mg/kg	NS	NS	NS	NA	< 10	< 10	< 10	< 10	< 12	180 J	550

Notes:

ug/kg Micrograms per kilogram.

mg/kg Milligrams per kilogram.

mg/l Milligrams per liter.

< Not detected.

ASB ARCADIS Soil Boring.

NA Not applicable/not analyzed.

ND Not detected.

NS No standard.

J Estimated result.

Bold Result value is above the MPCA Tier 1 Residential SRV.

Shade Result value is above the MPCA Tier 2 Recreational SRV.

Box Result value is above the MPCA Tier 2 Industrial SRV.

Italics Reporting limit for non detect result exceeds one or more of the SRVs.

VOCs Volatile organic compounds.

SVOCs Semi-volatile organic compounds.

PCBs Polychlorinated biphenyls.

SRV Soil reference value.

MPCA Minnesota Pollution Control Agency.

TCLP Toxicity characteristic leaching procedure.

* Sum of detected xylene results (m,p,o).

** Criteria for total xylenes used.

*** SRVs are for Chromium VI and Chromium III respectively, reported data is for total chromium and is therefore compared to the lower of the SRVs.

Samples ASB-195_6-8(20110912) (240-3807-26)[25X], ASB-195_8-10(20110912) (240-3807

27)[50X] and ASB-194_10-12(20110912) (240-3807-29)[10X] required dilution prior to

Table 6. Summary of Detected Constituents in Soil Samples	
Twin Cities Assembly Plant, St. Paul, Minnesota	

Feature Location ID Sample ID		Tier 1 Residential	Tier 2 Recreational	Tier 2 Industrial	TCLP Criteria	North Parking Area ASB-137 ASB-137 2-4(20110829)	North Parking Area ASB-141 ASB-141 2-4(20110830)	North Parking Area ASB-141 ASB-141_6-8(20110830)	North Parking Area ASB-142 ASB-142 2-4(20110830)	North Parking Area ASB-143 ASB-143_1-3(20110830) 5	1 ASB-127 8-127 0-2(201108)	1 ASB-133 ASB-133 2-4(20110901)	1 ASB-144 ASB-144_2-4(20110830)
Sample Date	Unit	SRV	SRV	SRV	Cinteria	8/29/2011	8/30/2011	8/30/2011	8/30/2011	8/30/2011	8/25/2011	9/1/2011	8/30/2011
Depth Interval	onic	UNI	U.V.	U.V.		2-4 ft	2-4 ft	6-8 ft	2-4 ft	1-3 ft	0-2 ft	2-4 ft	2-4 ft
VOCs													
1,2,4-Trimethylbenzene	ug/kg	8000	20000	25000	NA	NA	NA	NA	NA	NA	< 290	NA	< 280
1,2-Dichloroethane	ug/kg	4000	10000	6000	NA	NA	NA	NA	NA	NA	< 290	NA	< 280
1,3,5-Trimethylbenzene	ug/kg	3000	8000	10000	NA	NA	NA	NA	NA	NA	< 290	NA	< 280
2-Butanone (MEK)	ug/kg	5500000	5500000	19000000	NA	NA	NA	NA	NA	NA	< 1200	NA	< 1100
Benzene	ug/kg	6000	14000	10000	NA	NA	NA	NA	NA	NA	< 290	NA	< 280
Butylbenzene	ug/kg	30000	70000	92000	NA	NA	NA	NA	NA	NA	< 290	NA	< 280
Carbon disulfide	ug/kg	65000	160000	190000	NA	NA	NA	NA	NA	NA	56 J	NA	< 280
cis-1,2-Dichloroethene	ug/kg	8000	19000	22000	NA	NA	NA	NA	NA	NA	< 290	NA	< 280
Cyclohexane	ug/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	< 580	NA	< 550
Ethylbenzene	ug/kg	200000	200000	200000	NA	NA	NA	NA	NA	NA	< 290	NA	< 280
Isopropylbenzene	ug/kg	30000	74000	87000	NA	NA	NA	NA	NA	NA	< 290	NA	< 280
Methyl acetate	ug/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	280 J	NA	31 J
Methylcyclohexane	ug/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	< 580	NA	< 550
Methylene chloride	ug/kg	97000	270000	158000	NA	NA	NA	NA	NA	NA	< 290	NA	< 280
Naphthalene	ug/kg	10000	24000	28000	NA	NA	NA	NA	NA	NA	< 290	NA	< 280
n-Propylbenzene	ug/kg	30000	70000	93000	NA	NA	NA	NA	NA	NA	< 290	NA	< 280
p-Isopropyltoluene	ug/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	< 290	NA	< 280
sec-Butylbenzene	ug/kg	25000	55000	70000	NA	NA	NA	NA	NA	NA	< 290	NA	< 280
Styrene	ug/kg	210000	500000	600000	NA	NA	NA	NA	NA	NA	< 290	NA	< 280
Tetrachloroethene	ug/kg	72000	145000	131000	NA	NA	NA	NA	NA	NA	< 290	NA	< 280
Tetrahydrofuran	ug/kg	NS 107000	NS	NS 305000	NA NA	NA	NA	NA NA	NA NA	NA	< 1200 < 290	NA	< 1100 < 280
Toluene Trichloroethene	ug/kg ug/kg	29000	260000 82000	46000	NA	NA NA	NA NA	NA	NA	NA NA	< 290 < 290	NA NA	< 280 < 280
m-Xylene & p-Xylene**	ug/kg	29000 45000	110000	110000	NA	NA	NA	NA	NA	NA	< 580	NA	< 550
Xylene, -o**		45000	110000	110000	NA	NA	NA	NA	NA	NA	< 290	NA	< 280
Total Xylenes*	ug/kg ug/kg	45000 45000	110000	110000	NA	NA	NA	NA	NA	NA	< 290 ND	NA	< 280 ND
SVOCs													
2-Methylnaphthalene	ug/kg	100000	120000	369000	NA	34 J	< 440	< 410	< 410	< 400	< 430	< 360	< 360
Acenaphthene	ug/kg	1200000	1860000	5260000	NA	< 420	< 440	< 410	< 410	< 400	< 430	< 360	< 360
Acenaphthylene	ug/kg	NS	NS	NS	NA	12 J	< 440	< 410	< 410	< 400	< 430	< 360	< 360
Acetophenone	ug/kg	NS	NS	NS	NA	NA	NA	NA	NA . 110	NA 100	14 J	< 360	< 360
Anthracene	ug/kg	7880000	1000000	45400000	NA	17 J	< 440	< 410	< 410	< 400	< 430	< 360	< 360
Benzaldehyde	ug/kg	NS	NS	NS	NA	NA 24 J	NA - 140	NA - 110	NA	NA - 100	56 J	< 360	< 360
Benzo (g,h,i) perylene Benzo(a)anthracene	ug/kg ug/kg	NS NS	NS NS	NS NS	NA NA	34 J 41 J	< 440 < 440	< 410 < 410	< 410 < 410	< 400 < 400	8.4 J 8.2 J	< 360 < 360	< 360 < 360
Benzo(a)pyrene	ug/kg	2000	2000	3000	NA	44 J	< 440	< 410	< 410	< 400	6.2 J	< 360	< 360
Benzo(b)fluoranthene	ug/kg	NS	NS	NS	NA	73 J	< 440	< 410	< 410	< 400	12 J	< 360	< 360
Benzo(k)fluoranthene	ug/kg ug/kg	NS	NS	NS	NA	25 J	< 440	< 410	< 410	< 400	6.3 J	< 360	< 360
bis(2-Ethylhexyl)phthalate	ug/kg	570000	690000	2100000	NA	NA	NA	NA	NA	NA	< 430	< 360	< 360
Carbazole	ug/kg	700000	720000	1310000	NA	NA	NA	NA	NA	NA	< 430	< 360	< 360
Chrysene	ug/kg	NS	NS	NS	NA	55 J	< 440	< 410	< 410	< 400	13 J	< 360	< 360
Dibenzo(a,h)anthracene	ug/kg	NS	NS	NS	NA	7.7 J	< 440	< 410	< 410	< 400	< 430	< 360	< 360
Dibenzofuran	ug/kg	104000	130000	810000	NA	NA	NA	NA	NA	NA	< 430	< 360	< 360
Fluoranthene	ug/kg	1080000	1290000	6800000	NA	80 J	< 440	< 410	< 410	< 400	22 J	< 360	< 360
Fluorene	ug/kg	850000	1200000	4120000	NA	6 J	< 440	< 410	< 410	< 400	< 430	< 360	< 360
Indeno(1,2,3-cd)pyrene	ug/kg	NS	NS	NS	NA	32 J	< 440	< 410	< 410	< 400	< 430	< 360	< 360
Naphthalene	ug/kg	10000	24000	28000	NA	20 J	< 440	< 410	< 410	< 400	11 J	< 360	< 360
Phenanthrene	ug/kg	NS	NS	NS	NA	72 J	< 440	< 410	< 410	< 400	12 J	< 360	< 360
Pyrene Metals	ug/kg	890000	1060000	5800000	NA	61 J	< 440	< 410	< 410	< 400	16 J	< 360	< 360
Aluminum	mg/kg	30000	40000	100000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	12	16	100	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	9	11	20	NA	7.2	3.8	7.5	3	2.1	5.4	1.1	7.6
Barium	mg/kg	1100	1100	18000	NA	70	21 J	39	16 J	23	98	14 J	120

Feature						North Parking Area	1	1	1				
Location ID		Tier 1	Tier 2	Tier 2	TCLP	ASB-137	ASB-141	ASB-141	ASB-142	ASB-143	ASB-127	ASB-133	ASB-144
Sample ID		Residential	Recreational	Industrial	Criteria	ASB-137_2-4(20110829)	ASB-141_2-4(20110830)	ASB-141_6-8(20110830)	ASB-142_2-4(20110830)	ASB-143_1-3(20110830) S	B-127_0-2(2011082 ASI	3-133_2-4(20110901)	ASB-144_2-4(20110830)
Sample Date	Unit	SRV	SRV	SRV		8/29/2011	8/30/2011	8/30/2011	8/30/2011	8/30/2011	8/25/2011	9/1/2011	8/30/2011
Depth Interval						2-4 ft	2-4 ft	6-8 ft	2-4 ft	1-3 ft	0-2 ft	2-4 ft	2-4 ft
Beryllium	mg/kg	55	75	230	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	25	35	200	NA	0.18 J	< 0.26	< 0.21	< 0.22	< 0.21	0.11 J	< 0.18	0.28
Calcium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium, Total***	mg/kg	87/44000	120/60000	650/100000	NA	12	16	24	14	12	15	4.1	9.1
Cobalt	mg/kg	600	800	2600	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	100	100	9000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	9000	12000	75000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	300	300	700	NA	14	2.9	4.1	3	3.1	9.7	1.2	4.8
Magnesium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	3600	5000	8100	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.5	1.2	1.5	NA	0.061 J	< 0.13	0.035 J	0.019 J	0.014 J	0.024 J	0.023 J	< 0.086
Nickel	mg/kg	560	800	2500	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	160	200	1300	NA	< 0.62	< 0.65	< 0.52	< 0.55	< 0.53	< 0.6	0.49	< 0.48
Silver	mg/kg	160	200	1300	NA	< 0.62	< 0.65	< 0.52	< 0.55	< 0.53	< 0.6	< 0.44	< 0.48
Sodium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	3	3	21	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	30	40	250	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	8700	12000	75000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals - TCLP													
Arsenic	mg/l	NA	NA	NA	5	NA	NA	NA	NA	NA	NA	NA	NA
PCBs													
Aroclor 1248	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA	< 43	< 36	< 36
Aroclor 1260	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA	< 43	< 36	< 36
Total Detected PCBs	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA	< 43	< 36	< 36
Other													
Gasoline Range Organics	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diesel Range Organics	mg/kg	NS	NS	NS	NA	12	12	< 11	< 11	< 10	< 10	< 9.3	< 9.3

Notes:

Micrograms per kilogram. ug/kg

Milligrams per kilogram. mg/kg

mg/l Milligrams per liter.

Not detected. <

ASB ARCADIS Soil Boring.

NA Not applicable/not analyzed.

ND Not detected.

NS No standard.

J Estimated result.

Bold Result value is above the MPCA Tier 1 Residential SRV.

Shade Result value is above the MPCA Tier 2 Recreational SRV.

Result value is above the MPCA Tier 2 Industrial SRV. Box

Reporting limit for non detect result exceeds one or more of the SRVs. Italics

VOCs Volatile organic compounds.

SVOCs Semi-volatile organic compounds.

PCBs Polychlorinated biphenyls.

SRV Soil reference value. MPCA

Minnesota Pollution Control Agency. TCLP

Toxicity characteristic leaching procedure. *

Sum of detected xylene results (m,p,o). **

Criteria for total xylenes used.

*** SRVs are for Chromium VI and Chromium III respectively, reported data is for total chromium and is therefore compared to the lower of the SRVs.

Samples ASB-195_6-8(20110912) (240-3807-26)[25X], ASB-195_8-10(20110912) (240-3807

27)[50X] and ASB-194_10-12(20110912) (240-3807-29)[10X] required dilution prior to

Table 6. Summary of Detected Constituents in Soil Samples
Twin Cities Assembly Plant, St. Paul, Minnesota

Feature						1	1	1	3	3	3	4	4
Location ID		Tier 1	Tier 2	Tier 2	TCLP	ASB-178	ASB-184	ASB-187	ASB-138	ASB-139	ASB-140	ASB-119	ASB-119
Sample ID		Residential	Recreational	Industrial	Criteria	ASB-178_0-2(20110908)	ASB-184_2-4(20110909)	ASB-187_2-4(20110909)	ASB-138_2-4(20110829)	ASB-139_6-8(20110829)	ASB-140_6-8(20110829)	ASB-119_5-7(20110823)	ASB-119_8-10(20110823)
Sample Date	Unit	SRV	SRV	SRV		9/8/2011	9/9/2011	9/9/2011	8/29/2011	8/29/2011	8/30/2011	8/23/2011	8/23/2011
Depth Interval						0-2 ft	2-4 ft	2-4 ft	2-4 ft	6-8 ft	6-8 ft	5-7 ft	8-10 ft
VOCs													
1,2,4-Trimethylbenzene	ug/kg	8000	20000	25000	NA	< 290	< 300	< 260	< 260	150 J	< 290 J	< 280	< 310
1,2-Dichloroethane	ug/kg	4000	10000	6000	NA	< 290	< 300	< 260	< 260	< 280 J	< 290 J	< 280	< 310
1,3,5-Trimethylbenzene	ug/kg	3000	8000	10000	NA	< 290	< 300	< 260	< 260	43 J	< 290 J	< 280	< 310
2-Butanone (MEK)	ug/kg	5500000	5500000	19000000	NA	< 1200	< 1200	< 1000	< 1000	< 1100 J	< 1100 J	< 1100	< 1200
Benzene	ug/kg	6000	14000	10000	NA	< 290	< 300	< 260	< 260	< 280 J	< 290 J	< 280	< 310
Butylbenzene	ug/kg	30000	70000	92000	NA	< 290	< 300	< 260	< 260	< 280 J	< 290 J	< 280	< 310
Carbon disulfide	ug/kg	65000	160000	190000	NA	< 290	54 J	< 260	< 260	< 280 J	< 290 J	54 J	< 310
cis-1,2-Dichloroethene	ug/kg		19000	22000	NA	< 290	< 300	< 260	< 260	< 280 J	< 290 J	< 280	< 310
Cyclohexane	ug/kg	NS	NS	NS	NA	< 580	< 590	< 510	< 510	< 550 J	< 570 J	< 560	< 620
Ethylbenzene	ug/kg	200000	200000	200000	NA	< 290	< 300	< 260	< 260	< 280 J	< 290 J	< 280	< 310
Isopropylbenzene	ug/kg	30000	74000	87000	NA	< 290	< 300	< 260	< 260	< 280 J	< 290 J	< 280	< 310
Methyl acetate	ug/kg	NS	NS	NS	NA	< 580	420 J	< 510	< 510	< 550 J	< 570 J	110 J	41 J
Methylcyclohexane	ug/kg		NS	NS	NA	< 580	< 590	< 510	< 510	< 550 J	< 570 J	< 560	< 620
Methylene chloride	ug/kg	97000	270000	158000	NA	< 290	< 300	< 260	< 260	< 280 J	< 290 J	< 280	< 310
Naphthalene	ug/kg	10000	24000	28000	NA	< 290	29 J	< 260	< 260	< 820 J	< 290 J	< 280	< 310
n-Propylbenzene	ug/kg	30000	70000	93000	NA	< 290	< 300	< 260	< 260	< 280 J	< 290 J	< 280	< 310
p-Isopropyltoluene	ug/kg	NS	NS	NS	NA	< 290	< 300	< 260	< 260	< 280 J	< 290 J	< 280	< 310
sec-Butylbenzene	ug/kg	25000	55000	70000	NA	< 290	< 300	< 260	< 260	< 280 J	< 290 J	< 280	< 310
Styrene	ug/kg	210000	500000	600000	NA	< 290	< 300	< 260	< 260	< 280 J	< 290 J	< 280	< 310
Tetrachloroethene	ug/kg		145000	131000	NA	< 290	< 300	< 260	< 260	< 280 J	< 290 J	< 280	< 310
Tetrahydrofuran	ug/kg		NS	NS	NA	< 1200	< 1200	< 1000	< 1000	< 1100 J	< 1100 J	< 1100	< 1200
Toluene	ug/kg	107000	260000	305000	NA	< 290	< 300	< 260	< 260	< 280 J	< 290 J	< 280	< 310
Trichloroethene	ug/kg	29000	82000	46000	NA	< 290	< 300	< 260	< 260	< 280 J	< 290 J	< 280	< 310
m-Xylene & p-Xylene**	ug/kg	45000	110000	110000	NA	< 580	< 590	< 510	< 510	< 550	< 570 J	< 560	< 620
Xylene, -o**	ug/kg	45000	110000	110000	NA	< 290	< 300	< 260	< 260	16 J	< 290 J	< 280	< 310
Total Xylenes*	ug/kg	45000	110000	110000	NA	ND	ND	ND	ND	16	ND	ND	ND
SVOCs													
2-Methylnaphthalene	ug/kg		120000	369000	NA	< 390	21 J	< 370	NA	NA	NA	NA	NA
Acenaphthene	ug/kg		1860000	5260000	NA	< 390	58 J	< 370	NA	NA	NA	NA	NA
Acenaphthylene	ug/kg		NS	NS	NA	< 390	< 450	< 370	NA	NA	NA	NA	NA
Acetophenone	ug/kg		NS	NS	NA	< 390	< 450	< 370	NA	NA	NA	NA	NA
Anthracene	ug/kg	7880000	1000000	45400000	NA	< 390	130 J	< 370	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg		NS	NS	NA	< 390	55 J	< 370	NA	NA	NA	NA	NA
Benzo (g,h,i) perylene	ug/kg		NS	NS	NA	< 390	120 J	< 370	NA	NA	NA	NA	NA
Benzo(a)anthracene	ug/kg		NS	NS	NA	< 390	220 J	< 370	NA	NA	NA	NA	NA
Benzo(a)pyrene	ug/kg		2000	3000	NA	< 390	170 J	< 370	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	ug/kg		NS	NS	NA	< 390	210 J	< 370	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	ug/kg		NS	NS 2100000	NA	< 390	97 J	< 370	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg		690000	2100000	NA	< 390	< 450 20 J	< 370	NA	NA	NA	NA	NA
Carbazole	ug/kg		720000	1310000 NS	NA NA	< 390 < 390	39 J 200 J	< 370 < 370	NA NA	NA NA	NA NA	NA NA	NA NA
Chrysene	ug/kg		NS NS	NS NS	NA	< 390 < 390	200 J 23 J	< 370 < 370	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene Dibenzofuran	ug/kg ug/kg		130000	810000	NA	< 390	23 J 37 J	< 370	NA	NA	NA	NA	NA
Fluoranthene	ug/kg ug/kg		1290000	6800000	NA	< 390	500	< 370	NA	NA	NA	NA	NA
Fluorene	ug/kg		1200000	4120000	NA	< 390	78 J	< 370	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	ug/kg ug/kg		NS	4120000 NS	NA	< 390	90 J	< 370	NA	NA	NA	NA	NA
Naphthalene	ug/kg		24000	28000	NA	< 390	38 J	< 370	NA	NA	NA	NA	NA
Phenanthrene	ug/kg ug/kg		24000 NS	28000 NS	NA	< 390	440 J	< 370	NA	NA	NA	NA	NA
Pyrene	ug/kg		1060000	5800000	NA	< 390	350 J	< 370	NA	NA	NA	NA	NA
Metals	49/119	00000			11/1		0000	2010	1.11	1 17 1	1 1 1	1 17 1	1 17 1
Aluminum	mg/kg	30000	40000	100000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg		16	100	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg		11	20	NA	3.3	5.7	4.3	NA	NA	NA	NA	NA
Barium	mg/kg	-	1100	18000	NA	22	96	54	NA	NA	NA	NA	NA
		. 100						~ '					

Feature						1	1	1	3	3	3	4	4
Location ID		Tier 1	Tier 2	Tier 2	TCLP	ASB-178	ASB-184	ASB-187	ASB-138	ASB-139	ASB-140	ASB-119	ASB-119
Sample ID		Residential	Recreational	Industrial	Criteria	ASB-178_0-2(20110908)	ASB-184_2-4(20110909)	ASB-187_2-4(20110909)	ASB-138_2-4(20110829)	ASB-139_6-8(20110829)	ASB-140_6-8(20110829)	ASB-119_5-7(20110823)	ASB-119_8-10(20110823)
Sample Date	Unit	SRV	SRV	SRV		9/8/2011	9/9/2011	9/9/2011	8/29/2011	8/29/2011	8/30/2011	8/23/2011	8/23/2011
Depth Interval						0-2 ft	2-4 ft	2-4 ft	2-4 ft	6-8 ft	6-8 ft	5-7 ft	8-10 ft
Beryllium	mg/kg	55	75	230	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	25	35	200	NA	< 0.21	0.14 J	0.094 J	NA	NA	NA	NA	NA
Calcium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium, Total***	mg/kg	87/44000	120/60000	650/100000	NA	15	16	11	NA	NA	NA	NA	NA
Cobalt	mg/kg	600	800	2600	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	100	100	9000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	9000	12000	75000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	300	300	700	NA	3	8.3	2.8	2.1	4.5	2.6	7.5	3.9
Magnesium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	3600	5000	8100	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.5	1.2	1.5	NA	< 0.11	< 0.13	< 0.095	NA	NA	NA	NA	NA
Nickel	mg/kg	560	800	2500	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	160	200	1300	NA	< 0.53	1.1	< 0.52	NA	NA	NA	NA	NA
Silver	mg/kg	160	200	1300	NA	< 0.53	< 0.64	< 0.52	NA	NA	NA	NA	NA
Sodium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	3	3	21	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	30	40	250	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	8700	12000	75000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals - TCLP													
Arsenic	mg/l	NA	NA	NA	5	NA							
PCBs													
Aroclor 1248	ug/kg	1200	1400	8000	NA	< 39	< 45	< 37	NA	NA	NA	NA	NA
Aroclor 1260	ug/kg	1200	1400	8000	NA	< 39	< 45 J	< 37	NA	NA	NA	NA	NA
Total Detected PCBs	ug/kg	1200	1400	8000	NA	< 39	< 45 J	< 37	NA	NA	NA	NA	NA
Other													
Gasoline Range Organics	mg/kg	NS	NS	NS	NA	NA	NA	NA	< 13	8.6 J	< 12	< 13	< 13
Diesel Range Organics	mg/kg	NS	NS	NS	NA	< 9.9 J	20	< 9.8	< 11	1100	< 10	< 11	< 11

Notes:

Micrograms per kilogram. ug/kg

Milligrams per kilogram. mg/kg

mg/l Milligrams per liter.

Not detected. <

ASB ARCADIS Soil Boring.

NA Not applicable/not analyzed.

ND Not detected.

NS No standard.

J Estimated result.

Bold Result value is above the MPCA Tier 1 Residential SRV.

Shade Result value is above the MPCA Tier 2 Recreational SRV.

Result value is above the MPCA Tier 2 Industrial SRV. Box

Reporting limit for non detect result exceeds one or more of the SRVs. Italics

VOCs Volatile organic compounds.

SVOCs Semi-volatile organic compounds.

PCBs Polychlorinated biphenyls.

SRV Soil reference value.

MPCA Minnesota Pollution Control Agency.

Toxicity characteristic leaching procedure. TCLP *

Sum of detected xylene results (m,p,o).

** Criteria for total xylenes used.

*** SRVs are for Chromium VI and Chromium III respectively, reported data is for total chromium and is therefore compared to the lower of the SRVs.

Samples ASB-195_6-8(20110912) (240-3807-26)[25X], ASB-195_8-10(20110912) (240-3807

27)[50X] and ASB-194_10-12(20110912) (240-3807-29)[10X] required dilution prior to

Table 6. Summary of Detected Constituents in Soil Samples
Twin Cities Assembly Plant, St. Paul, Minnesota

Feature						4	4	5	5	5	5	5	5
Location ID		Tier 1	Tier 2	Tier 2	TCLP	ASB-120	ASB-120	ASB-121	ASB-121	ASB-122	ASB-122	ASB-199	ASB-199
Sample ID		Residential	Recreational	Industrial	Criteria	ASB-120_4-6(20110824)	ASB-120_6-8(20110824)		ASB-121_8-10(20110824)	ASB-122_2-4(20110824)	ASB-122_6-8(20110824)	ASB-199_0-2(20111104)	ASB-199_2-4(20111104)
Sample Date	Unit	SRV	SRV	SRV		8/24/2011	8/24/2011	8/24/2011	8/24/2011	8/24/2011	8/24/2011	11/4/2011	11/4/2011
Depth Interval						4-6 ft	6-8 ft	5-7 ft	8-10 ft	2-4 ft	6-8 ft	0-2 ft	2-4 ft
VOCs												-	
1,2,4-Trimethylbenzene	ug/kg	8000	20000	25000	NA	< 320	< 300	31000	110000	84 J	64000	< 260	< 270
1,2-Dichloroethane	ug/kg	4000	10000	6000	NA	33 J	99 J	< 1400	< 3400	< 270	< 1600	< 260	< 270
1,3,5-Trimethylbenzene	ug/kg	3000	8000	10000	NA	< 320	< 300	9700	35000	59 J	20000	< 260	< 270
2-Butanone (MEK)	ug/kg	5500000	5500000	19000000	NA	< 1300	< 1200	< 5500	< 14000	< 1100	< 6500	88 J	82 J
Benzene	ug/kg	6000	14000	10000	NA	< 320	< 300	2900	15000	1400	9200	< 260	< 270
Butylbenzene	ug/kg	30000	70000	92000	NA	< 320	< 300	2200	7200	< 270	4300	< 260	< 270
Carbon disulfide	ug/kg	65000	160000	190000	NA	67 J	55 J	< 1400	< 3400	< 270	< 1600	< 260	< 270
cis-1,2-Dichloroethene	ug/kg	8000	19000	22000	NA	< 320	< 300	< 1400	< 3400	< 270	< 1600	< 260	< 270
Cyclohexane	ug/kg	NS	NS	NS	NA	< 650	< 600	11000	35000	820	24000	< 520	< 550
Ethylbenzene	ug/kg	200000	200000	200000	NA	< 320	< 300	18000	70000	51 J	36000	< 260	< 270
Isopropylbenzene	ug/kg	30000	74000	87000	NA	< 320	< 300	1300 J	4800	30 J	2600	< 260	< 270
Methyl acetate Methylcyclohexane	ug/kg	NS NS	NS NS	NS NS	NA NA	290 J < 650	81 J < 600	< 2800 12000	< 6900 36000	81 J 590	< 3300 19000	57 J < 520	30 J < 550
Methylene chloride	ug/kg ug/kg	97000	270000	158000	NA	< 320	< 300	< 1400	< 3400	100 J	< 1600	< 260	< 330 < 270
Naphthalene	ug/kg	10000	24000	28000	NA	< 320	< 300	2900	11000	< 270	6300	< 260	< 270
n-Propylbenzene	ug/kg	30000	70000	93000	NA	< 320	< 300	6500	23000	110 J	13000	< 260	< 270
p-Isopropyltoluene	ug/kg		NS	NS	NA	< 320	< 300	220 J	740 J	< 270	410 J	< 260	< 270
sec-Butylbenzene	ug/kg	25000	55000	70000	NA	< 320	< 300	570 J	1900 J	< 270	1100 J	< 260	< 270
Styrene	ug/kg	210000	500000	600000	NA	< 320	< 300	< 1400	< 3400	< 270	< 1600	< 260	< 270
Tetrachloroethene	ug/kg	72000	145000	131000	NA	< 320	< 300	< 1400	< 3400	< 270	< 1600	< 260	< 270
Tetrahydrofuran	ug/kg	NS	NS	NS	NA	< 1300	< 1200	< 5500	< 14000	< 1100	< 6500	< 1000	< 1100
Toluene	ug/kg	107000	260000	305000	NA	< 320	< 300	16000	120000	36 J	28000	< 260	< 270
Trichloroethene	ug/kg	29000	82000	46000	NA	< 320	< 300	< 1400	< 3400	< 270	< 1600	< 260	< 270
m-Xylene & p-Xylene**	ug/kg	45000	110000	110000	NA	< 650	< 600	61000	240000	620	120000	< 520	< 550
Xylene, -o**	ug/kg	45000	110000	110000	NA	< 320	< 300	21000	87000	82 J	42000	< 260	< 270
Total Xylenes*	ug/kg	45000	110000	110000	NA	ND	ND	82000	327000	702	162000	ND	ND
SVOCs												-	
2-Methylnaphthalene	ug/kg	100000	120000	369000	NA	NA	NA	1600 J	4200	18 J	2500	< 370	< 360
Acenaphthene	ug/kg	1200000	1860000	5260000	NA	NA	NA	180 J	120 J	35 J	33 J	< 370	< 360
Acenaphthylene	ug/kg	NS	NS	NS	NA	NA	NA	48 J	< 1900	4.2 J	< 860	< 370	< 360
Acetophenone	ug/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	ug/kg	7880000	10000000	45400000	NA	NA	NA	1000 J	160 J	66 J	< 860	< 370	< 360
Benzaldehyde	ug/kg	NS	NS	NS	NA	NA	NA	NA 2400	NA 110 I	NA	NA 1860	NA	NA 1 260
Benzo (g,h,i) perylene Benzo(a)anthracene	ug/kg	NS NS	NS NS	NS NS	NA NA	NA NA	NA NA	2400 4500	110 J 250 J	86 J 170 J	< 860 < 860	20 J 19 J	< 360 < 360
Benzo(a)pyrene	ug/kg ug/kg	2000	2000	3000	NA	NA	NA	4300	200 J	150 J	< 860	21 J	< 360
Benzo(b)fluoranthene	ug/kg		NS	NS	NA	NA	NA	5200	250 J	130 J	< 860	213 34 J	< 360
Benzo(k)fluoranthene	ug/kg ug/kg		NS	NS	NA	NA	NA	3400	160 J	98 J	< 860	4.9 J	< 360
bis(2-Ethylhexyl)phthalate	ug/kg		690000	2100000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	700000	720000	1310000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	ug/kg		NS	NS	NA	NA	NA	4300	220 J	180 J	< 860	24 J	< 360
Dibenzo(a,h)anthracene	ug/kg		NS	NS	NA	NA	NA	< 1900	< 1900	< 390	< 860	< 370	< 360
Dibenzofuran	ug/kg		130000	810000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	ug/kg	1080000	1290000	6800000	NA	NA	NA	7400	550 J	420	22 J	39 J	< 360
Fluorene	ug/kg	850000	1200000	4120000	NA	NA	NA	280 J	140 J	39 J	45 J	< 370	< 360
Indeno(1,2,3-cd)pyrene	ug/kg		NS	NS	NA	NA	NA	2400	95 J	72 J	< 860	13 J	< 360
Naphthalene	ug/kg		24000	28000	NA	NA	NA	1200 J	3000	25 J	1900	< 370	< 360
Phenanthrene	ug/kg		NS	NS	NA	NA	NA	3000	510 J	350 J	69 J	14 J	< 360
Pyrene Metals	ug/kg		1060000	5800000	NA	NA	NA	5200	440 J	330 J	25 J	29 J	< 360
Aluminum	mg/kg		40000	100000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	12	16	100	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg		11	20	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	mg/kg	1100	1100	18000	NA	NA	NA	NA	NA	NA	NA	NA	NA

Feature						4	4	5	5	5	5	5	5
Location ID		Tier 1	Tier 2	Tier 2	TCLP	ASB-120	ASB-120	ASB-121	ASB-121	ASB-122	ASB-122	ASB-199	ASB-199
Sample ID		Residential	Recreational	Industrial	Criteria	ASB-120_4-6(20110824)	ASB-120_6-8(20110824)	ASB-121_5-7(20110824)	ASB-121_8-10(20110824)	ASB-122_2-4(20110824)	ASB-122_6-8(20110824)	ASB-199_0-2(20111104)	ASB-199_2-4(20111104)
Sample Date	Unit	SRV	SRV	SRV		8/24/2011	8/24/2011	8/24/2011	8/24/2011	8/24/2011	8/24/2011	11/4/2011	11/4/2011
Depth Interval						4-6 ft	6-8 ft	5-7 ft	8-10 ft	2-4 ft	6-8 ft	0-2 ft	2-4 ft
Beryllium	mg/kg	55	75	230	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	25	35	200	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium, Total***	mg/kg	87/44000	120/60000	650/100000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	mg/kg	600	800	2600	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	100	100	9000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	9000	12000	75000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	300	300	700	NA	11	5.8	31	32	14	8	9.8	2.8
Magnesium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	3600	5000	8100	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.5	1.2	1.5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	mg/kg	560	800	2500	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	160	200	1300	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	mg/kg	160	200	1300	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	3	3	21	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	30	40	250	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	8700	12000	75000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals - TCLP													
Arsenic	mg/l	NA	NA	NA	5	NA	NA	NA	NA	NA	NA	NA	NA
PCBs													
Aroclor 1248	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Detected PCBs	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other													
Gasoline Range Organics	mg/kg	NS	NS	NS	NA	< 13	< 12	820	4000	57	2300	< 11	< 11
Diesel Range Organics	mg/kg	NS	NS	NS	NA	< 12	< 10	42	12	< 10	26	4.3 J	2.3 J

Notes:

Micrograms per kilogram. ug/kg

Milligrams per kilogram. mg/kg

mg/l Milligrams per liter.

Not detected. <

ASB ARCADIS Soil Boring.

NA Not applicable/not analyzed.

ND Not detected.

NS No standard.

J Estimated result.

Bold Result value is above the MPCA Tier 1 Residential SRV.

Shade Result value is above the MPCA Tier 2 Recreational SRV.

Result value is above the MPCA Tier 2 Industrial SRV. Box

Reporting limit for non detect result exceeds one or more of the SRVs. Italics

VOCs Volatile organic compounds.

SVOCs Semi-volatile organic compounds.

PCBs Polychlorinated biphenyls.

SRV Soil reference value.

MPCA Minnesota Pollution Control Agency.

Toxicity characteristic leaching procedure. TCLP *

Sum of detected xylene results (m,p,o). **

Criteria for total xylenes used.

*** SRVs are for Chromium VI and Chromium III respectively, reported data is for total chromium and is therefore compared to the lower of the SRVs.

Samples ASB-195_6-8(20110912) (240-3807-26)[25X], ASB-195_8-10(20110912) (240-3807

27)[50X] and ASB-194_10-12(20110912) (240-3807-29)[10X] required dilution prior to

Table 6. Summary of Detected Constituents in Soil Samples
Twin Cities Assembly Plant, St. Paul, Minnesota

baseline Turi Turi Alle No Al	Feature						5	5	8	8	8	9	9	9
Bange Dat Restance Interant Control ABS-00 Age:11103 ABS-00 Age:11003 ABS<00			Tier 1	Tier 2	Tier 2	TCLP	-	ASB-200	ASB-179	ASB-180	ASB-180	ASB-177	ASB-181	ASB-182
Sample from Unit Sample from														
Dephend Unit Optimization	•	Unit					= (,	• •		· · ·	· · ·	• •	• • •	9/9/2011
VACC VACC <th< th=""><th>Depth Interval</th><th></th><th></th><th></th><th></th><th></th><th>0-2 ft</th><th></th><th>0-2 ft</th><th></th><th>2-4 ft</th><th>4-6 ft</th><th></th><th>2-4 ft</th></th<>	Depth Interval						0-2 ft		0-2 ft		2-4 ft	4-6 ft		2-4 ft
La Determinante unit Second	-													
C1.01 Tempsherator upp Sile No	1,2,4-Trimethylbenzene	ug/kg	8000	20000	25000	NA	< 250	< 270	< 280	< 300	< 270	13 J	< 290	170000
1.5.Finallylevatere ung 3.00 9.00 <td>1,2-Dichloroethane</td> <td>ug/kg</td> <td>4000</td> <td>10000</td> <td>6000</td> <td>NA</td> <td>< 250</td> <td>< 270</td> <td>< 280</td> <td>< 300</td> <td>< 270</td> <td>< 270</td> <td>< 290</td> <td>< 15000</td>	1,2-Dichloroethane	ug/kg	4000	10000	6000	NA	< 250	< 270	< 280	< 300	< 270	< 270	< 290	< 15000
Substance USA USA <thusa< th=""> USA <thusa< th=""> <thusa<< td=""><td>1,3,5-Trimethylbenzene</td><td></td><td></td><td>8000</td><td>10000</td><td>NA</td><td></td><td>< 270</td><td>< 280</td><td>< 300</td><td>< 270</td><td>< 270</td><td>< 290</td><td>37000</td></thusa<<></thusa<></thusa<>	1,3,5-Trimethylbenzene			8000	10000	NA		< 270	< 280	< 300	< 270	< 270	< 290	37000
Banter Optimization	•			5500000		NA								< 59000
Biolyfannen Upb Biolyfannen				14000		NA			< 280		< 270			< 15000
Calcon doubles upper lesson 18000 18000 18000 18000 18000 270 -270 -280 -370 -270 <th< td=""><td></td><td></td><td></td><td>70000</td><td></td><td>NA</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>98000</td></th<>				70000		NA								98000
or.1-3 Distribution op/19 0.00 1.000 2.000 N.A < 2.20 < 2.20 < 2.00 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 < 2.70 <														< 15000
Cycletenere upp NB NB NB NA < Col < Col < Col < Col Col Col														2600 J
Enylegenzen (a)/a 20000 20000 AA <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200 <200	,													< 29000
biospace/parame up/sp 3000 7400 7400 8700														120000
Methy isotabile up ng ng NS N														5500 J
Methysics/solutation upbs NS NS<														3400 J
Methyline binding upply 9000 27000 18000 NA - 200 - 270	•													7100 J
Ngshtalarian ugbg 1000 2400 2400 8200 NA < 220 < 220 730 3200 7300	Methylene chloride			270000	158000	NA								< 15000
n-Programment up kg 30000 70000 83000 NA < 250 < 270 < 280 < 300 < 270 < 270 < 270 < 270 < 280	•			24000		NA								380000
placepropholutane up/kg NS NS NS NA < 250 < 700 < 280 < 200 < 270 < 270 < 280 < 200 < 270 < 270 < 280 < 200 < 270 < 270 < 280 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 <th< td=""><td>n-Propylbenzene</td><td></td><td></td><td>70000</td><td></td><td>NA</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>16000</td></th<>	n-Propylbenzene			70000		NA								16000
sec-Bufferman up/kg 2500 55000 70000 NA < 250 < 270 < 270 < 270 < 270 < 280 < 300 < 270 < 270 < 280 < 300 < 270 < 270 < 280 < 300 < 270 < 270 < 280 < 300 < 270 < 270 < 280 < 300 < 270 < 270 < 280 < 300 < 1700 < 1700 < 1700 < 1700 < 1700 < 1700 < 1700 < 1700 < 1700 < 1700 < 270 < 280 < 300 < 250 < 270 < 280 < 300 < 270 < 280 < 300 < 270 < 280 < 300 < 270 < 280 < 300 < 270 < 280 < 300 < 270 < 280 < 300 < 270 < 280 < 300 < 270 < 280 < 300 < 270 < 280 < 300 < 270 < 280 < 300 < 300 < 300 < 300 < 300 < 300 < 300 < 300 < 300 < 300 < 300 < 300 <td></td> <td></td> <td></td> <td>NS</td> <td>NS</td> <td>NA</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>6600 J</td>				NS	NS	NA								6600 J
Syrene' up/s 21000 50000 N0 < 220 < 270 < 280 < 300 < 270 < 270 < 280 < 170 Tetan/stront/stront up/s NS NS NS NS NS NS NS NS < 100				55000	70000	NA								8500 J
Tertary dortuna up/s NS NS NS NS NA < 1000 < 1100 < 1100 < 1100 < 1100 < 1100 < 1100 < 1100 < 1100 < 1100 < 1100 < 1100 < 1100 < 1100 < 1100 < 11000 NA < 250 < 270 < 280 < 300 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270 < 270				500000	600000	NA		< 270	< 280	< 300			< 290	< 15000
Tertahyndrulan up/g NS NS NS NN v100 <1100 <1100 <1100 <1100 <1100 <1100 <1100 <1100 <1100 <1100 <1100 <1100 <1100 <1100 <1100 <1100 <1100 <11000 NA <250 <220 <280 <300 <270 <280 <270 <280 <270 <280 <270 <280 <270 <280 <270 <280 <270 <280 <270 <280 <270 <280 <270 <280 <270 <280 <270 <280 <270 <280 <270 <280 <270 <280 <270 <280 <270 <280 <270 <280 <270 <280 <270 <280 <270 <280 <270 <280 <270 <280 <270 <280 <270 <280 <270 <280 <270 <280 <270 <280 <270 <280 <2400 <200 <200 <	Tetrachloroethene	ug/kg		145000	131000	NA			< 280	< 300				< 15000
Tolanen upkg 10700 26000 366000 NA < 250 < 220 < 230 < 270 < 220 < 230 < 270 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 230 < 330 < 230 < 330 < 330 < 330 < 330 < 330 < 330 < 330 < 330 < 330 < 330 < 340 < 330 < 340 < 340 < 340 < 340 < 340 < 340 < 340 < 340 < 340 < 340 < 340 < 340 < 340 < 340 < 340 < 340 < 340 < 340 < 340 < 340 < 340	Tetrahydrofuran			NS	NS	NA	< 1000	< 1100	< 1100	< 1200	< 1100	< 1100	< 1100	< 59000
m. Xylane 4; - Xylane" ugkg 45000 110000 NA < 500 < 560 < 600 < 640 < 670 33 Total Xylane.o" ugkg 45000 110000 NA < 250 < 230 < 300 < 270 < 270 < 230 < 300 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 < 700 <td>Toluene</td> <td></td> <td></td> <td>260000</td> <td>305000</td> <td>NA</td> <td>< 250</td> <td>< 270</td> <td>< 280</td> <td>< 300</td> <td>< 270</td> <td>< 270</td> <td>< 290</td> <td>56000</td>	Toluene			260000	305000	NA	< 250	< 270	< 280	< 300	< 270	< 270	< 290	56000
Nylene o" ugkg 4500 11000 11000 NA < 250 < 280 ND NA NA < S30 S400 S400<	Trichloroethene	ug/kg	29000	82000	46000	NA	< 250	< 270	< 280	< 300	< 270	< 270	< 290	< 15000
Total Kylenes* ug/kg 45000 110000 NA ND N	m-Xylene & p-Xylene**	ug/kg	45000	110000	110000	NA	< 500	< 540	< 560	< 600	< 540	< 540	< 570	340000
system 2-MetryInaphthalene ug/kg 100000 120000 1800000 5260000 NA < 350 < 380 < 400 < 400 < 380 NA NA NA Acernaphthylene ug/kg NS NS NS NS NA < 380	Xylene, -o**	ug/kg	45000	110000	110000	NA	< 250	< 270	< 280	< 300	< 270	< 270	< 290	150000
2-Methylaphthalene ugkg 10000 12000 326000 NA < 550 < 380 < 400 < 400 < 390 NA NA Acenaphthene ugkg 120000 120000 526000 NA < 350	Total Xylenes*	ug/kg	45000	110000	110000	NA	ND	ND	ND	ND	ND	ND	ND	490000
Accangenthene ug/kg 120000 186000 526000 NA < 350 < 380 < 400 < 400 < 330 NA NA Acetaphenone ug/kg NS NS NS NS NA NA < 400	SVOCs													
Accomptinylene ug/kg NS NS NS NA < 350 < 430 < 400 < 400 < 330 NA NA Acetophenone ug/kg NS NS NS NS NA NA < 400	2-Methylnaphthalene	ug/kg	100000	120000	369000	NA	< 350	< 380	< 400	< 400	< 390	NA	NA	NA
Accophenone ug/kg NS NS NS NA NA <400	Acenaphthene	ug/kg	1200000	1860000	5260000	NA	< 350	< 380	< 400	< 400	< 390	NA	NA	NA
Anthracene ug/kg 7880000 10000000 45400000 NA < 350 < 380 < 400 < 400 < 390 NA NA NA Benza (g,h)) perylene ug/kg NS NS NS NS NA < 400	Acenaphthylene	ug/kg	NS	NS	NS	NA	< 350	< 380	< 400	< 400	< 390	NA	NA	NA
Benzaldehyde ug/kg NS NS NS NA NA < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 < 400 </td <td>Acetophenone</td> <td>ug/kg</td> <td>NS</td> <td>NS</td> <td>NS</td> <td>NA</td> <td>NA</td> <td>NA</td> <td>< 400</td> <td>< 400</td> <td>< 390</td> <td>NA</td> <td>NA</td> <td>NA</td>	Acetophenone	ug/kg	NS	NS	NS	NA	NA	NA	< 400	< 400	< 390	NA	NA	NA
Benzo (g,h.) yerylene ug/kg NS NS NA < 350 < 380 < 400 < 400 < 390 NA NA NA Benzo (g),hi jerylene ug/kg NS NS NS NA < 350	Anthracene	ug/kg	7880000	1000000	45400000	NA	< 350	< 380	< 400	< 400	< 390	NA	NA	NA
Benzo(a)anthraceneug/kgNSNSNSNA< 350< 380< 400< 400< 390NANANABenzo(a)pyreneug/kgNSNSNSNA< 350	Benzaldehyde	ug/kg				NA			< 400	< 400	< 390	NA		NA
Benzo(a)pyrene ug/kg 2000 2000 3000 NA < 350 < 380 < 400 < 400 < 390 NA NA NA Benzo(b)fluoranthene ug/kg NS NS NS NS NA < 350														NA
Benzo(b)fluorantheneug/kgNSNSNSNSNSNA< 350< 380< 400< 400< 390NANANANABenzo(k)fluorantheneug/kgNSNSNSNSNA< 350	Benzo(a)anthracene			NS		NA						NA		NA
Benzo(k)fluoranthene ug/kg NS NS NS NA < 350 < 380 < 400 < 400 < 400 < 390 NA NA NA bis(2-Ethylhexyl)phthalate ug/kg 70000 720000 131000 NA NA < 400	Benzo(a)pyrene	ug/kg	2000	2000	3000	NA		< 380	< 400	< 400	< 390	NA	NA	NA
bis(2-Ethylhexyl)phthalateug/kg5700069000210000NANANA< 400< 400< 390NANANACarbazoleug/kg7000072000131000NANANA< 400		ug/kg												NA
Carbazoleug/kg7000007200001310000NANANA< 400< 400< 390NANANAChryseneug/kgNSNSNSNSNA< 350< 380< 400< 400< 390NANANADibenzo(a,h)anthraceneug/kgNSNSNSNA< 350< 380< 400< 400< 390NANANADibenzo(ranug/kg104000130000810000NANANA< 400< 400< 390NANANAFluorantheneug/kg10800001200000810000NA< 350< 380< 400< 400< 390NANANAFluoreneug/kgNSNSNA< 350< 380< 400< 400< 390NANANANaphthaleneug/kg100002400028000NA< 350< 380< 400< 400< 390NANANAPhenanthreneug/kgNSNSNSNA< 350< 380< 400< 400< 390NANANAPhenanthreneug/kgNSNSNSNA< 350< 380< 400< 400< 390NANANAPyreneug/kg89000106000280000NA< 350< 380< 400< 400< 390NANANANaphthaleneug/kg89000NSNSNA<		ug/kg				NA								NA
Chryseneug/kgNSNSNSNSNA< 350< 380< 400< 400< 390NANANANADibenzo(a,h)anthraceneug/kgNSNSNSNSNA< 350														NA
Dibenzo(a,h)anthracene ug/kg NS NS NA < 350 < 380 < 400 < 400 < 390 NA NA Dibenzofuran ug/kg 104000 130000 810000 NA NA < 400														NA
Dibenzofuranug/kg104000130000810000NANANA< 400< 400< 390NANANAIFluorantheneug/kg108000012900006800000NA< 350	•													NA
Fluoranthene ug/kg 1080000 1290000 6800000 NA < 350 < 380 < 400 < 400 < 390 NA NA NA Fluorene ug/kg 850000 120000 412000 NA < 350	(. ,													NA
Fluoreneug/kg8500001200004120000NA< 350< 380< 400< 400< 390NANANAIndeno(1,2,3-cd)pyreneug/kgNSNSNSNA< 350														NA
Indeno(1,2,3-cd)pyreneug/kgNSNSNSNA< 350< 380< 400< 400< 390NANANANaphthaleneug/kg100002400028000NA< 350														NA
Naphthalene ug/kg 10000 24000 28000 NA < 350 < 380 < 400 < 400 < 390 NA NA Phenanthrene ug/kg NS NS NS NA < 350														NA
Phenanthrene ug/kg NS NS NA < 350 < 380 < 400 < 400 < 390 NA NA NA Pyrene ug/kg 890000 1060000 5800000 NA < 350	(· · ·)/)													NA
Pyrene ug/kg 89000 1060000 5800000 NA < 350 < 380 < 400 < 400 < 390 NA NA	•													NA
														NA
	Metals													NA
														8800
	Antimony													7.2 J
	Arsenic	mg/kg		11		NA	NA			3.1				7.2
Barium mg/kg 1100 1100 18000 NA NA NA NA 26 24 21 29 130 9	Barium	mg/kg	1100	1100	18000	NA	NA	NA	26	24	21	29	130	900 J

Table 6. Summary of Detected Constituents in Soil Samples
Twin Cities Assembly Plant, St. Paul, Minnesota

Feature						5	5	8	8	8	9	9	9
Location ID		Tier 1	Tier 2	Tier 2	TCLP	ASB-200	ASB-200	ASB-179	ASB-180	ASB-180	ASB-177	ASB-181	ASB-182
Sample ID		Residential	Recreational	Industrial	Criteria	ASB-200_0-2(20111104)	ASB-200_4-6(20111104)	ASB-179_0-2(20110908)	ASB-180_0-2(20110908)	ASB-180_2-4(20110908)	ASB-177_4-6(20110908)	ASB-181_6-8(20110909)	ASB-182_2-4(20110909)
Sample Date	Unit	SRV	SRV	SRV		11/4/2011	11/4/2011	9/8/2011	9/8/2011	9/8/2011	9/8/2011	9/9/2011	9/9/2011
Depth Interval						0-2 ft	4-6 ft	0-2 ft	0-2 ft	2-4 ft	4-6 ft	6-8 ft	2-4 ft
Beryllium	mg/kg	55	75	230	NA	NA	NA	0.42 J	0.46 J	0.52	< 0.49	0.86	0.68
Cadmium	mg/kg	25	35	200	NA	NA	NA	< 0.18	< 0.23	< 0.21	< 0.2	0.14 J	2.5
Calcium	mg/kg	NS	NS	NS	NA	NA	NA	16000	16000	9200	37000	4600	15000 J
Chromium, Total***	mg/kg	87/44000	120/60000	650/100000	NA	NA	NA	18	15	14	9.2	19	86 J
Cobalt	mg/kg	600	800	2600	NA	NA	NA	9.2	11	12	5.7	18	13
Copper	mg/kg	100	100	9000	NA	NA	NA	32	20	19	9.5	16	33
Iron	mg/kg	9000	12000	75000	NA	NA	NA	13000	14000	14000	9700	21000	17000
Lead	mg/kg	300	300	700	NA	1.9	3.5	3	2.6	2.2	5.9	66	700
Magnesium	mg/kg	NS	NS	NS	NA	NA	NA	5400	8200	6100	9300	3700	5100
Manganese	mg/kg	3600	5000	8100	NA	NA	NA	170	210	150	300	200	390
Mercury	mg/kg	0.5	1.2	1.5	NA	NA	NA	< 0.1	< 0.1	< 0.12	< 0.11	0.052 J	0.042 J
Nickel	mg/kg	560	800	2500	NA	NA	NA	19	22	25	12	30	25
Potassium	mg/kg	NS	NS	NS	NA	NA	NA	3900	3800	4200	910	2500	3700
Selenium	mg/kg	160	200	1300	NA	NA	NA	< 0.44	< 0.58	< 0.52	< 0.49	0.54 J	1.2
Silver	mg/kg	160	200	1300	NA	NA	NA	< 0.44	< 0.58	< 0.52	< 0.49	< 0.6	< 0.6
Sodium	mg/kg	NS	NS	NS	NA	NA	NA	290 J	330 J	250 J	100 J	300 J	490 J
Thallium	mg/kg	3	3	21	NA	NA	NA	< 0.89	< 1.2	< 1	< 0.98	< 1.2	< 1.2
Vanadium	mg/kg	30	40	250	NA	NA	NA	10	8.2	5.4	13	27	10
Zinc	mg/kg	8700	12000	75000	NA	NA	NA	18	22	19	19	64	670
Metals - TCLP													
Arsenic	mg/l	NA	NA	NA	5	NA							
PCBs													
Aroclor 1248	ug/kg	1200	1400	8000	NA	NA	NA	< 40	< 40	< 39	NA	NA	NA
Aroclor 1260	ug/kg	1200	1400	8000	NA	NA	NA	< 40	< 40	< 39	NA	NA	NA
Total Detected PCBs	ug/kg	1200	1400	8000	NA	NA	NA	< 40	< 40	< 39	NA	NA	NA
Other													
Gasoline Range Organics	mg/kg	NS	NS	NS	NA	< 10	< 11	< 12	< 11	< 12	3 J	190	6200 J
Diesel Range Organics	mg/kg	NS	NS	NS	NA	2 J	2.1 J	< 10 J	< 10 J	< 10 J	20 J	56	3600 J
Notes:													

Notes:

Micrograms per kilogram. ug/kg

Milligrams per kilogram. mg/kg

mg/l Milligrams per liter.

Not detected. <

ASB ARCADIS Soil Boring.

NA Not applicable/not analyzed.

ND Not detected.

NS No standard.

J Estimated result.

Bold Result value is above the MPCA Tier 1 Residential SRV.

Shade Result value is above the MPCA Tier 2 Recreational SRV.

Box Result value is above the MPCA Tier 2 Industrial SRV.

Italics Reporting limit for non detect result exceeds one or more of the SRVs.

VOCs Volatile organic compounds.

SVOCs Semi-volatile organic compounds.

PCBs Polychlorinated biphenyls.

SRV Soil reference value.

Minnesota Pollution Control Agency. MPCA

TCLP Toxicity characteristic leaching procedure. *

Sum of detected xylene results (m,p,o). **

Criteria for total xylenes used.

*** SRVs are for Chromium VI and Chromium III respectively, reported data is for total chromium and is therefore compared to the lower of the SRVs.

Samples ASB-195_6-8(20110912) (240-3807-26)[25X], ASB-195_8-10(20110912) (240-3807

27)[50X] and ASB-194_10-12(20110912) (240-3807-29)[10X] required dilution prior to

Table 6. Summary of Detected Constituents in Soil Samples
Twin Cities Assembly Plant, St. Paul, Minnesota

Feature						9	10	10	10	10	10	10	10
Location ID		Tier 1	Tier 2	Tier 2	TCLP	ASB-183	ASB-165	ASB-166	ASB-167	ASB-167	ASB-167	ASB-170	ASB-170
Sample ID		Residential	Recreational	Industrial	Criteria	ASB-183_0-2(20110909)	ASB-165_0-2(20110906)	ASB-166_2-4(20110906)	ASB-167_0-2(20110906)	ASB-167_6-8(20110906)	ASB-167_8-10(20110906)	ASB-170_0-2(20110907)	ASB-170_4-6(20110907)
Sample Date	Unit	SRV	SRV	SRV		9/9/2011	9/6/2011	9/6/2011	9/6/2011	9/6/2011	9/6/2011	9/7/2011	9/7/2011
Depth Interval						0-2 ft	0-2 ft	2-4 ft	0-2 ft	6-8 ft	8-10 ft	0-2 ft	4-6 ft
VOCs													
1,2,4-Trimethylbenzene	ug/kg	8000	20000	25000	NA	< 240	7.4 J	250	19 J	< 300	< 3300	24 J	< 280
1,2-Dichloroethane	ug/kg	4000	10000	6000	NA	< 240	< 270	< 250	< 260	< 300	< 3300	< 250	< 280
1,3,5-Trimethylbenzene	ug/kg	3000	8000	10000	NA	< 240	< 270	77 J	< 260	< 300	< 3300	7.9 J	< 280
2-Butanone (MEK)	ug/kg	5500000	5500000	19000000	NA	< 960	< 1100	< 1000	< 1000	< 1200	< 13000	< 1000	< 1100
Benzene	ug/kg	6000	14000	10000	NA	< 240	< 270	< 250	< 260	< 300	< 3300	< 250	< 280
Butylbenzene	ug/kg	30000	70000	92000	NA	< 240	< 270	< 250	< 260	< 300	7400 J	< 250	< 280
Carbon disulfide	ug/kg	65000	160000	190000	NA	< 240	< 270	48 J	< 260	< 300	600 J	< 250	< 280
cis-1,2-Dichloroethene	ug/kg	8000	19000	22000	NA	< 240	< 270	< 250	< 260	< 300	< 3300	< 250	< 280
Cyclohexane	ug/kg	NS	NS	NS	NA	< 480	< 540	62 J	< 510	< 590	6300 J	< 500	< 560
Ethylbenzene	ug/kg	200000	200000	200000	NA	< 240	< 270	11 J	< 260	< 300	1100 J	9.6 J	< 280
Isopropylbenzene	ug/kg	30000	74000	87000	NA	< 240	< 270	57 J	< 260	36 J	8500 J	< 250	< 280
Methyl acetate	ug/kg	NS	NS	NS	NA	73 J	86 J	140 J	< 510	< 590	< 6500	< 500	230 J
Methylcyclohexane	ug/kg	NS	NS	NS	NA	< 480	< 540	880	24 J	49 J	54000 J	63 J	< 560
Methylene chloride	ug/kg	97000	270000	158000	NA	< 240	< 270	< 250	< 260	< 300	< 3300	< 250	< 280
Naphthalene	ug/kg	10000	24000	28000	NA	10 J	< 270	2100	97 J	< 300	1200 J	150 J	< 280
n-Propylbenzene	ug/kg	30000	70000	93000	NA	< 240	< 270	50 J	< 260	< 300	14000 J	< 250	< 280
p-Isopropyltoluene	ug/kg	NS	NS	NS	NA	< 240	< 270	79 J	< 260	< 300	< 3300	< 250	< 280
sec-Butylbenzene	ug/kg	25000	55000	70000	NA	< 240	< 270	110 J	< 260	17 J	7600 J	< 250	< 280
Styrene	ug/kg	210000	500000	600000	NA	< 240	< 270	< 250	< 260	< 300	< 3300	< 250	< 280
Tetrachloroethene	ug/kg	72000	145000	131000	NA	< 240	< 270	< 250	< 260	< 300	< 3300	< 250	< 280
Tetrahydrofuran	ug/kg	NS	NS	NS	NA	< 960	< 1100	< 1000	< 1000	< 1200	< 13000	< 1000	< 1100
Toluene	ug/kg	107000	260000	305000	NA	< 240	< 270	< 250	< 260	< 300	< 3300	27 J	< 280
Trichloroethene	ug/kg	29000	82000	46000	NA	< 240	< 270	< 250	< 260	< 300	< 3300	< 250	< 280
m-Xylene & p-Xylene**	ug/kg	45000	110000	110000	NA	6.9 J	< 540	79 J	17 J	< 590	< 6500	41 J	< 560
Xylene, -o**	ug/kg	45000	110000	110000	NA	< 240	< 270	< 250	11 J	< 300	< 3300	24 J	< 280
Total Xylenes*	ug/kg	45000	110000	110000	NA	6.9	ND	79	28	ND	ND	65	ND
SVOCs													
2-Methylnaphthalene	ug/kg	100000	120000	369000	NA	NA	96 J	440 J	160 J	< 400	1400 J	110 J	< 410
Acenaphthene	ug/kg	1200000	1860000	5260000	NA	NA	210 J	180 J	< 2000	< 400	59 J	440 J	< 410
Acenaphthylene	ug/kg	NS	NS	NS	NA	NA	160 J	< 1800	< 2000	< 400	< 1900 J	20 J	< 410
Acetophenone	ug/kg	NS	NS	NS	NA	NA	< 2000	< 1800	< 2000	< 400	< 1900 J	< 1800	< 410
Anthracene	ug/kg	7880000	1000000	45400000	NA	NA	540 J	140 J	130 J	< 400	41 J	1000 J	11 J
Benzaldehyde	ug/kg	NS	NS	NS	NA	NA	< 2000	< 1800	< 2000	< 400	< 1900 J	< 1800	< 410
Benzo (g,h,i) perylene	ug/kg	NS	NS	NS	NA	NA	720 J	140 J	< 2000	< 400	< 1900 J	1600 J	14 J
Benzo(a)anthracene	ug/kg	NS	NS	NS	NA	NA	1400 J	210 J	180 J	< 400	< 1900 J	2800	22 J
Benzo(a)pyrene	ug/kg	2000	2000	3000	NA	NA	1100 J	200 J	< 2000	< 400	< 1900 J	2600	21 J
Benzo(b)fluoranthene	ug/kg	NS	NS	NS	NA	NA	1400 J	290 J	160 J	< 400	< 1900 J	3300	29 J
Benzo(k)fluoranthene	ug/kg	NS	NS	NS	NA	NA	580 J	150 J	84 J	< 400	< 1900 J	1000 J	11 J
bis(2-Ethylhexyl)phthalate	ug/kg	570000	690000	2100000	NA	NA	< 2000	< 1800	< 2000	33 J	< 1900 J	160 J	28 J
Carbazole	ug/kg	700000	720000	1310000	NA	NA	< 2000	< 1800	< 2000	< 400	< 1900 J	480 J	< 410
Chrysene	ug/kg	NS	NS	NS	NA	NA	1300 J	240 J	180 J	< 400	< 1900 J	2400	23 J
Dibenzo(a,h)anthracene	ug/kg	NS	NS	NS	NA	NA	220 J	< 1800	< 2000	< 400	< 1900 J	530 J	< 410
Dibenzofuran	ug/kg	104000	130000	810000	NA	NA	120 J	110 J	51 J	< 400	< 1900 J	210 J	< 410
Fluoranthene	ug/kg	1080000	1290000	6800000	NA	NA	2700	420 J	390 J	< 400	< 1900 J	5900	66 J
Fluorene	ug/kg	850000	1200000	4120000	NA	NA	280 J	150 J	77 J	< 400	80 J	370 J	5.4 J
Indeno(1,2,3-cd)pyrene	ug/kg	NS	NS	NS	NA	NA	600 J	120 J	< 2000	< 400	< 1900 J	1500 J	12 J
Naphthalene	ug/kg	10000	24000	28000	NA	NA	70 J	340 J	150 J	< 400	550 J	110 J	< 410
Phenanthrene	ug/kg	NS	NS	NS	NA	NA	1900 J	610 J	390 J	< 400	150 J	3300	50 J
Pyrene	ug/kg	890000	1060000	5800000	NA	NA	2100	360 J	280 J	< 400	61 J	4400	55 J
Metals													
Aluminum	mg/kg	30000	40000	100000	NA	2400	2700	2900	6600	6700	11000	3700	9700
Antimony	mg/kg	12	16	100	NA	< 1	7.8	410	400	1.4	< 1.4 J	< 1.4	< 1.2
Arsenic	mg/kg	9	11	20	NA	2.6	97	4.5	8.1	7.2	4.4	4.8	5.8
Barium	mg/kg	1100	1100	18000	NA	19 J	120	360	150	22 J	140	57	55

Feature						9	10	10	10	10	10	10	10
Location ID		Tier 1	Tier 2	Tier 2	TCLP	ASB-183	ASB-165	ASB-166	ASB-167	ASB-167	ASB-167	ASB-170	ASB-170
Sample ID		Residential	Recreational	Industrial	Criteria	ASB-183_0-2(20110909)	ASB-165_0-2(20110906)	ASB-166_2-4(20110906)	ASB-167_0-2(20110906)	ASB-167_6-8(20110906)	ASB-167_8-10(20110906)	ASB-170_0-2(20110907)	ASB-170_4-6(20110907)
Sample Date	Unit	SRV	SRV	SRV		9/9/2011	9/6/2011	9/6/2011	9/6/2011	9/6/2011	9/6/2011	9/7/2011	9/7/2011
Depth Interval						0-2 ft	0-2 ft	2-4 ft	0-2 ft	6-8 ft	8-10 ft	0-2 ft	4-6 ft
Beryllium	mg/kg	55	75	230	NA	0.23 J	< 0.53	< 0.46	0.45 J	0.59	0.82	0.28 J	0.64
Cadmium	mg/kg	25	35	200	NA	0.11 J	0.62	44	19 J	< 0.24	0.16 J	0.19 J	< 0.24
Calcium	mg/kg	NS	NS	NS	NA	110000	41000	38000	38000	11000	9000	48000	37000
Chromium, Total***	mg/kg	87/44000	120/60000	650/100000	NA	5.5	14	140	25 J	13	16	9.2	17
Cobalt	mg/kg	600	800	2600	NA	3.9 J	3.7 J	2.1 J	7.6	13	8.4	4.4 J	14
Copper	mg/kg	100	100	9000	NA	9.5	17	20	19	14	18	13	12
Iron	mg/kg	9000	12000	75000	NA	10000	14000	6800	17000	13000	14000	12000	17000
Lead	mg/kg	300	300	700	NA	8.9	83	720	440	2.6	9.9	53	4.5
Magnesium	mg/kg	NS	NS	NS	NA	59000	5800	3900	11000	5700	3900	24000	11000
Manganese	mg/kg	3600	5000	8100	NA	810	300	190	610	190	290	510	470
Mercury	mg/kg	0.5	1.2	1.5	NA	< 0.096	0.074 J	0.062 J	0.052 J	0.021 J	< 0.14	0.051 J	0.021 J
Nickel	mg/kg	560	800	2500	NA	15	9.1	5.7	17	24	18	10	23
Potassium	mg/kg	NS	NS	NS	NA	620	500 J	340 J	870	3700	2000	680	4000
Selenium	mg/kg	160	200	1300	NA	< 0.51	0.68	14	6.4	< 0.59	1.1	< 0.49	< 0.59
Silver	mg/kg	160	200	1300	NA	0.1 J	0.17 J	< 0.46	0.13 J	< 0.59	< 0.71	< 0.49	< 0.59
Sodium	mg/kg	NS	NS	NS	NA	180 J	470 J	940	80 J	180 J	210 J	< 490	220 J
Thallium	mg/kg	3	3	21	NA	< 1	< 1.1	< 0.93	< 1.1	< 1.2	< 1.4	< 0.98	< 1.2
Vanadium	mg/kg	30	40	250	NA	15	12	9.6	27	6.8	21	17	15
Zinc	mg/kg	8700	12000	75000	NA	31	79	190	75	21	35	71	29
Metals - TCLP													
Arsenic	mg/l	NA	NA	NA	5	NA	NA	NA	NA	0.0034 J	NA	NA	NA
PCBs													
Aroclor 1248	ug/kg	1200	1400	8000	NA	NA	< 40	< 36	84	< 40	< 47	< 35	< 41
Aroclor 1260	ug/kg	1200	1400	8000	NA	NA	< 40	< 36	44	< 40	< 47	60	< 41
Total Detected PCBs	ug/kg	1200	1400	8000	NA	NA	< 40	< 36	128	< 40	< 47	60	< 41
Other													
Gasoline Range Organics	mg/kg	NS	NS	NS	NA	2.1 J	2.2 J	33	6.3 J	22	3000 J	NA	2.4 J
Diesel Range Organics	mg/kg	NS	NS	NS	NA	190	100	NA	170	3.8 J	1300	NA	8.2 J

Notes:

Micrograms per kilogram. ug/kg

Milligrams per kilogram. mg/kg

mg/l Milligrams per liter.

Not detected. <

ASB ARCADIS Soil Boring.

NA Not applicable/not analyzed.

ND Not detected.

NS No standard.

J Estimated result.

Bold Result value is above the MPCA Tier 1 Residential SRV.

Shade Result value is above the MPCA Tier 2 Recreational SRV.

Result value is above the MPCA Tier 2 Industrial SRV. Box

Reporting limit for non detect result exceeds one or more of the SRVs. Italics

VOCs Volatile organic compounds.

SVOCs Semi-volatile organic compounds.

PCBs Polychlorinated biphenyls.

SRV Soil reference value.

MPCA Minnesota Pollution Control Agency.

Toxicity characteristic leaching procedure. TCLP *

Sum of detected xylene results (m,p,o). **

Criteria for total xylenes used.

*** SRVs are for Chromium VI and Chromium III respectively, reported data is for total chromium and is therefore compared to the lower of the SRVs.

Samples ASB-195_6-8(20110912) (240-3807-26)[25X], ASB-195_8-10(20110912) (240-3807

27)[50X] and ASB-194_10-12(20110912) (240-3807-29)[10X] required dilution prior to

Table 6. Summary of Detected Constituents in Soil Samples	
Twin Cities Assembly Plant, St. Paul, Minnesota	

Feature						10	11	11	11	11	11	12,47	16
Location ID		Tier 1	Tier 2	Tier 2	TCLP	ASB-171	ASB-172	ASB-173	ASB-174	ASB-175	ASB-176	ASB-162	ASB-157
Sample ID		Residential	Recreational	Industrial	Criteria	ASB-171_1-3(20110907)	ASB-172_1-3(20110907)	ASB-173_1-3(20110907)	ASB-174_4-6(20110907)	ASB-175_4-6(20110908)	ASB-176_8-10(20110908)	ASB-162_1-3(20110906)	ASB-157_0-2(20110901)
Sample Date	Unit	SRV	SRV	SRV		9/7/2011	9/7/2011	9/7/2011	9/7/2011	9/8/2011	9/8/2011	9/6/2011	9/1/2011
Depth Interval						1-3 ft	1-3 ft	1-3 ft	4-6 ft	4-6 ft	8-10 ft	1-3 ft	0-2 ft
VOCs													
1,2,4-Trimethylbenzene	ug/kg	8000	20000	25000	NA	< 270	14 J	< 270	< 280	< 1000	440000	< 290	< 240
1,2-Dichloroethane	ug/kg	4000	10000	6000	NA	< 270	< 270	< 270	< 280	< 1000	< 21000	< 290	< 240
1,3,5-Trimethylbenzene	ug/kg	3000	8000	10000	NA	< 270	7.4 J	< 270	< 280	< 1000	< 21000	< 290	< 240
2-Butanone (MEK)	ug/kg	5500000	5500000	19000000	NA	< 1100	< 1100	< 1100	< 1100	< 4100	< 83000	< 1200	< 970
Benzene	ug/kg	6000	14000	10000	NA	< 270	< 270	< 270	< 280	< 1000	< 21000	< 290	< 240
Butylbenzene	ug/kg	30000	70000	92000	NA	< 270	< 270	< 270	< 280	19000	13000 J	< 290	< 240
Carbon disulfide	ug/kg	65000	160000	190000	NA	53 J	< 270	52 J	< 280	200 J	< 21000	54 J	< 240
cis-1,2-Dichloroethene	ug/kg	8000	19000	22000	NA	< 270	< 270	< 270	< 280	< 1000	< 21000	< 290	< 240
Cyclohexane Ethylbenzene	ug/kg	NS 200000	NS 200000	NS 200000	NA NA	< 540 < 270	< 540 < 270	< 550 < 270	< 570 < 280	430 J < 1000	16000 J 43000	< 580 < 290	< 480 < 240
Isopropylbenzene	ug/kg ug/kg	30000	74000	200000 87000	NA	< 270	< 270	< 270	< 280 < 280	3800	28000	< 290 < 290	< 240 < 240
Methyl acetate	ug/kg	NS	NS	NS	NA	< 540	< 540	< 550	230 J	860 J	< 42000	100 J	35 J
Methylcyclohexane	ug/kg	NS	NS	NS	NA	< 540	< 540	< 550	< 570	14000	83000	< 580	< 480
Methylene chloride	ug/kg	97000	270000	158000	NA	< 270	< 270	< 270	< 280	< 1000	< 21000	< 290	< 240
Naphthalene	ug/kg	10000	24000	28000	NA	< 270	< 270	< 270	12 J	14000	41000	< 290	< 240
n-Propylbenzene	ug/kg	30000	70000	93000	NA	< 270	< 270	< 270	< 280	8100	29000	< 290	< 240
p-Isopropyltoluene	ug/kg	NS	NS	NS	NA	< 270	< 270	< 270	< 280	2100	16000 J	< 290	< 240
sec-Butylbenzene	ug/kg	25000	55000	70000	NA	< 270	< 270	< 270	< 280	9900	24000	< 290	< 240
Styrene	ug/kg	210000	500000	600000	NA	< 270	< 270	< 270	< 280	< 1000	< 21000	< 290	< 240
Tetrachloroethene	ug/kg	72000	145000	131000	NA	< 270	< 270	< 270	< 280	< 1000	< 21000	69 J	< 240
Tetrahydrofuran	ug/kg	NS	NS	NS	NA	< 1100	< 1100	< 1100	< 1100	< 4100	< 83000	< 1200	< 970
Toluene	ug/kg	107000	260000	305000	NA	< 270	< 270	< 270	< 280	< 1000	< 21000	< 290	18 J
Trichloroethene	ug/kg	29000	82000	46000	NA	< 270	< 270	< 270	< 280	< 1000	< 21000	16 J	< 240
m-Xylene & p-Xylene**	ug/kg	45000	110000	110000	NA	< 540	13 J	< 550	< 570	< 2000	< 42000	< 580	< 480
Xylene, -o**	ug/kg	45000	110000	110000	NA	< 270	< 270	< 270	< 280	< 1000	< 21000	< 290	< 240
Total Xylenes*	ug/kg	45000	110000	110000	NA	ND	13	ND	ND	ND	ND	ND	ND
SVOCs		100000	400000	200000	NIA	40.1	NIA	NIA	NIA	NIA	NIA	. 110	. 250
2-Methylnaphthalene Acenaphthene	ug/kg ug/kg	100000 1200000	120000 1860000	369000 5260000	NA NA	10 J 110 J	NA NA	NA NA	NA NA	NA NA	NA NA	< 410 < 410	< 350 < 350
Acenaphthylene	ug/kg ug/kg	NS	NS	5200000 NS	NA	38 J	NA	NA	NA	NA	NA	< 410	< 350
Acetophenone	ug/kg	NS	NS	NS	NA	< 960	NA	NA	NA	NA	NA	NA	NA
Anthracene	ug/kg	7880000	10000000	45400000	NA	610 J	NA	NA	NA	NA	NA	< 410	< 350
Benzaldehyde	ug/kg	NS	NS	NS	NA	< 960	NA	NA	NA	NA	NA	NA	NA
Benzo (g,h,i) perylene	ug/kg	NS	NS	NS	NA	450 J	NA	NA	NA	NA	NA	< 410	16 J
Benzo(a)anthracene	ug/kg	NS	NS	NS	NA	1300	NA	NA	NA	NA	NA	< 410	23 J
Benzo(a)pyrene	ug/kg	2000	2000	3000	NA	930 J	NA	NA	NA	NA	NA	< 410	22 J
Benzo(b)fluoranthene	ug/kg	NS	NS	NS	NA	1100	NA	NA	NA	NA	NA	< 410	34 J
Benzo(k)fluoranthene	ug/kg	NS	NS	NS	NA	460 J	NA	NA	NA	NA	NA	< 410	12 J
bis(2-Ethylhexyl)phthalate	ug/kg	570000	690000	2100000	NA	< 960	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	700000	720000	1310000	NA	< 960	NA	NA	NA	NA	NA	NA	NA
Chrysene	ug/kg	NS	NS	NS	NA	1200	NA	NA	NA	NA	NA	< 410	27 J
Dibenzo(a,h)anthracene	ug/kg	NS 104000	NS 120000	NS 810000	NA	150 J	NA	NA NA	NA	NA NA	NA NA	< 410 NA	4.6 J
Dibenzofuran Fluoranthene	ug/kg ug/kg	104000 1080000	130000 1290000	810000 6800000	NA NA	40 J 2900	NA NA	NA	NA NA	NA	NA	< 410	NA 43 J
Fluorene	ug/kg	850000	1200000	4120000	NA	200 J	NA	NA	NA	NA	NA	< 410	< 350
Indeno(1,2,3-cd)pyrene	ug/kg	NS	NS	NS	NA	400 J	NA	NA	NA	NA	NA	< 410	19 J
Naphthalene	ug/kg	10000	24000	28000	NA	< 960	NA	NA	NA	NA	NA	9.4 J	< 350
Phenanthrene	ug/kg	NS	NS	NS	NA	2000	NA	NA	NA	NA	NA	< 410	20 J
Pyrene	ug/kg	890000	1060000	5800000	NA	2300	NA	NA	NA	NA	NA	< 410	32 J
Metals	2 0												
Aluminum	mg/kg	30000	40000	100000	NA	7900	4900	5000	6900	2800	8100	NA	NA
Antimony	mg/kg	12	16	100	NA	< 1	32	< 1.3	< 0.97	18 J	0.62 J	NA	NA
Arsenic	mg/kg	9	11	20	NA	600	6.5	4.6	6.8	7.7	2.7	3.3	NA
Barium	mg/kg	1100	1100	18000	NA	92	480	76	29	1100	83	39	NA

Feature						10	11	11	11	11	11	12,47	16
Location ID		Tier 1	Tier 2	Tier 2	TCLP	ASB-171	ASB-172	ASB-173	ASB-174	ASB-175	ASB-176	ASB-162	ASB-157
Sample ID		Residential	Recreational	Industrial	Criteria	ASB-171_1-3(20110907)	ASB-172_1-3(20110907)	ASB-173_1-3(20110907)	ASB-174_4-6(20110907)	ASB-175_4-6(20110908)	ASB-176_8-10(20110908)	ASB-162_1-3(20110906)	ASB-157_0-2(20110901
Sample Date	Unit	SRV	SRV	SRV		9/7/2011	9/7/2011	9/7/2011	9/7/2011	9/8/2011	9/8/2011	9/6/2011	9/1/2011
Depth Interval						1-3 ft	1-3 ft	1-3 ft	4-6 ft	4-6 ft	8-10 ft	1-3 ft	0-2 ft
Beryllium	mg/kg	55	75	230	NA	0.43 J	0.4 J	0.41 J	0.59	< 0.59	0.23 J	NA	NA
Cadmium	mg/kg	25	35	200	NA	< 0.2	1.3	0.16 J	< 0.19	0.77	0.15 J	< 0.23	NA
Calcium	mg/kg	NS	NS	NS	NA	6000	34000	30000	21000	16000	9200	NA	NA
Chromium, Total***	mg/kg	87/44000	120/60000	650/100000	NA	12	16	12	14	19	13	20	NA
Cobalt	mg/kg	600	800	2600	NA	8.5	6.2	8.6	11	2.6 J	8.3	NA	NA
Copper	mg/kg	100	100	9000	NA	11	40	15	170	73 J	10	NA	NA
Iron	mg/kg	9000	12000	75000	NA	15000	16000	14000	15000	6600	11000	NA	NA
Lead	mg/kg	300	300	700	NA	6.2	3000	39	5.3	1000	6.4	3.1	NA
Magnesium	mg/kg	NS	NS	NS	NA	1700	12000	7400	6900	4000	3000	NA	NA
Manganese	mg/kg	3600	5000	8100	NA	710	470	530	230	170	470	NA	NA
Mercury	mg/kg	0.5	1.2	1.5	NA	0.062 J	0.079 J	0.017 J	< 0.11	6.1	< 0.12	< 0.12	NA
Nickel	mg/kg	560	800	2500	NA	15	15	17	21	6	15	NA	NA
Potassium	mg/kg	NS	NS	NS	NA	1500	1200	1100	3500	490 J	510 J	NA	NA
Selenium	mg/kg	160	200	1300	NA	1	0.59	< 0.54	< 0.48	0.64	< 0.57	< 0.58	NA
Silver	mg/kg	160	200	1300	NA	< 0.51	< 0.51	< 0.54	< 0.48	< 0.59	< 0.57	< 0.58	NA
Sodium	mg/kg	NS	NS	NS	NA	470 J	120 J	< 540	220 J	140 J	86 J	NA	NA
Thallium	mg/kg	3	3	21	NA	0.57 J	< 1	< 1.1	< 0.97	0.71 J	< 1.1	NA	NA
Vanadium	mg/kg	30	40	250	NA	28	16	16	6.9	8.5	21	NA	NA
Zinc	mg/kg	8700	12000	75000	NA	27	400	40	22	390	29	NA	NA
Metals - TCLP													
Arsenic	mg/l	NA	NA	NA	5	NA	NA	NA	NA	NA	NA	NA	NA
PCBs													
Aroclor 1248	ug/kg	1200	1400	8000	NA	< 38	NA	NA	NA	NA	NA	< 41	NA
Aroclor 1260	ug/kg	1200	1400	8000	NA	< 38	NA	NA	NA	NA	NA	< 41	NA
Total Detected PCBs	ug/kg	1200	1400	8000	NA	< 38	NA	NA	NA	NA	NA	< 41	NA
Other													
Gasoline Range Organics	mg/kg	NS	NS	NS	NA	1.8 J	2.9 J	< 13	< 13	5800	4200	NA	< 10
Diesel Range Organics	mg/kg	NS	NS	NS	NA	8.2 J	52	25	< 9.4	2600 J	500 J	2 J	< 9.2

Notes:

ug/kg Micrograms per kilogram.

mg/kg Milligrams per kilogram.

mg/l Milligrams per liter.

< Not detected.

ASB ARCADIS Soil Boring.

NA Not applicable/not analyzed.

ND Not detected.

NS No standard.

J Estimated result.

Bold Result value is above the MPCA Tier 1 Residential SRV.

Shade Result value is above the MPCA Tier 2 Recreational SRV.

Box Result value is above the MPCA Tier 2 Industrial SRV.

Italics Reporting limit for non detect result exceeds one or more of the SRVs.

VOCs Volatile organic compounds.

SVOCs Semi-volatile organic compounds.

PCBs Polychlorinated biphenyls.

SRV Soil reference value.

MPCA Minnesota Pollution Control Agency.

TCLP Toxicity characteristic leaching procedure.

* Sum of detected xylene results (m,p,o).

** Criteria for total xylenes used.

*** SRVs are for Chromium VI and Chromium III respectively, reported data is for total chromium and is therefore compared to the lower of the SRVs.

Samples ASB-195_6-8(20110912) (240-3807-26)[25X], ASB-195_8-10(20110912) (240-3807

27)[50X] and ASB-194_10-12(20110912) (240-3807-29)[10X] required dilution prior to

Table 6. Summary of Detected Constituents in Soil Samples
Twin Cities Assembly Plant, St. Paul, Minnesota

Feature Location ID Sample ID Sample Date	Unit	Tier 1 Residential SRV	Tier 2 Recreational SRV	Tier 2 Industrial SRV	TCLP Criteria	16 ASB-158 ASB-158_02(20110901) 9/1/2011	16 ASB-158 ASB-158_4-6(20110901) 9/1/2011	16 ASB-159 ASB-159_2-4(20110902) 9/2/2011	16 ASB-159 ASB-159_5-7(20110902) 9/2/2011	16 ASB-160 ASB-160_2-4(20110902) 9/2/2011	16 ASB-160 ASB-160_5-7(20110902) 9/2/2011	16 ASB-161 ASB-161_1-3(20110902) 9/2/2011	21 ASB-168 ASB-168_0-2(20110907) 9/7/2011
Depth Interval						02 ft	4-6 ft	2-4 ft	5-7 ft	2-4 ft	5-7 ft	1-3 ft	0-2 ft
VOCs													
1,2,4-Trimethylbenzene	ug/kg		20000	25000	NA	15 J	13 J	67 J	28000	28 J	2900	< 270	< 200
1,2-Dichloroethane	ug/kg	4000	10000	6000	NA	< 250	< 240	< 290	< 1000	< 270	< 320	< 270	< 200
1,3,5-Trimethylbenzene	ug/kg	3000	8000	10000	NA	< 250	< 240	16 J	5000	< 270	400	< 270	< 200
2-Butanone (MEK)	ug/kg	5500000	5500000	19000000	NA	< 1000	< 950	< 1200	< 4100	< 1100	< 1300	< 1100	< 810
Benzene	ug/kg	6000	14000	10000	NA	< 250	< 240	< 290	< 1000	< 270	< 320	< 270	< 200
Butylbenzene	ug/kg	30000	70000	92000	NA	< 250	< 240	< 290	4500	66 J	660	< 270	< 200
Carbon disulfide cis-1,2-Dichloroethene	ug/kg	65000	160000	190000	NA	< 250	< 240	59 J	190 J	57 J < 270	80 J	< 270	< 200
Cis-1,2-Dichloroethene Cyclohexane	ug/kg ug/kg	8000 NS	19000 NS	22000 NS	NA NA	< 250 < 510	< 240 < 480	< 290 < 580	< 1000 2800	< 270 < 540	< 320 < 630	< 270 < 540	< 200 < 400
Ethylbenzene	ug/kg ug/kg	200000	200000	200000	NA	< 510 17 J	< 480 7.9 J	< 380 17 J	1500	< 540 16 J	< 030 310 J	< 540 < 270	< 400 < 200
Isopropylbenzene	ug/kg	30000	74000	87000	NA	< 250	< 240	< 290	860 J	28 J	180 J	< 270	< 200
Methyl acetate	ug/kg	NS	NS	NS	NA	79 J	28 J	190 J	210 J	200 J	470 J	60 J	< 400
Methylcyclohexane	ug/kg	NS	NS	NS	NA	39 J	< 480	50 J	6100	< 540	< 630	< 540	< 400
Methylene chloride	ug/kg	97000	270000	158000	NA	< 250	< 240	< 290	< 1000	< 270	< 320	< 270	< 200
Naphthalene	ug/kg	10000	24000	28000	NA	< 250	< 240	< 290	5200	< 270	630	< 270	< 200
n-Propylbenzene	ug/kg	30000	70000	93000	NA	< 250	< 240	30 J	3500	44 J	390	< 270	< 200
p-Isopropyltoluene	ug/kg		NS	NS	NA	< 250	< 240	< 290	810 J	< 270	110 J	< 270	< 200
sec-Butylbenzene	ug/kg	25000	55000	70000	NA	< 250	< 240	33 J	910 J	39 J	210 J	< 270	< 200
Styrene	ug/kg	210000	500000	600000	NA	13 J	< 240	< 290	< 1000	< 270	< 320	< 270	< 200
Tetrachloroethene	ug/kg	72000	145000	131000	NA	< 250	< 240	< 290	< 1000	< 270	< 320	< 270	< 200
Tetrahydrofuran	ug/kg	NS	NS	NS	NA	< 1000	< 950	< 1200	< 4100	< 1100	< 1300	< 1100	< 810
Toluene	ug/kg	107000	260000	305000	NA	< 250	< 240	< 290	< 1000	< 270	< 320	< 270	< 200
Trichloroethene	ug/kg	29000	82000	46000	NA NA	< 250	< 240	< 290	< 1000 4800	< 270 36 J	< 320 700	< 270	< 200
m-Xylene & p-Xylene**	ug/kg	45000	110000	110000	NA	90 J 41 J	< 480 < 240	68 J 20 J	4800 < 1000			< 540 < 270	< 400
Xylene, -o**	ug/kg	45000	110000 110000	110000	NA	41 J 131		20 J 88	< 1000 4800	< 270	38 J 738	< 270 ND	< 200 ND
Total Xylenes* SVOCs	ug/kg			110000			ND			36			
2-Methylnaphthalene	ug/kg		120000	369000	NA	48 J	6.7 J	230 J	1500 J	8.3 J	410 J	12 J	NA
Acenaphthene	ug/kg		1860000	5260000	NA	23 J	< 360	< 1900	< 1900	12 J	< 960	< 880	NA
Acenaphthylene Acetophenone	ug/kg	NS NS	NS NS	NS NS	NA NA	12 J NA	< 360 NA	< 1900 NA	< 1900 NA	< 370 NA	< 960 NA	< 880 NA	NA NA
Acetophenone Anthracene	ug/kg ug/kg	7880000	10000000	45400000	NA	66 J	< 360	38 J	28 J	NA 21 J	< 960	20 J	NA
Benzaldehyde	ug/kg		NS	43400000 NS	NA	NA	NA	NA	NA	NA	< 900 NA	NA	NA
Benzo (g,h,i) perylene	ug/kg		NS	NS	NA	200 J	< 360	140 J	< 1900	98 J	< 960	70 J	NA
Benzo(a)anthracene	ug/kg		NS	NS	NA	260 J	< 360	190 J	54 J	91 J	< 960	100 J	NA
Benzo(a)pyrene	ug/kg	2000	2000	3000	NA	260 J	< 360	230 J	45 J	95 J	< 960	110 J	NA
Benzo(b)fluoranthene	ug/kg		NS	NS	NA	410	< 360	270 J	74 J	140 J	< 960	150 J	NA
Benzo(k)fluoranthene	ug/kg		NS	NS	NA	140 J	< 360	120 J	36 J	96 J	< 960	76 J	NA
bis(2-Ethylhexyl)phthalate	ug/kg	570000	690000	2100000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	700000	720000	1310000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	ug/kg	NS	NS	NS	NA	280 J	< 360	200 J	69 J	100 J	< 960	110 J	NA
Dibenzo(a,h)anthracene	ug/kg		NS	NS	NA	54 J	< 360	< 1900	< 1900	< 370	< 960	< 880	NA
Dibenzofuran	ug/kg		130000	810000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	ug/kg		1290000	6800000	NA	460	< 360	300 J	170 J	230 J	39 J	160 J	NA
Fluorene	ug/kg		1200000	4120000	NA	21 J	< 360	29 J	25 J	9.8 J	< 960	< 880	NA
Indeno(1,2,3-cd)pyrene Naphthalene	ug/kg ug/kg		NS 24000	NS 28000	NA NA	160 J 36 J	< 360 < 360	140 J 250 J	< 1900 460 J	78 J 6.2 J	< 960 290 J	66 J < 880	NA NA
Phenanthrene			24000 NS	28000 NS	NA	240 J	< 360	230 J 130 J	400 J 80 J	0.2 J 120 J	< 960	< 880 50 J	NA
Pyrene Metals	ug/kg ug/kg		1060000	5800000	NA	380	< 360	270 J	140 J	120 J	< 960 37 J	140 J	NA
Aluminum	mg/kg	30000	40000	100000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg		40000	100000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg		10	20	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	mg/kg	-	1100	18000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bandin	iiig/kg	1100	1100	10000	11/1		LN/A	LN/A	11/7	INA.	LN/A	LN/A	

Table 6. Summary of Detected Constituents in Soil Samples	
Twin Cities Assembly Plant, St. Paul, Minnesota	

Feature						16	16	16	16	16	16	16	21
Location ID		Tier 1	Tier 2	Tier 2	TCLP	ASB-158	ASB-158	ASB-159	ASB-159	ASB-160	ASB-160	ASB-161	ASB-168
Sample ID		Residential	Recreational	Industrial	Criteria	ASB-158_02(20110901)	ASB-158_4-6(20110901)	ASB-159_2-4(20110902)	ASB-159_5-7(20110902)	ASB-160_2-4(20110902)	ASB-160_5-7(20110902)	ASB-161_1-3(20110902)	ASB-168_0-2(20110907)
Sample Date	Unit	SRV	SRV	SRV		9/1/2011	9/1/2011	9/2/2011	9/2/2011	9/2/2011	9/2/2011	9/2/2011	9/7/2011
Depth Interval						02 ft	4-6 ft	2-4 ft	5-7 ft	2-4 ft	5-7 ft	1-3 ft	0-2 ft
Beryllium	mg/kg	55	75	230	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	25	35	200	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium, Total***	mg/kg	87/44000	120/60000	650/100000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	mg/kg	600	800	2600	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	100	100	9000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	9000	12000	75000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	300	300	700	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	3600	5000	8100	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.5	1.2	1.5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	mg/kg	560	800	2500	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	160	200	1300	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	mg/kg	160	200	1300	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	3	3	21	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	30	40	250	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	8700	12000	75000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals - TCLP													
Arsenic	mg/l	NA	NA	NA	5	NA	NA	NA	NA	NA	NA	NA	NA
PCBs													
Aroclor 1248	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Detected PCBs	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other													
Gasoline Range Organics	mg/kg	NS	NS	NS	NA	< 11	< 11	53 J	790 J	8.6 J	160 J	1.6 J	1.4 J
Diesel Range Organics	mg/kg	NS	NS	NS	NA	49	< 9.1	100	290	18	150	< 8.7	110

Notes:

ug/kg Micrograms per kilogram.

mg/kg Milligrams per kilogram.

mg/l Milligrams per liter.

< Not detected.

ASB ARCADIS Soil Boring.

NA Not applicable/not analyzed.

ND Not detected.

NS No standard.

J Estimated result.

Bold Result value is above the MPCA Tier 1 Residential SRV.

Shade Result value is above the MPCA Tier 2 Recreational SRV.

Box Result value is above the MPCA Tier 2 Industrial SRV.

Italics Reporting limit for non detect result exceeds one or more of the SRVs.

VOCs Volatile organic compounds.

SVOCs Semi-volatile organic compounds.

PCBs Polychlorinated biphenyls.

SRV Soil reference value.

MPCA Minnesota Pollution Control Agency.

TCLP Toxicity characteristic leaching procedure.

* Sum of detected xylene results (m,p,o).

** Criteria for total xylenes used.

*** SRVs are for Chromium VI and Chromium III respectively, reported data is for total chromium and is therefore compared to the lower of the SRVs.

Samples ASB-195_6-8(20110912) (240-3807-26)[25X], ASB-195_8-10(20110912) (240-3807

27)[50X] and ASB-194_10-12(20110912) (240-3807-29)[10X] required dilution prior to

Table 6. Summary of Detected Constituents in Soil Samples
Twin Cities Assembly Plant, St. Paul, Minnesota

Feature						21	27	35,36,37,46	35,36,37,46	35,36,37,46	35,36,37,46	41,42	41,42
Location ID		Tier 1	Tier 2	Tier 2	TCLP	ASB-168	ASB-169	ASB-185	ASB-185	ASB-186	ASB-186	ASB-196	ASB-197
Sample ID		Residential	Recreational	Industrial	Criteria	ASB-168_4-6(20110907)	ASB-169_3-5(20110907)	ASB-185_0-2(20110909)	ASB-185_4-6(20110909)	ASB-186_0-2(20110909)	ASB-186_4-6(20110909)	ASB-196_4-6(20111104)	ASB-197_4-6(20111104
Sample Date	Unit	SRV	SRV	SRV		9/7/2011	9/7/2011	9/9/2011	9/9/2011	9/9/2011	9/9/2011	11/4/2011	11/4/2011
Depth Interval						4-6 ft	3-5 ft	0-2 ft	4-6 ft	0-2 ft	4-6 ft	4-6 ft	4-6 ft
VOCs													
1,2,4-Trimethylbenzene	ug/kg	8000	20000	25000	NA	< 230	< 250	< 230	< 300	< 250	< 300	9.7 J	< 270
1,2-Dichloroethane	ug/kg	4000	10000	6000	NA	< 230	< 250	< 230	< 300	< 250	< 300	< 250	< 270
1,3,5-Trimethylbenzene	ug/kg	3000	8000	10000	NA	< 230	< 250	< 230	< 300	< 250	< 300	< 250	< 270
2-Butanone (MEK)	ug/kg	5500000	5500000	19000000	NA	< 910	< 1000	< 900	< 1200	< 1000	< 1200	< 990	87 J
Benzene	ug/kg	6000	14000	10000	NA	< 230	< 250	< 230	< 300	< 250	< 300	< 250	< 270
Butylbenzene	ug/kg	30000	70000	92000	NA	< 230	< 250	< 230	< 300	< 250	< 300	< 250	< 270
Carbon disulfide	ug/kg	65000	160000	190000	NA	< 230	< 250	< 230	< 300	< 250	< 300	< 250	< 270
cis-1,2-Dichloroethene	ug/kg	8000	19000	22000	NA	< 230	< 250	< 230	< 300	< 250	< 300	< 250	< 270
Cyclohexane	ug/kg	NS	NS	NS	NA	< 460	< 500	< 450	< 600	< 500	< 590	< 500	< 530
Ethylbenzene	ug/kg	200000	200000	200000	NA	< 230	< 250	< 230	< 300	< 250	< 300	< 250	< 270
Isopropylbenzene	ug/kg	30000	74000	87000	NA	< 230	< 250	< 230	< 300	< 250	< 300	< 250	< 270
Methyl acetate	ug/kg	NS	NS	NS	NA	< 460	< 500	47 J	< 600	500	< 590	55 J	57 J
Methylcyclohexane	ug/kg	NS	NS	NS	NA	< 460	< 500	< 450	< 600	< 500	< 590	18 J	< 530
Methylene chloride	ug/kg	97000	270000	158000	NA	< 230	< 250	< 230	< 300	< 250	< 300	< 250	< 270
Naphthalene	ug/kg	10000	24000	28000	NA	< 230	< 250	< 230	< 300	< 250	< 300	< 250	< 270
n-Propylbenzene	ug/kg	30000	70000	93000	NA	< 230	< 250	< 230	< 300	< 250	< 300	< 250	< 270
p-lsopropyltoluene	ug/kg ug/kg	NS	NS	NS	NA	< 230	< 250 < 250	< 230	< 300	< 250	< 300	< 250	< 270
sec-Butylbenzene	ug/kg ug/kg	25000	55000	70000	NA	< 230	< 250	< 230	< 300	< 250	< 300	< 250	< 270
Styrene	ug/kg	210000	500000	600000	NA	< 230	< 250	< 230	< 300	< 250	< 300	< 250	< 270
Tetrachloroethene	ug/kg	72000	145000	131000	NA	< 230	< 250	< 230	< 300	< 250	< 300	< 250	< 270
Tetrahydrofuran	ug/kg	NS	NS	NS	NA	< 910	< 1000	< 900	< 1200	< 1000	< 1200	< 990	< 1100
Toluene	ug/kg	107000	260000	305000	NA	< 230	< 250	< 230	< 300	< 250	< 300	< 250	< 270
Trichloroethene	ug/kg	29000	82000	46000	NA	< 230	< 250	< 230	< 300	< 250	< 300	< 250	< 270
m-Xylene & p-Xylene**	ug/kg	45000	110000	110000	NA	< 460	< 500	< 450	< 600	< 500	< 590	7.6 J	< 530
, , ,	00												
Xylene, -o**	ug/kg	45000	110000	110000	NA	< 230	< 250	< 230	< 300	< 250	< 300	< 250	< 270
Total Xylenes*	ug/kg	45000	110000	110000	NA	ND	ND	ND	ND	ND	ND	7.6	ND
SVOCs									100		100		
2-Methylnaphthalene	ug/kg	100000	120000	369000	NA	NA	< 3500	< 350	< 420	< 340	< 420	< 1500	< 390
Acenaphthene	ug/kg	1200000	1860000	5260000	NA	NA	< 3500	< 350	< 420	< 340	< 420	< 1500	< 390
Acenaphthylene	ug/kg	NS	NS	NS	NA	NA	< 3500	< 350	< 420	< 340	< 420	< 1500	< 390
Acetophenone	ug/kg	NS	NS	NS	NA	NA	< 3500	< 350	< 420	< 340	< 420	< 1500	< 390
Anthracene	ug/kg	7880000	1000000	45400000	NA	NA	140 J	< 350	< 420	< 340	< 420	< 1500	< 390
Benzaldehyde	ug/kg	NS	NS	NS	NA	NA	< 3500	< 350	< 420	< 340	< 420	< 1500	< 390
Benzo (g,h,i) perylene	ug/kg	NS	NS	NS	NA	NA	190 J	< 350	< 420	< 340	< 420	< 1500	< 390
Benzo(a)anthracene	ug/kg	NS	NS	NS	NA	NA	350 J	< 350	< 420	< 340	< 420	< 1500	< 390
Benzo(a)pyrene	ug/kg	2000	2000	3000	NA	NA	300 J	< 350	< 420	< 340	< 420	< 1500	< 390
Benzo(b)fluoranthene	ug/kg	NS	NS	NS	NA	NA	450 J	< 350	< 420	< 340	< 420	< 1500	< 390
Benzo(k)fluoranthene	ug/kg	NS	NS	NS	NA	NA	180 J	< 350	< 420	< 340	< 420	< 1500	< 390
bis(2-Ethylhexyl)phthalate	ug/kg	570000	690000	2100000	NA	NA	< 3500	< 350	< 420	< 340	< 420	< 1500	< 390
Carbazole	ug/kg	700000	720000	1310000	NA	NA	< 3500	< 350	< 420	< 340	< 420	< 1500	< 390
Chrysene	ug/kg	NS	NS	NS	NA	NA	330 J	12 J	< 420	< 340	< 420	< 1500	< 390
Dibenzo(a,h)anthracene	ug/kg	NS	NS	NS	NA	NA	< 3500	< 350	< 420	< 340	< 420	< 1500	< 390
Dibenzofuran	ug/kg	104000	130000	810000	NA	NA	< 3500	< 350	< 420	< 340	< 420	< 1500	< 390
Fluoranthene	ug/kg	1080000	1290000	6800000	NA	NA	910 J	< 350	< 420	< 340	< 420	< 1500	7.4 J
Fluorene	ug/kg	850000	1200000	4120000	NA	NA	43 J	< 350	< 420	< 340	< 420	< 1500	< 390
Indeno(1,2,3-cd)pyrene	ug/kg	NS	NS	NS	NA	NA	180 J	< 350	< 420	< 340	< 420	< 1500	< 390
Naphthalene	ug/kg	10000	24000	28000	NA	NA	< 3500	< 350	< 420	< 340	< 420	< 1500	< 390
Phenanthrene	ug/kg	NS	NS	NS	NA	NA	540 J	< 350	< 420	< 340	< 420	< 1500	< 390
Pyrene	ug/kg	890000	1060000	5800000	NA	NA	630 J	14 J	< 420	< 340	< 420	26 J	6.2 J
Metals										• * *			
Aluminum	mg/kg	30000	40000	100000	NA	NA	NA	NA	NA	NA	NA	7400	8000
Antimony	mg/kg	12	16	100	NA	NA	NA	NA	NA	NA	NA	0.93 J	< 1
Arsenic	mg/kg	9	11	20	NA	NA	2.2	3.2	4.5	2.8	4.7	3.9	4.3
Barium	mg/kg	1100	1100	18000	NA	NA	21	61	27	39	20 J	31	27

Feature						21	27	35,36,37,46	35,36,37,46	35,36,37,46	35,36,37,46	41,42	41,42
Location ID		Tier 1	Tier 2	Tier 2	TCLP	ASB-168	ASB-169	ASB-185	ASB-185	ASB-186	ASB-186	ASB-196	ASB-197
Sample ID		Residential	Recreational	Industrial	Criteria	ASB-168_4-6(20110907)	ASB-169_3-5(20110907)	ASB-185_0-2(20110909)	ASB-185_4-6(20110909)	ASB-186_0-2(20110909)	ASB-186_4-6(20110909)	ASB-196_4-6(20111104)	ASB-197_4-6(20111104)
Sample Date	Unit	SRV	SRV	SRV		9/7/2011	9/7/2011	9/9/2011	9/9/2011	9/9/2011	9/9/2011	11/4/2011	11/4/2011
Depth Interval						4-6 ft	3-5 ft	0-2 ft	4-6 ft	0-2 ft	4-6 ft	4-6 ft	4-6 ft
Beryllium	mg/kg	55	75	230	NA	NA	NA	NA	NA	NA	NA	0.39 J	0.56
Cadmium	mg/kg	25	35	200	NA	NA	0.045 J	0.066 J	< 0.24	< 0.17	< 0.23	< 0.23	< 0.2
Calcium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	36000	19000
Chromium, Total***	mg/kg	87/44000	120/60000	650/100000	NA	NA	8.8	8.9	19	14	15	15	14
Cobalt	mg/kg	600	800	2600	NA	NA	NA	NA	NA	NA	NA	7.8	12
Copper	mg/kg	100	100	9000	NA	NA	NA	NA	NA	NA	NA	14	22
Iron	mg/kg	9000	12000	75000	NA	NA	NA	NA	NA	NA	NA	16000	14000
Lead	mg/kg	300	300	700	NA	NA	6.6	4.4	2.6	2.7	2.7	9	3.2
Magnesium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	6700	10000
Manganese	mg/kg	3600	5000	8100	NA	NA	NA	NA	NA	NA	NA	220	260
Mercury	mg/kg	0.5	1.2	1.5	NA	NA	< 0.08	0.02 J	0.023 J	< 0.092	< 0.099	< 0.11	< 0.11
Nickel	mg/kg	560	800	2500	NA	NA	NA	NA	NA	NA	NA	18	23
Potassium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	2700	4400
Selenium	mg/kg	160	200	1300	NA	NA	< 0.49	< 0.52	< 0.61	< 0.43	< 0.57	< 0.57	< 0.51
Silver	mg/kg	160	200	1300	NA	NA	< 0.49	< 0.52	< 0.61	< 0.43	< 0.57	< 0.57	< 0.51
Sodium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	< 570	69 J
Thallium	mg/kg	3	3	21	NA	NA	NA	NA	NA	NA	NA	1.1	1.2
Vanadium	mg/kg	30	40	250	NA	NA	NA	NA	NA	NA	NA	12	4.7 J
Zinc	mg/kg	8700	12000	75000	NA	NA	NA	NA	NA	NA	NA	26	22
Metals - TCLP													
Arsenic	mg/l	NA	NA	NA	5	NA							
PCBs													
Aroclor 1248	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Detected PCBs	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other													
Gasoline Range Organics	mg/kg	NS	NS	NS	NA	3.9 J	NA	NA	NA	NA	NA	< 11	< 12
Diesel Range Organics	mg/kg	NS	NS	NS	NA	16	68	NA	NA	NA	NA	38	3.6 J

Notes:

ug/kg Micrograms per kilogram.

mg/kg Milligrams per kilogram.

mg/l Milligrams per liter.

< Not detected.

ASB ARCADIS Soil Boring.

NA Not applicable/not analyzed.

ND Not detected.

NS No standard.

J Estimated result.

Bold Result value is above the MPCA Tier 1 Residential SRV.

Shade Result value is above the MPCA Tier 2 Recreational SRV.

Box Result value is above the MPCA Tier 2 Industrial SRV.

Italics Reporting limit for non detect result exceeds one or more of the SRVs.

VOCs Volatile organic compounds.

SVOCs Semi-volatile organic compounds.

PCBs Polychlorinated biphenyls.

SRV Soil reference value.

MPCA Minnesota Pollution Control Agency.

TCLP Toxicity characteristic leaching procedure.

* Sum of detected xylene results (m,p,o).

** Criteria for total xylenes used.

*** SRVs are for Chromium VI and Chromium III respectively, reported data is for total chromium and is therefore compared to the lower of the SRVs.

Samples ASB-195_6-8(20110912) (240-3807-26)[25X], ASB-195_8-10(20110912) (240-3807

27)[50X] and ASB-194_10-12(20110912) (240-3807-29)[10X] required dilution prior to

Table 6. Summary of Detected Constituents in Soil Samples
Twin Cities Assembly Plant, St. Paul, Minnesota

Feature Location ID Sample ID Sample Date	Unit	Tier 1 Residential SRV	Tier 2 Recreational SRV	Tier 2 Industrial SRV	TCLP Criteria	41,42 ASB-198 ASB-198_6-8(20111104) 11/4/2011	44,134,140 ASB-188 ASB-188_0-2(20110912) 9/12/2011	44,134,140 ASB-188 ASB-188_4-6(20110912) 9/12/2011	44,134,140 ASB-189 ASB-189_0-2(20110912) 9/12/2011	44,134,140 ASB-189 ASB-189_4-6(20110912) 9/12/2011	44,134,140 ASB-190 ASB-190_0-2(20110912) 9/12/2011	44,134,140 ASB-190 ASB-190_8-10(20110912) 9/12/2011	44,134,140 ASB-191 ASB-191_0-2(20110912) 9/12/2011
Depth Interval						6-8 ft	0-2 ft	4-6 ft	0-2 ft	4-6 ft	0-2 ft	8-10 ft	0-2 ft
VOCs													
1,2,4-Trimethylbenzene	ug/kg	8000	20000	25000	NA	20 J	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	4000	10000	6000	NA	< 280	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	3000	8000	10000	NA	< 280	NA	NA	NA	NA	NA	NA	NA
2-Butanone (MEK)	ug/kg	5500000	5500000	19000000	NA	120 J	NA	NA	NA	NA	NA	NA	NA
Benzene	ug/kg	6000	14000	10000	NA	< 280	NA	NA	NA	NA	NA	NA	NA
Butylbenzene	ug/kg	30000	70000	92000	NA	< 280	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide cis-1,2-Dichloroethene	ug/kg	65000 8000	160000 19000	190000 22000	NA NA	54 J < 280	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
Cyclohexane	ug/kg ug/kg	NS	NS	22000 NS	NA	< 570	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	ug/kg	200000	200000	200000	NA	10 J	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	30000	74000	87000	NA	< 280	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NS	NS	NS	NA	220 J	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NS	NS	NS	NA	91 J	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	ug/kg	97000	270000	158000	NA	< 280	NA	NA	NA	NA	NA	NA	NA
Naphthalene	ug/kg	10000	24000	28000	NA	76 J	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	30000	70000	93000	NA	< 280	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NS	NS	NS	NA	< 280	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	25000	55000	70000	NA	< 280	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	210000	500000	600000	NA	< 280	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	72000	145000	131000	NA	< 280	NA	NA	NA	NA	NA	NA	NA
Tetrahydrofuran	ug/kg	NS	NS	NS	NA	< 1100	NA	NA	NA	NA	NA	NA	NA
Toluene Trichloroethene	ug/kg	107000 29000	260000 82000	305000 46000	NA NA	34 J < 280	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
m-Xylene & p-Xylene**	ug/kg ug/kg	29000 45000	110000	110000	NA	38 J	NA	NA	NA	NA	NA	NA	NA
Xylene, -o**	ug/kg	45000	110000	110000	NA	28 J	NA	NA	NA	NA	NA	NA	NA
Total Xylenes*	ug/kg ug/kg		110000	110000	NA	66	NA	NA	NA	NA	NA	NA	NA
SVOCs													
2-Methylnaphthalene	ug/kg		120000	369000	NA	4000 J	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	ug/kg	1200000 NS	1860000 NS	5260000	NA NA	14000 J < 39000	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
Acenaphthylene Acetophenone	ug/kg ug/kg		NS	NS NS	NA	< 39000	NA	NA	NA	NA	NA	NA	NA
Anthracene	ug/kg	7880000	10000000	45400000	NA	20000 J	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg		NS	NS	NA	< 39000	NA	NA	NA	NA	NA	NA	NA
Benzo (g,h,i) perylene	ug/kg	NS	NS	NS	NA	25000 J	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	ug/kg	NS	NS	NS	NA	54000	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	ug/kg	2000	2000	3000	NA	43000	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	ug/kg	NS	NS	NS	NA	64000	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	ug/kg	NS	NS	NS	NA	17000 J	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	570000	690000	2100000	NA	< 39000	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	700000	720000	1310000	NA	11000 J	NA	NA	NA	NA	NA	NA	NA
Chrysene	ug/kg		NS	NS	NA	50000	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	ug/kg		NS	NS	NA	7600 J	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	ug/kg		130000	810000	NA	6500 J	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	ug/kg		1290000	6800000	NA	130000	NA	NA	NA	NA	NA	NA	NA
Fluorene	ug/kg		1200000	4120000	NA	14000 J	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene Naphthalene	ug/kg ug/kg		NS 24000	NS 28000	NA NA	21000 J 7500 J	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
Phenanthrene	ug/kg		24000 NS	28000 NS	NA	88000	NA	NA	NA	NA	NA	NA	NA
Pyrene Metals	ug/kg ug/kg		1060000	5800000	NA	83000	NA	NA	NA	NA	NA	NA	NA
Aluminum	mg/kg	30000	40000	100000	NA	4900	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg		40000	100000	NA	1.3	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg		10	20	NA	1.5	NA	NA	NA	NA	NA	NA	NA
Barium	mg/kg	-	1100	18000	NA	170	NA	NA	NA	NA	NA	NA	NA
Bandin	шу/ку	1100	1100	10000		170	117		1 17				11/1

Feature						41,42	44,134,140	44,134,140	44,134,140	44,134,140	44,134,140	44,134,140	44,134,140
Location ID		Tier 1	Tier 2	Tier 2	TCLP	ASB-198	ASB-188	ASB-188	ASB-189	ASB-189	ASB-190	ASB-190	ASB-191
Sample ID		Residential	Recreational	Industrial	Criteria	ASB-198_6-8(20111104)	ASB-188_0-2(20110912)	ASB-188_4-6(20110912)	ASB-189_0-2(20110912)	ASB-189_4-6(20110912)	ASB-190_0-2(20110912)	ASB-190_8-10(20110912)	ASB-191_0-2(20110912)
Sample Date	Unit	SRV	SRV	SRV		11/4/2011	9/12/2011	9/12/2011	9/12/2011	9/12/2011	9/12/2011	9/12/2011	9/12/2011
Depth Interval						6-8 ft	0-2 ft	4-6 ft	0-2 ft	4-6 ft	0-2 ft	8-10 ft	0-2 ft
Beryllium	mg/kg	55	75	230	NA	0.14 J	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	25	35	200	NA	0.48	NA	NA	NA	NA	NA	NA	NA
Calcium	mg/kg	NS	NS	NS	NA	15000	NA	NA	NA	NA	NA	NA	NA
Chromium, Total***	mg/kg	87/44000	120/60000	650/100000	NA	12	NA	NA	NA	NA	NA	NA	NA
Cobalt	mg/kg	600	800	2600	NA	4.9 J	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	100	100	9000	NA	19	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	9000	12000	75000	NA	10000	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	300	300	700	NA	130	12	8.8	16	2.5	12	4.9	2.5
Magnesium	mg/kg	NS	NS	NS	NA	4200	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	3600	5000	8100	NA	380	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.5	1.2	1.5	NA	0.063 J	NA	NA	NA	NA	NA	NA	NA
Nickel	mg/kg	560	800	2500	NA	12	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NS	NS	NS	NA	670	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	160	200	1300	NA	< 0.57	NA	NA	NA	NA	NA	NA	NA
Silver	mg/kg	160	200	1300	NA	< 0.57	NA	NA	NA	NA	NA	NA	NA
Sodium	mg/kg	NS	NS	NS	NA	120 J	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	3	3	21	NA	0.99 J	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	30	40	250	NA	15	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	8700	12000	75000	NA	130	NA	NA	NA	NA	NA	NA	NA
Metals - TCLP													
Arsenic	mg/l	NA	NA	NA	5	NA	NA						
PCBs													
Aroclor 1248	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Detected PCBs	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other													
Gasoline Range Organics	mg/kg	NS	NS	NS	NA	< 11	NA	NA	NA	NA	NA	NA	NA
Diesel Range Organics	mg/kg	NS	NS	NS	NA	57	NA	NA	NA	NA	NA	NA	NA

Notes:

Micrograms per kilogram. ug/kg

Milligrams per kilogram. mg/kg

mg/l Milligrams per liter.

Not detected. <

ASB ARCADIS Soil Boring.

NA Not applicable/not analyzed.

ND Not detected.

NS No standard.

J Estimated result.

Bold Result value is above the MPCA Tier 1 Residential SRV.

Shade Result value is above the MPCA Tier 2 Recreational SRV.

Result value is above the MPCA Tier 2 Industrial SRV. Box

Reporting limit for non detect result exceeds one or more of the SRVs. Italics

VOCs Volatile organic compounds.

SVOCs Semi-volatile organic compounds.

PCBs Polychlorinated biphenyls.

SRV Soil reference value. MPCA

Minnesota Pollution Control Agency. TCLP

Toxicity characteristic leaching procedure. * Sum of detected xylene results (m,p,o).

**

Criteria for total xylenes used.

*** SRVs are for Chromium VI and Chromium III respectively, reported data is for total chromium and is therefore compared to the lower of the SRVs.

Samples ASB-195_6-8(20110912) (240-3807-26)[25X], ASB-195_8-10(20110912) (240-3807

27)[50X] and ASB-194_10-12(20110912) (240-3807-29)[10X] required dilution prior to

Table 6. Summary of Detected Constituents in Soil Samples	
Twin Cities Assembly Plant, St. Paul, Minnesota	

Feature Location ID Sample ID		Tier 1 Residential	Tier 2 Recreational	Tier 2 Industrial	TCLP Criteria	44,134,140 ASB-191 ASB-191_4-6(20110912)	44,134,140 ASB-192 ASB-192 0-2(20110912)	44,134,140 ASB-192 ASB-192 4-6(20110912)	138 ASB-145 ASB-145 0-2(20110830)	138 ASB-145 ASB-145 6-8(20110830)	138 ASB-146 ASB-146 0-2(20110831)	138 ASB-146 ASB-146 6-8(20110831)	152 ASB-135 ASB-135_2-4(20110826)
Sample Date Depth Interval	Unit	SRV	SRV	SRV		9/12/2011 4-6 ft	9/12/2011 0-2 ft	9/12/2011 4-6 ft	8/30/2011 0-2 ft	8/30/2011 6-8 ft	8/31/2011 0-2 ft	8/31/2011 6-8 ft	8/26/2011 2-4 ft
VOCs						4011	0211	4011	0211	0011	0211	0011	2 4 10
1,2,4-Trimethylbenzene	ug/kg	8000	20000	25000	NA	NA	NA	NA	84 J	< 280	< 290	< 1500	33 J
1,2-Dichloroethane	ug/kg	4000	10000	6000	NA	NA	NA	NA	< 330	< 280	< 290	< 1500	< 240
1,3,5-Trimethylbenzene	ug/kg	3000	8000	10000	NA	NA	NA	NA	28 J	< 280	< 290	< 1500	< 240
2-Butanone (MEK)	ug/kg	5500000	5500000	19000000	NA	NA	NA	NA	< 1300	< 1100	< 1100	< 5900	< 940
Benzene	ug/kg	6000	14000	10000	NA	NA	NA	NA	< 330	< 280	< 290	< 1500	< 240
Butylbenzene	ug/kg	30000	70000	92000	NA	NA	NA	NA	14 J	< 280	< 290	20000	520
Carbon disulfide	ug/kg	65000	160000	190000	NA	NA	NA	NA	< 330	< 280	< 290	< 1500	44 J
cis-1,2-Dichloroethene	ug/kg	8000	19000	22000	NA	NA	NA	NA	< 330	< 280	< 290	< 1500	< 240
Cyclohexane	ug/kg	NS	NS	NS	NA	NA	NA	NA	98 J	< 560	< 570	7800	< 470
Ethylbenzene	ug/kg	200000	200000	200000	NA	NA	NA	NA	29 J	< 280	18 J	< 1500	36 J
Isopropylbenzene	ug/kg	30000	74000	87000	NA	NA	NA	NA	10 J	< 280	< 290	2300	53 J
Methyl acetate	ug/kg	NS	NS	NS	NA	NA	NA	NA	890	63 J	120 J	350 J	130 J
Methylcyclohexane	ug/kg	NS	NS	NS	NA	NA	NA	NA	280 J	< 560	< 570	26000	140 J
Methylene chloride	ug/kg	97000	270000	158000	NA	NA	NA	NA	< 330	< 280	< 290	< 1500	< 240
Naphthalene	ug/kg	10000	24000	28000	NA	NA	NA	NA	230 J	< 280	< 290	2800	150 J
n-Propylbenzene	ug/kg	30000	70000	93000	NA	NA	NA	NA	< 330	< 280	< 290	6200	240
p-Isopropyltoluene	ug/kg	NS	NS	NS	NA	NA	NA	NA	7.3 J	< 280	< 290	< 1500	< 240
sec-Butylbenzene	ug/kg	25000	55000	70000	NA	NA	NA	NA	< 330	< 280	< 290	3500	150 J
Styrene	ug/kg	210000	500000	600000	NA	NA	NA	NA	< 330	< 280	< 290	< 1500	< 240
Tetrachloroethene	ug/kg	72000	145000	131000	NA	NA	NA	NA	< 330	< 280	38 J	< 1500	< 240
Tetrahydrofuran	ug/kg	NS	NS	NS	NA	NA	NA	NA	< 1300	< 1100	< 1100	< 5900	< 940
Toluene	ug/kg	107000	260000	305000	NA	NA	NA	NA	170 J	< 280	< 290	< 1500	18 J
Trichloroethene	ug/kg	29000	82000	46000	NA	NA	NA	NA	< 330	< 280	< 290	< 1500	< 240
m-Xylene & p-Xylene**	ug/kg	45000	110000	110000	NA	NA	NA	NA	220 J	< 560	49 J	< 2900	35 J
Xylene, -o**	ug/kg	45000	110000	110000	NA	NA	NA	NA	200 J	< 280	27 J	< 1500	< 240
Total Xylenes*	ug/kg	45000	110000	110000	NA	NA	NA	NA	420	ND	76	ND	35
SVOCs													
2-Methylnaphthalene	ug/kg	100000	120000	369000	NA	NA	NA	NA	NA	NA	NA	NA	43 J
Acenaphthene	ug/kg	1200000	1860000	5260000	NA	NA	NA	NA	NA	NA	NA	NA	< 920
Acenaphthylene	ug/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	< 920
Acetophenone	ug/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	ug/kg	7880000	10000000	45400000	NA	NA	NA	NA	NA	NA	NA	NA	25 J NA
Benzaldehyde Benzo (a b i) populopo	ug/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	
Benzo (g,h,i) perylene Benzo(a)anthracene	ug/kg	NS NS	NS NS	NS NS	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	29 J 32 J
Benzo(a)pyrene	ug/kg	2000	2000	3000	NA	NA	NA	NA	NA	NA	NA	NA	32 J 30 J
Benzo(b)fluoranthene	ug/kg	2000 NS	2000 NS		NA	NA	NA	NA	NA	NA	NA	NA	30 J
Benzo(k)fluoranthene	ug/kg ug/kg	NS	NS	NS NS	NA	NA	NA	NA	NA	NA	NA	NA	33 J 18 J
bis(2-Ethylhexyl)phthalate	ug/kg ug/kg	570000	690000	2100000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	700000	720000	1310000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	ug/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	38 J
Dibenzo(a,h)anthracene	ug/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	< 920
Dibenzofuran	ug/kg	104000	130000	810000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	ug/kg	1080000	1290000	6800000	NA	NA	NA	NA	NA	NA	NA	NA	88 J
Fluorene	ug/kg	850000	1200000	4120000	NA	NA	NA	NA	NA	NA	NA	NA	13 J
Indeno(1,2,3-cd)pyrene	ug/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	32 J
Naphthalene	ug/kg	10000	24000	28000	NA	NA	NA	NA	NA	NA	NA	NA	42 J
Phenanthrene	ug/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	65 J
Pyrene Metals	ug/kg	890000	1060000	5800000	NA	NA	NA	NA	NA	NA	NA	NA	73 J
Aluminum	mg/kg	30000	40000	100000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg		16	100	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg		11	20	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	mg/kg		1100	18000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	39				-								

Feature						44,134,140	44,134,140	44,134,140	138	138	138	138	152
Location ID		Tier 1	Tier 2	Tier 2	TCLP	ASB-191	ASB-192	ASB-192	ASB-145	ASB-145	ASB-146	ASB-146	ASB-135
Sample ID		Residential	Recreational	Industrial	Criteria	ASB-191_4-6(20110912)	ASB-192_0-2(20110912)	ASB-192_4-6(20110912)	ASB-145_0-2(20110830)	ASB-145_6-8(20110830)	ASB-146_0-2(20110831)	ASB-146_6-8(20110831)	ASB-135_2-4(20110826)
Sample Date	Unit	SRV	SRV	SRV		9/12/2011	9/12/2011	9/12/2011	8/30/2011	8/30/2011	8/31/2011	8/31/2011	8/26/2011
Depth Interval						4-6 ft	0-2 ft	4-6 ft	0-2 ft	6-8 ft	0-2 ft	6-8 ft	2-4 ft
Beryllium	mg/kg	55	75	230	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	25	35	200	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium, Total***	mg/kg	87/44000	120/60000	650/100000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	mg/kg	600	800	2600	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	100	100	9000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	9000	12000	75000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	300	300	700	NA	9.2	4.4	3.8	51 J	5.8	8.8	7.3	NA
Magnesium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	3600	5000	8100	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.5	1.2	1.5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	mg/kg	560	800	2500	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	160	200	1300	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	mg/kg	160	200	1300	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	3	3	21	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	30	40	250	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	8700	12000	75000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals - TCLP													
Arsenic	mg/l	NA	NA	NA	5	NA							
PCBs													
Aroclor 1248	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Detected PCBs	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other													
Gasoline Range Organics	mg/kg	NS	NS	NS	NA	NA	NA	NA	< 11	< 12	< 13	780	170
Diesel Range Organics	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	100

Notes:

Micrograms per kilogram. ug/kg

Milligrams per kilogram. mg/kg

mg/l Milligrams per liter.

Not detected. <

ASB ARCADIS Soil Boring.

NA Not applicable/not analyzed.

ND Not detected.

NS No standard.

J Estimated result.

Bold Result value is above the MPCA Tier 1 Residential SRV.

Shade Result value is above the MPCA Tier 2 Recreational SRV.

Result value is above the MPCA Tier 2 Industrial SRV. Box

Reporting limit for non detect result exceeds one or more of the SRVs. Italics

VOCs Volatile organic compounds.

SVOCs Semi-volatile organic compounds.

PCBs Polychlorinated biphenyls. SRV

Soil reference value. MPCA

Minnesota Pollution Control Agency. TCLP

Toxicity characteristic leaching procedure. *

Sum of detected xylene results (m,p,o).

** Criteria for total xylenes used.

*** SRVs are for Chromium VI and Chromium III respectively, reported data is for total chromium and is therefore compared to the lower of the SRVs.

Samples ASB-195_6-8(20110912) (240-3807-26)[25X], ASB-195_8-10(20110912) (240-3807

27)[50X] and ASB-194_10-12(20110912) (240-3807-29)[10X] required dilution prior to

Table 6. Summary of Detected Constituents in Soil Samples	
Twin Cities Assembly Plant, St. Paul, Minnesota	

Feature						152	152	152	152	152	152	152	152
Location ID		Tier 1	Tier 2	Tier 2	TCLP	ASB-135	ASB-135	ASB-147	ASB-147	ASB-148	ASB-148	ASB-163	ASB-163
Sample ID		Residential	Recreational	Industrial	Criteria	. ,	ASB-135_8-9(20110826)	ASB-147_0-2(20110831)	ASB-147_6-8(20110831)	ASB-148_0-2(20110831)	ASB-148_4-6(20110831)	ASB-163_2-4(20110906)	-
Sample Date	Unit	SRV	SRV	SRV		8/26/2011	8/26/2011	8/31/2011	8/31/2011	8/31/2011	8/31/2011	9/6/2011	9/6/2011
Depth Interval						6-8 ft	8-9 ft	0-2 ft	6-8 ft	0-2 ft	4-6 ft	2-4 ft	4-6 ft
VOCs													
1,2,4-Trimethylbenzene	ug/kg	8000	20000	25000	NA	< 390	< 240	14 J	< 1300	< 250	< 240	640	220 J
1,2-Dichloroethane	ug/kg	4000	10000	6000	NA	< 390	< 240	< 250	< 1300	< 250	< 240	< 280	< 230
1,3,5-Trimethylbenzene	ug/kg	3000	8000	10000	NA	< 390	< 240	< 250	< 1300	< 250	< 240	120 J	41 J
2-Butanone (MEK)	ug/kg	5500000	5500000	1900000	NA	< 1600	< 960	< 1000	< 5400	< 1000	< 970	< 1100	< 930
Benzene	ug/kg	6000	14000	10000	NA	< 390	< 240	< 250	< 1300	< 250	< 240	< 280	< 230
Butylbenzene	ug/kg	30000	70000	92000	NA	540	170 J	14 J	16000	< 250	< 240	600	39 J
Carbon disulfide	ug/kg	65000	160000	190000	NA	75 J	57 J	51 J	260 J	< 250	< 240	60 J	43 J
cis-1,2-Dichloroethene	ug/kg	8000	19000	22000	NA	< 390	< 240	< 250	< 1300	< 250	< 240	< 280	< 230
Cyclohexane	ug/kg	NS	NS	NS	NA	610 J	240 J	< 500	800 J	< 500	< 490	< 550	< 470
Ethylbenzene	ug/kg	200000	200000	200000	NA	< 390	< 240	< 250	< 1300	< 250	14 J	670	86 J
Isopropylbenzene	ug/kg	30000	74000	87000	NA	220 J	67 J	< 250	1300	< 250	< 240	190 J	14 J
Methyl acetate	ug/kg	NS	NS	NS	NA	310 J	88 J	250 J	200 J	< 500	24 J	390 J	71 J
Methylcyclohexane	ug/kg	NS	NS	NS	NA	5600	3000	< 500	3400	< 500	< 490	130 J	15 J
Methylene chloride	ug/kg	97000	270000	158000	NA	< 390	< 240	< 250	< 1300	< 250	< 240	< 280	< 230
Naphthalene	ug/kg	10000	24000	28000	NA	170 J	< 240	< 250	< 1300	< 250	< 240	690	83 J
n-Propylbenzene	ug/kg	30000	70000	93000	NA	520	97 J	< 250	3600	< 250	< 240	470	40 J
p-lsopropyltoluene	ug/kg	NS	NS	NS	NA	< 390	< 240	< 250	< 1300	< 250	< 240	110 J	8.5 J
sec-Butylbenzene	ug/kg	25000	55000	70000	NA	280 J	110 J	5.3 J	3600	< 250	< 240	170 J	< 230
Styrene	ug/kg	210000	500000	600000	NA	< 390	< 240	< 250	< 1300	< 250	< 240	< 280	< 230
Tetrachloroethene	ug/kg	72000	145000	131000	NA	< 390	< 240	< 250	< 1300	< 250	< 240	< 280	< 230
Tetrahydrofuran	ug/kg	NS	NS	NS	NA	< 1600	< 960	< 1000	< 5400	< 1000	< 970	< 1100	< 930
Toluene	ug/kg	107000	260000	305000	NA	< 390	< 240	< 250	< 1300	< 250	< 240	< 280	< 230
Trichloroethene	ug/kg	29000	82000	46000	NA	< 390	< 240	< 250	< 1300	< 250	< 240	< 280	< 230
m-Xylene & p-Xylene**	ug/kg	45000	110000	110000	NA	< 790	< 480	9.6 J	< 2700	< 500	21 J	88 J	210 J
Xylene, -o**	ug/kg	45000	110000	110000	NA	< 390	< 240	< 250	< 1300	< 250	< 240	< 280	19 J
Total Xylenes*	ug/kg	45000	110000	110000	NA	ND	ND	9.6	ND	ND	21	88	229
SVOCs													
2-Methylnaphthalene	ug/kg	100000	120000	369000	NA	230 J	35 J	3.7 J	63 J	< 340	< 350	520	23 J
Acenaphthene	ug/kg	1200000	1860000	5260000	NA	< 430	< 380	< 370	41 J	< 340	< 350	< 420	< 350
Acenaphthylene	ug/kg	NS	NS	NS	NA	< 430	< 380	< 370	< 3700	< 340	< 350	< 420	< 350
Acetophenone	ug/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	ug/kg	7880000	10000000	45400000	NA	< 430	< 380	4 J	< 3700	< 340	< 350	< 420	< 350
Benzaldehyde	ug/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo (g,h,i) perylene	ug/kg	NS	NS	NS	NA	< 430	18 J	9.4 J	< 3700	5.1 J	4.1 J	< 420	< 350
Benzo(a)anthracene	ug/kg	NS	NS	NS	NA	< 430	< 380	< 370	< 3700	7.3 J	< 350	< 420	< 350
Benzo(a)pyrene	ug/kg	2000	2000	3000	NA	< 430	8.4 J	8.6 J	< 3700	6.2 J	3.8 J	< 420	< 350
Benzo(b)fluoranthene	ug/kg	NS	NS	NS	NA	< 430	< 380	< 370	< 3700	9.8 J	4.9 J	< 420	< 350
Benzo(k)fluoranthene	ug/kg	NS	NS	NS	NA	< 430	< 380	< 370	< 3700	3.7 J	< 350	< 420	< 350
bis(2-Ethylhexyl)phthalate	ug/kg	570000	690000	2100000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	700000	720000	1310000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	ug/kg	NS	NS	NS	NA	4.7 J	< 380	< 370	< 3700	7.3 J	< 350	13 J	15 J
Dibenzo(a,h)anthracene	ug/kg	NS	NS	NS	NA	< 430	< 380	< 370 J	< 3700	< 340	< 350	< 420	< 350
Dibenzofuran	ug/kg	104000	130000	810000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	ug/kg	1080000	1290000	6800000	NA	8.8 J	21 J	25 J	83 J	11 J	4.6 J	22 J	20 J
Fluorene	ug/kg	850000	1200000	4120000	NA	< 430	< 380	< 370	65 J	< 340	< 350	< 420	< 350
Indeno(1,2,3-cd)pyrene	ug/kg	NS	NS	NS	NA	< 430	12 J	14 J	< 3700	10 J	9.9 J	< 420	< 350
Naphthalene	ug/kg	10000	24000	28000	NA	140 J	19 J	9.1 J	< 3700	< 340	< 350	760	25 J
Phenanthrene	ug/kg	NS	NS	NS	NA	11 J	14 J	16 J	110 J	4.9 J	< 350	15 J	20 0 21 J
Pyrene	ug/kg	890000	1060000	5800000	NA	7.9 J	20 J	19 J	110 J	8.5 J	4 J	15 J	19 J
Metals	~9/19									0.00			
Aluminum	mg/kg	30000	40000	100000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	12	16	100000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	9	10	20	NA	NA	NA	NA	NA	NA	NA	NA	NA
		9 1100					NA			NA		NA	
Barium	mg/kg	1100	1100	18000	NA	NA	INA	NA	NA	INA	NA	INA	NA

Feature						152	152	152	152	152	152	152	152
Location ID		Tier 1	Tier 2	Tier 2	TCLP	ASB-135	ASB-135	ASB-147	ASB-147	ASB-148	ASB-148	ASB-163	ASB-163
Sample ID		Residential	Recreational	Industrial	Criteria	ASB-135_6-8(20110826)	ASB-135_8-9(20110826)	ASB-147_0-2(20110831)	ASB-147_6-8(20110831)	ASB-148_0-2(20110831)	ASB-148_4-6(20110831)	ASB-163_2-4(20110906)	ASB-163_4-6(20110906)
Sample Date	Unit	SRV	SRV	SRV		8/26/2011	8/26/2011	8/31/2011	8/31/2011	8/31/2011	8/31/2011	9/6/2011	9/6/2011
Depth Interval						6-8 ft	8-9 ft	0-2 ft	6-8 ft	0-2 ft	4-6 ft	2-4 ft	4-6 ft
Beryllium	mg/kg	55	75	230	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	25	35	200	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium, Total***	mg/kg	87/44000	120/60000	650/100000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	mg/kg	600	800	2600	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	100	100	9000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	9000	12000	75000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	300	300	700	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	3600	5000	8100	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.5	1.2	1.5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	mg/kg	560	800	2500	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	160	200	1300	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	mg/kg	160	200	1300	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	3	3	21	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	30	40	250	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	8700	12000	75000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals - TCLP													
Arsenic	mg/l	NA	NA	NA	5	NA							
PCBs													
Aroclor 1248	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Detected PCBs	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other													
Gasoline Range Organics	mg/kg	NS	NS	NS	NA	450	280	7.3 J	3000	< 10	< 10	82	9.4 J
Diesel Range Organics	mg/kg	NS	NS	NS	NA	23	32	9.8	29	< 8.7	< 8.5	27	24

Notes:

Micrograms per kilogram. ug/kg

Milligrams per kilogram. mg/kg

mg/l Milligrams per liter.

Not detected. <

ASB ARCADIS Soil Boring.

NA Not applicable/not analyzed.

ND Not detected.

NS No standard.

J Estimated result.

Bold Result value is above the MPCA Tier 1 Residential SRV.

Shade Result value is above the MPCA Tier 2 Recreational SRV.

Result value is above the MPCA Tier 2 Industrial SRV. Box

Reporting limit for non detect result exceeds one or more of the SRVs. Italics

VOCs Volatile organic compounds.

SVOCs Semi-volatile organic compounds.

PCBs Polychlorinated biphenyls. SRV

Soil reference value. MPCA

Minnesota Pollution Control Agency. TCLP

Toxicity characteristic leaching procedure. *

Sum of detected xylene results (m,p,o). **

Criteria for total xylenes used.

*** SRVs are for Chromium VI and Chromium III respectively, reported data is for total chromium and is therefore compared to the lower of the SRVs.

Samples ASB-195_6-8(20110912) (240-3807-26)[25X], ASB-195_8-10(20110912) (240-3807

27)[50X] and ASB-194_10-12(20110912) (240-3807-29)[10X] required dilution prior to

Table 6. Summary of Detected Constituents in Soil Samples
Twin Cities Assembly Plant, St. Paul, Minnesota

Feature						153	153,154	153,154	154	154
Location ID		Tier 1	Tier 2	Tier 2	TCLP	ASB-193	ASB-195	ASB-195	ASB-194	ASB-194
Sample ID		Residential			Criteria	ASB-193_1-2(20110912)	- 、 ,	ASB-195_8-10(20110912)		-
Sample Date	Unit	SRV	SRV	SRV		9/12/2011	9/12/2011	9/12/2011	9/12/2011	9/12/2011
Depth Interval						1-2 ft	6-8 ft	8-10 ft	10-12 ft	13-15 ft
VOCs		0000	00000	05000	N1.A	000	00.1	04.1	04.1	000
1,2,4-Trimethylbenzene	ug/kg	8000	20000	25000	NA	< 300	33 J	34 J	91 J	< 330
1,2-Dichloroethane	ug/kg	4000	10000	6000	NA	< 300	< 190	< 250	< 250	< 330
1,3,5-Trimethylbenzene	ug/kg	3000	8000	10000	NA	< 300	12 J	11 J	37 J	< 330
2-Butanone (MEK)	ug/kg	5500000	5500000	19000000	NA	< 1200	< 760	< 1000	< 1000	< 1300
Benzene	ug/kg	6000	14000	10000	NA	< 300	< 190	< 250	< 250	< 330
Butylbenzene	ug/kg	30000	70000	92000	NA	< 300	16 J	< 250	87 J	< 330
Carbon disulfide	ug/kg	65000	160000	190000	NA	< 300	< 190	< 250	55 J	< 330
cis-1,2-Dichloroethene	ug/kg	8000	19000	22000	NA	< 300	< 190	< 250	< 250	< 330
Cyclohexane	ug/kg	NS	NS	NS	NA	< 600	< 380	< 500	< 500	< 660
Ethylbenzene	ug/kg	200000	200000	200000	NA	< 300	5.9 J	< 250	17 J	< 330
Isopropylbenzene	ug/kg	30000	74000	87000	NA	< 300	< 190	< 250	15 J	< 330
Methyl acetate	ug/kg	NS	NS	NS	NA	910	270 J	290 J	600	410 J
Methylcyclohexane	ug/kg	NS	NS	NS	NA	18 J	19 J	55 J	93 J	< 660
Methylene chloride	ug/kg	97000	270000	158000	NA	< 300	< 190	< 250	< 250	< 330
Naphthalene	ug/kg	10000	24000	28000	NA	38 J	290	45 J	270	< 330
n-Propylbenzene	ug/kg	30000	70000	93000	NA	< 300	< 190	< 250	26 J	< 330
p-Isopropyltoluene	ug/kg	NS	NS	NS	NA	< 300	5.3 J	< 250	32 J	< 330
sec-Butylbenzene	ug/kg	25000	55000	70000	NA	< 300	< 190	< 250	45 J	< 330
Styrene	ug/kg	210000	500000	600000	NA	< 300	< 190	< 250	< 250	< 330
Tetrachloroethene	ug/kg	72000	145000	131000	NA	< 300	< 190	< 250	< 250	< 330
Tetrahydrofuran	ug/kg	NS	NS	NS	NA	< 1200	< 760	49 J	< 1000	< 1300
Toluene	ug/kg	107000	260000	305000	NA	< 300	< 190	< 250	35 J	< 330
Trichloroethene	ug/kg	29000	82000	46000	NA	< 300	< 190	< 250	< 250	< 330
m-Xylene & p-Xylene**	ug/kg	45000	110000	110000	NA	13 J	21 J	12 J	60 J	< 660
Xylene, -o**	ug/kg	45000	110000	110000	NA	< 300	11 J	12 J	46 J	< 330
Total Xylenes*	ug/kg	45000	110000	110000	NA	13	32	24	106	ND
SVOCs										
2-Methylnaphthalene	ug/kg	100000	120000	369000	NA	4.5 J	1000 J	< 17000	340 J	< 360
Acenaphthene	ug/kg	1200000	1860000	5260000	NA	< 390	< 8700	< 17000	< 3600	< 360
Acenaphthylene	ug/kg	NS	NS	NS	NA	< 390	< 8700	< 17000	< 3600	< 360
Acetophenone	ug/kg	NS	NS	NS	NA	< 390	< 8700	< 17000	< 3600	< 360
Anthracene	ug/kg	7880000	1000000	45400000	NA	4.3 J	710 J	< 17000	< 3600	< 360
Benzaldehyde	ug/kg	NS	NS	NS	NA	< 390	< 8700	< 17000	< 3600	< 360
Benzo (g,h,i) perylene	ug/kg	NS	NS	NS	NA	24 J	2000 J	< 17000	< 3600	11 J
Benzo(a)anthracene	ug/kg	NS	NS	NS	NA	26 J	3500 J	< 17000	170 J	14 J
Benzo(a)pyrene	ug/kg	2000	2000	3000	NA	31 J	3500 J	< 17000	630 J	14 J
Benzo(b)fluoranthene	ug/kg	NS	NS	NS	NA	40 J	5000 J	< 17000	< 3600	17 J
Benzo(k)fluoranthene	ug/kg	NS	NS	NS	NA	15 J	900 J	< 17000	< 3600	6.7 J
bis(2-Ethylhexyl)phthalate	ug/kg	570000	690000	2100000	NA	< 390	< 8700	< 17000	< 3600	21 J
Carbazole	ug/kg	700000	720000	1310000	NA	< 390	< 8700	< 17000	< 3600	< 360
Chrysene	ug/kg	NS	NS	NS	NA	34 J	3600 J	< 17000	340 J	16 J
Dibenzo(a,h)anthracene	ug/kg	NS	NS	NS	NA	< 390	720 J	< 17000	< 3600	< 360
Dibenzofuran	ug/kg	104000	130000	810000	NA	< 390	200 J	< 17000	< 3600	< 360
Fluoranthene	ug/kg	1080000	1290000	6800000	NA	55 J	5700 J	210 J	160 J	22 J
Fluorene	ug/kg	850000	1200000	4120000	NA	< 390	350 J	< 17000	100 J	< 360
Indeno(1,2,3-cd)pyrene	ug/kg	NS	NS	NS	NA	15 J	1600 J	< 17000	< 3600	8.4 J
Naphthalene	ug/kg	10000	24000	28000	NA	5.1 J	110 J	< 17000	80 J	< 360
Phenanthrene	ug/kg	NS	NS	NS	NA	20 J	2200 J	< 17000	420 J	7.5 J
Pyrene	ug/kg	890000	1060000	5800000	NA	46 J	5100 J	180 J	790 J	25 J
Metals Aluminum	mg/kg	30000	40000	100000	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	12	16	100	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	9	10	20	NA	3.9	3.8	2.2	3.1	5.6
Barium			1100	18000	NA	90	47	46	38	53
Danum	mg/kg	1100	1100	10000	NΑ	90	47	40	30	00

Feature						153	153,154	153,154	154	154
Location ID		Tier 1	Tier 2	Tier 2	TCLP	ASB-193	ASB-195	ASB-195	ASB-194	ASB-194
Sample ID		Residential	Recreational	Industrial	Criteria	ASB-193_1-2(20110912)	ASB-195_6-8(20110912)	ASB-195_8-10(20110912)	ASB-194_10-12(20110912)	ASB-194_13-15(20110912
Sample Date	Unit	SRV	SRV	SRV		9/12/2011	9/12/2011	9/12/2011	9/12/2011	9/12/2011
Depth Interval						1-2 ft	6-8 ft	8-10 ft	10-12 ft	13-15 ft
Beryllium	mg/kg	55	75	230	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	25	35	200	NA	< 0.23	< 0.21	< 0.2	< 0.2	< 0.22
Calcium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA
Chromium, Total***	mg/kg	87/44000	120/60000	650/100000	NA	11	12	9	9.7	12
Cobalt	mg/kg	600	800	2600	NA	NA	NA	NA	NA	NA
Copper	mg/kg	100	100	9000	NA	NA	NA	NA	NA	NA
Iron	mg/kg	9000	12000	75000	NA	NA	NA	NA	NA	NA
Lead	mg/kg	300	300	700	NA	23	31	16	14	4.6
Magnesium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	3600	5000	8100	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.5	1.2	1.5	NA	0.065 J	0.016 J	< 0.082	< 0.092	< 0.085
Nickel	mg/kg	560	800	2500	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	160	200	1300	NA	< 0.59	< 0.52 J	< 0.5 J	< 0.5 J	< 0.54 J
Silver	mg/kg	160	200	1300	NA	< 0.59	< 0.52	< 0.5	< 0.5	< 0.54
Sodium	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	3	3	21	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	30	40	250	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	8700	12000	75000	NA	NA	NA	NA	NA	NA
Metals - TCLP										
Arsenic	mg/l	NA	NA	NA	5	NA	NA	NA	NA	NA
PCBs										
Aroclor 1248	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA
Aroclor 1260	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA
Total Detected PCBs	ug/kg	1200	1400	8000	NA	NA	NA	NA	NA	NA
Other										
Gasoline Range Organics	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA
Diesel Range Organics	mg/kg	NS	NS	NS	NA	NA	NA	NA	NA	NA

Notes:

Micrograms per kilogram. ug/kg

Milligrams per kilogram. mg/kg

mg/l Milligrams per liter.

Not detected. <

ASB ARCADIS Soil Boring.

NA Not applicable/not analyzed.

ND Not detected.

NS No standard.

J Estimated result.

Bold Result value is above the MPCA Tier 1 Residential SRV.

Shade Result value is above the MPCA Tier 2 Recreational SRV.

Result value is above the MPCA Tier 2 Industrial SRV. Box

Reporting limit for non detect result exceeds one or more of the SRVs. Italics

VOCs Volatile organic compounds.

SVOCs Semi-volatile organic compounds.

PCBs Polychlorinated biphenyls.

SRV Soil reference value. MPCA

Minnesota Pollution Control Agency. TCLP

Toxicity characteristic leaching procedure. *

Sum of detected xylene results (m,p,o). **

Criteria for total xylenes used.

*** SRVs are for Chromium VI and Chromium III respectively, reported data is for total chromium and is therefore compared to the lower of the SRVs.

Samples ASB-195_6-8(20110912) (240-3807-26)[25X], ASB-195_8-10(20110912) (240-3807

27)[50X] and ASB-194_10-12(20110912) (240-3807-29)[10X] required dilution prior to

Feature or Area Location ID		MDH Healt	th Based Water	North Parking Area ASB-115	North Parking Area ASB-118	North Parking Area ASB-128	North Parking Area ASB-129	North Parking Area ASB-129	North Parking Area ASB-130	North Parking Area ASB-137	4 ASB-120
Sample ID	EPA		uidance				ASB-129_4.5-9.5(20110826)	DUP-001			ASB-120_6-11(20110823)
Sample Date	MCL	Value	Basis	8/22/2011	8/23/2011	8/25/2011	8/26/2011	8/26/2011	8/26/2011	8/29/2011	8/24/2011
Interval	-			4-9 ft bgs	8-12 ft bgs	5-10 ft bgs	4.5-9.5 ft bgs	4.5-9.5 ft bgs	0-5 ft bgs	6-11 ft bgs	6-11 ft bgs
VOCs									· · · · · · · · · · · · · · · · · · ·		<u> </u>
1,1-Dichloroethane	NS	100	2009 RAA	< 250 J	< 5	< 1	< 1	< 1	< 1	< 1	< 1 J
1,2,4-Trimethylbenzene	NS	100	2010 RAA	30 J	1.8 J	< 1	< 1	< 1	< 1	< 1	< 1 J
1,3,5-Trimethylbenzene	NS	100	2009 HRL	29 J	3.3 J	< 1	< 1	< 1	< 1	< 1	< 1 J
2-Butanone (MEK)	NS	4000	1993/94 HRL	< 2500 J	< 50	< 10	< 10	< 10	< 10	< 10	1.5 J
Acetone	NS	4000	2010 HRL	< 2500 J	< 50	1.6 J	2.3 J	< 10	< 10	3.5 J	8.9 J
Benzene	5	2	2009 HRL	6200 J	120	<1	< 1	< 1	< 1	< 1	17 J
Butylbenzene	NS	NS	NS	< 250 J	0.91 J	< 1	< 1	< 1	< 1	< 1	< 1 J
Carbon disulfide	NS	700	1993/94 HRL	< 250 J	< 5	< 1	<1	< 1	< 1	< 1	0.15 J
Cyclohexane	NS	NS	NS	480 J	92	< 1	<1	< 1	< 1	< 1	16 J
Dichlorodifluoromethane (CFC-12)	NS	700	2009 HBV	< 250 J	< 5	< 1	< 1	< 1	<1	< 1	< 1 J
Ethylbenzene	700	50	2010 HBV	770 J	< 5	< 1	< 1	< 1	< 1	< 1	< 1 J
Isopropylbenzene	NS	300	1993/94 HRL	79 J	9	< 1	<1	< 1	< 1	< 1	< 1 J
Methyl isobutyl ketone (MIBK)	NS	300	1993/94 HRL	< 1300 J	< 25	< 10	< 10	< 10	< 10	< 10	< 5 J
Methyl tertiary butyl ether (MTBE)	NS	70	2000 HBV	< 500 J	< 10	< 5	< 5	< 5	< 5	< 5	2 5 J 19 J
Methylcyclohexane	NS	NS	NS	< 500 J 150 J	15	< 1	< 1	< 1	< 5 < 1	< 1	0.27 J
Naphthalene	NS	300	1993/94 HRL	< 250 J	4.2 J	< 1	<1	< 1	< 1	< 1	< 1 J
n-Propylbenzene	NS	NS	NS	< 360 J	20	< 1	< 1	< 1	< 1	< 1	< 1 J
	NS	NS	NS	< 250 J	< 5						< 1 J
p-Isopropyltoluene				< 250 J < 250 J		< 1	< 1	< 1	< 1	< 1	
sec-Butylbenzene	NS NS	NS	NS NS	< 250 J < 250 J	1.3 J	< 1	< 1	< 1	< 1	< 1	<1J
Tert-butylbenzene		NS			< 5	< 1	< 1	< 1	< 1	< 1	< 1 J
Tetrahydrofuran Toluene	NS 1000	100 200	1995 HBV 2009 HBV	< 1300 J < 250 J	< 25 3.2 J	< 5 0.23 J	< 5	< 5	< 5	< 5	< 5 J 0.51 J
m-Xylene & p-Xylene**	1000	200 300	2009 HBV 2010 HBV	< 250 J 140 J	3.2 J 35	< 2	< 1	< 1	< 1 < 2	< 1 < 2	0.51 J 2 J
Xylene, -o**	10000	300	2010 HBV 2010 HBV	< 250 J			< 2	< 2			2 J 0.27 J
					< 5	< 1	< 1	< 1	< 1	< 1	
Total Xylenes*	10000	300	2010 HBV	140 J	35	ND	ND	ND	ND	ND	2.27 J
SVOCs											
2,4-Dimethylphenol	NS	100	1993/94 HRL	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	NS	NS	NS	230	< 10	< 9.8	< 10	< 9.9	< 9.9	< 10	NA
Acenaphthene	NS	400	1993/94 HRL	1.6 J	< 10	< 9.8	< 10	< 9.9	< 9.9	< 10	NA
Anthracene	NS	2000	1993/94 HRL	< 65	< 10	< 9.8	< 10	< 9.9	< 9.9	< 10	NA
Benzo(b)fluoranthene ¹	NS	NS	1995 HBV	< 65	< 10	< 9.8	< 10	< 9.9	< 9.9	< 10	NA
bis(2-Ethylhexyl)phthalate	6	6	2009 HRL/MCL	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	NS	300	1993/94 HRL	< 65	< 10	< 9.8	< 10	< 9.9	< 9.9	< 10	NA
Fluorene	NS	300	1993/94 HRL	< 65	< 10	< 9.8	< 10	< 9.9	< 9.9	< 10	NA
Naphthalene	NS	300	1993/94 HRL	130	1.6 J	< 9.8	< 10	< 9.9	< 9.9	< 10	NA
Phenanthrene	NS	NS	NS	1.7 J	< 10	< 9.8	< 10	< 9.9	< 9.9	< 10	NA
Pyrene	NS	200	1993/94 HRL	< 65	< 10	< 9.8	< 10	< 9.9	< 9.9	< 10	NA
Benzo(a)pyrene (BaP) Equivalents	NS	0.05	1995 HBV	ND	ND	ND	ND	ND	ND	ND	ND
Metals											
Antimony	6	6	1993/94 HRL	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	10	NS	NS	7.6 J	8 J	23	< 10	< 10	< 10	< 10	NA
Barium	2000	2000	1993/94 HRL	340	130 J	250	190 J	180 J	180 J	23 J	NA
Calcium	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA
Chromium***	100	100/20000	1993/94 HRL	2.4 J	< 10	< 10	< 10	< 10	< 10	< 10	NA
Cobalt	NS	30	1995 HBV	NA	NA	NA	NA	NA	NA	NA	NA
Iron	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA
Lead ²	NS	15	No Basis ²	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
Magnesium	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	NS	300	2008 RAA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	NS	100	1993/94 HRL	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA

Feature or Area				North Parking Area	North Parking Area	North Parking Area	North Parking Area	North Parking Area	North Parking Area	North Parking Area	4
Location ID		MDH Hea	Ith Based Water	ASB-115	ASB-118	ASB-128	ASB-129	ASB-129	ASB-130	ASB-137	ASB-120
Sample ID	EPA	G	uidance	ASB-115_4-9(20110822)	ASB-118_8-12(20110823)	ASB-128_5-10(20110825)	ASB-129_4.5-9.5(20110826)	DUP-001	ASB-130_0-5(20110826)	ASB-137_6-11(20110829)	ASB-120_6-11(20110823)
Sample Date	MCL	Value	Basis	8/22/2011	8/23/2011	8/25/2011	8/26/2011	8/26/2011	8/26/2011	8/29/2011	8/24/2011
Interval				4-9 ft bgs	8-12 ft bgs	5-10 ft bgs	4.5-9.5 ft bgs	4.5-9.5 ft bgs	0-5 ft bgs	6-11 ft bgs	6-11 ft bgs
Vanadium	NS	50	1993/94 HRL	NA	NA	NA	NA	NA	NA	NA	NA
Other											
Gasoline Range Organics	NS	NS	NS	< 24000 J	770	< 100	< 100 J	< 100	< 100	< 100	88 J
Diesel Range Organics	NS	NS	NS	3400	450	380	410	410	270	< 97	760

Notes:

Results are reported in micrograms per liter (ug/l).

Results are rep	orted in micrograms per liter (ug/l).
AMW	ARCADIS Monitoring Well Location.
NA	Not analyzed.
NS	No standard.
ND	Not detected
E	Result exceeded calibration range.
J	Estimated result.
Shaded	Value is above the EPA Maximum Contaminant Level (MCL)
Boxed	Value is above the MDH Health Based Water Guidance
Italic	Reporting limit for non detect result exceeds MDH Health Based Water Guidance Criteria
HBV	Health Based Values
RAA	Risk Assessment Advice
VOCs	Volatile organic compounds.
SVOCs	Semi-volatile organic compounds.
MEK	Methyl ethyl ketone.
*	Sum of detected xylene results (m,p,o).
**	Criteria for Total Xylenes Used.
***	SRVs are for Chromium VI and Chromium III respectively, reported data is for total chromium and is therefore compared to the lower of the SRVs.
1	See Benzo(a)pyrene (BaP) Equivalents Action Levels.
2	Lead MDH Health Based Water Guidance Action Level at Tap.
ft have	East halow serviced average

ft bgs Feet below ground surface.

ft msl Feet above mean sea level.

Feature or Area				5	5	10	12,47	12,47	12,47	13	13	13
Location ID			h Based Water	AMW-16	AMW-17	ASB-166	AMW-11	AMW-11	AMW-18	AMW-19	AMW-20	AMW-20
Sample ID	EPA		idance	AMW-16(20111107)	AMW-17(20111107)	ASB-166_7-12(20110906)	AMW-11 (10/31/2011)	• •	• •	AMW-19(20111111)	AMW-20(20111111)	DUP-01(20111111)
Sample Date	MCL	Value	Basis	11/7/2011	11/7/2011	9/6/2011	10/31/2011	10/31/2011	10/31/2011	11/11/2011	11/11/2011	11/11/2011
Interval				806.28 - 801.28 ft msl	806.15 - 801.15 ft msl	7-12 ft bgs	804.47 - 799.47 ft msl	804.47 - 799.47 ft msl	803.22 - 798.22 ft msl	691.29 - 681.29 ft msl	694.09 - 684.09 ft msl	694.09 - 684.09 ft msl
VOCs												
1,1-Dichloroethane	NS	100	2009 RAA	< 67	< 14	NA	< 10	< 10	1.2	< 1	< 1	< 1
1,2,4-Trimethylbenzene	NS	100	2010 RAA	1500	< 14	NA	< 10	< 10	< 1	< 1	< 1	< 1
1,3,5-Trimethylbenzene	NS	100	2009 HRL	330	< 14	NA	< 10	< 10	< 1	< 1	< 1	< 1
2-Butanone (MEK)	NS	4000	1993/94 HRL	< 670	23 J	NA	< 100	< 100	< 10	< 10	0.88 J	< 10
Acetone	NS	4000	2010 HRL	430 J	340	NA	< 100	< 100	< 10	< 10	5.4 J	1.9 J
Benzene	5	2	2009 HRL	< 67	52	NA	< 10	< 10	< 1	< 1	0.14 J	< 1
Butylbenzene	NS	NS	NS	39 J	8.4 J	NA	5.4 J	6.1 J	< 1	< 1	< 1	< 1
Carbon disulfide	NS	700	1993/94 HRL	< 67	< 14	NA	< 10	< 10	< 1	< 1	< 1	< 1
Cyclohexane	NS	NS	NS	380	290	NA	45	48	< 1	< 1	< 1	< 1
Dichlorodifluoromethane (CFC-12)	NS	700	2009 HBV	< 67	< 14	NA	< 10	< 10	< 1	< 1	< 1	< 1
Ethylbenzene	700	50	2010 HBV	1400	78	NA	< 10	< 10	< 1	< 1	< 1	< 1
Isopropylbenzene	NS	300	1993/94 HRL	68	49	NA	22	26	< 1	< 1	< 1	< 1
Methyl isobutyl ketone (MIBK)	NS	300	1993/94 HRL	< 670	< 140	NA	< 100	< 100	< 10	< 5	< 5	< 5
Methyl tertiary butyl ether (MTBE)	NS	70	2000 HBV	< 330	< 71	NA	< 50	< 50	< 5	< 2	< 2	< 2
Methylcyclohexane	NS	NS	NS	100	55	NA	170	170	< 1	< 1	0.15 J	< 1
Naphthalene	NS	300	1993/94 HRL	150	28	NA	< 10	< 10	< 1	< 1	< 1	<1
•	NS	NS	NS	230	150	NA	33	35				
n-Propylbenzene									< 1	< 1	< 1	< 1
p-Isopropyltoluene	NS	NS	NS	< 67	43	NA	< 10	< 10	< 1	< 1	< 1	< 1
sec-Butylbenzene	NS	NS	NS	< 67	5.2 J	NA	11	13	< 1	< 1	< 1	< 1
Tert-butylbenzene	NS	NS	NS	< 67	< 14	NA	1.7 J	< 10	< 1	< 1	< 1	< 1
Tetrahydrofuran	NS	100	1995 HBV	< 330	< 71	NA	< 50	< 50	< 5	< 5	0.51 J	< 5
Toluene	1000	200	2009 HBV	73	14	NA	< 10	< 10	< 1	< 1	0.19 J	0.14 J
m-Xylene & p-Xylene**	10000	300	2010 HBV	3000	21 J	NA	< 20	< 20	< 2	< 2	< 2	< 2
Xylene, -o**	10000	300	2010 HBV	900	< 14	NA	< 10	< 10	< 1	< 1	< 1	< 1
Total Xylenes*	10000	300	2010 HBV	3900	21 J	ND						
SVOCs												
2,4-Dimethylphenol	NS	100	1993/94 HRL	NA								
2-Methylnaphthalene	NS	NS	NS	27 J	4.3 J	NA	< 10	< 9.9	< 10	< 10	< 10	< 10
Acenaphthene	NS	400	1993/94 HRL	< 42	< 10	NA	< 10	< 9.9	< 10	< 10	< 10	< 10
Anthracene	NS	2000	1993/94 HRL	< 42	< 10	NA	< 10	< 9.9	< 10	< 10	< 10	< 10
Benzo(b)fluoranthene ¹	NS	NS	1995 HBV	< 42	< 10	NA	< 10	< 9.9	0.25 J	< 10 J	< 10	< 10
bis(2-Ethylhexyl)phthalate	6	6	2009 HRL/MCL	NA								
Fluoranthene	NS	300	1993/94 HRL	< 42	< 10	NA	< 10	< 9.9	0.2 J	< 10	< 10	< 10
Fluorene	NS	300	1993/94 HRL	< 42	0.14 J	NA	0.17 J	0.22 J	< 10	< 10	< 10	< 10
Naphthalene	NS	300	1993/94 HRL	89	14	NA	< 10	< 9.9	< 10	< 10	< 10	< 10
Phenanthrene	NS	NS	NS	< 42	< 10	NA	< 10	< 9.9	< 10	< 10	< 10	< 10
Pyrene	NS	200	1993/94 HRL	< 42	< 10	NA	< 10	< 9.9	0.14 J	< 10	< 10	< 10
Benzo(a)pyrene (BaP) Equivalents	NS	0.05	1995 HBV	ND	ND	ND	ND	ND	0.025	ND	ND	ND
Metals												
Antimony	6	6	1993/94 HRL	NA	NA	NA	NA	NA	NA	2.9 J	3.3 J	< 10
Arsenic	10	NS	NS	NA	NA	610	< 10	< 10	4.1 J	< 10	< 10	< 10
Barium	2000	2000	1993/94 HRL	NA	NA	NA	200	200	4.1 J 180 J	240	200	200
Calcium	2000 NS	2000 NS	NS	NA	NA	NA	NA	NA	NA	150000	180000	190000
Chromium***			NS 1993/94 HRL	NA								
	100 NS	100/20000			NA	NA	< 10	< 10	< 10	< 10	< 10	< 10
Cobalt	NS	30 NG	1995 HBV	NA	NA	NA	NA	NA	NA	4.9 J	5.3 J	9.9
Iron	NS	NS	NS	NA	NA	NA	NA	NA	NA	170	< 100	< 100
Lead ²	NS	15 NC	No Basis ²	< 3	< 3	NA	< 3	< 3	< 3	< 3	< 3	< 3
Magnesium	NS	NS	NS	NA	NA	NA	NA	NA	NA	41000	49000	51000
Manganese	NS	300	2008 RAA	NA	NA	NA	NA	NA	NA	2800	1800	1900
Nickel	NS	100	1993/94 HRL	NA	NA	NA	NA	NA	NA	3.4 J	6.9 J	7.6 J
Potassium	NS	NS	NS	NA	NA	NA	NA	NA	NA	4300 J	3500 J	3600 J
Sodium	NS	NS	NS	NA	NA	NA	NA	NA	NA	55000	66000	69000

Table 7. Summary of Detected Constituents in Groundwater SamplesFord Twin Cities Assembly Plant, St. Paul, Minnesota

Feature or Area				5	5	10	12,47	12,47	12,47	13	13	13
Location ID		MDH Hea	Ith Based Water	AMW-16	AMW-17	ASB-166	AMW-11	AMW-11	AMW-18	AMW-19	AMW-20	AMW-20
Sample ID	EPA	G	uidance	AMW-16(20111107)	AMW-17(20111107)	ASB-166_7-12(20110906)	AMW-11 (10/31/2011)	DUP-002 (10/31/2011)	AMW-18 (10/31/2011)	AMW-19(20111111)	AMW-20(20111111)	DUP-01(20111111)
Sample Date	MCL	Value	Basis	11/7/2011	11/7/2011	9/6/2011	10/31/2011	10/31/2011	10/31/2011	11/11/2011	11/11/2011	11/11/2011
Interval				806.28 - 801.28 ft msl	806.15 - 801.15 ft msl	7-12 ft bgs	804.47 - 799.47 ft msl	804.47 - 799.47 ft msl	803.22 - 798.22 ft msl	691.29 - 681.29 ft msl	694.09 - 684.09 ft msl	694.09 - 684.09 ft msl
Vanadium	NS	50	1993/94 HRL	NA	NA	NA	NA	NA	NA	< 7	0.64 J	< 7
Other												
Gasoline Range Organics	NS	NS	NS	15000	3200	NA	3000	2900	< 100	< 100	< 100	< 100
Diesel Range Organics	NS	NS	NS	1200	820	NA	1200	1600	1000	260	630	280

Notes:

Results are reported in micrograms per liter (ug/l).

Results are rep	orted in micrograms per liter (ug/l).
AMW	ARCADIS Monitoring Well Location.
NA	Not analyzed.
NS	No standard.
ND	Not detected
E	Result exceeded calibration range.
J	Estimated result.
Shaded	Value is above the EPA Maximum Contaminant Level (MCL)
Boxed	Value is above the MDH Health Based Water Guidance
Italic	Reporting limit for non detect result exceeds MDH Health Based Water Guidance Criteria
HBV	Health Based Values
RAA	Risk Assessment Advice
VOCs	Volatile organic compounds.
SVOCs	Semi-volatile organic compounds.
MEK	Methyl ethyl ketone.
*	Sum of detected xylene results (m,p,o).
**	Criteria for Total Xylenes Used.
***	SRVs are for Chromium VI and Chromium III respectively, reported data is for total chromium and is therefore compared to the lower of the SRVs.
1	See Benzo(a)pyrene (BaP) Equivalents Action Levels.
2	Lead MDH Health Based Water Guidance Action Level at Tap.

ft bgs Feet below ground surface.

ft msl Feet above mean sea level.

Table 7. Summary of Detected Constituents in Groundwater SamplesFord Twin Cities Assembly Plant, St. Paul, Minnesota

oturo or Aroo				16	16	20	120	152
eature or Area ocation ID		MDUUsa	the Decent Water	16 AMW-14	AMW-15	20 AMW-13	138 ASB-145	152 AMW-12
ample ID	EPA		th Based Water uidance	AMW-14 AMW-14(20111107)		AMW-13 AMW-13 (10/31/2011)	ASB-145 ASB-145_7-12(20110830)	AWW-12 AMW-12(20111107)
ample Date	MCL	Value	Basis	11/7/2011	AMW-15(20111107) 11/7/2011	10/31/2011	8/30/2011	11/7/2011
terval	MOL	Value	Buolo	802.57 - 797.57 ft msl	801.79 - 796.79 ft msl	802.92 - 797.92 ft msl	7-12 ft bgs	802.30 - 797.30 ft msl
OCs				002.07 - 707.07 11 1131	001.75 - 750.75 11 1131	002.32 - 737.32 it iii3i	7-12 It bg5	002.30 - 131.30 mms
1-Dichloroethane	NS	100	2009 RAA	< 12	< 67	NA	< 1	< 56
2,4-Trimethylbenzene	NS	100	2010 RAA	120	1500 J	NA	< 1	680
3,5-Trimethylbenzene	NS	100	2009 HRL	27	200	NA	< 1	110
Butanone (MEK) etone	NS NS	4000 4000	1993/94 HRL 2010 HRL	< 120 < 120	< 670 < 670	NA NA	0.59 J 1.7 J	< 560 < 560
nzene	5	4000			690	NA	< 1	32 J
			2009 HRL	< 12				
ylbenzene	NS	NS	NS	19	56 J	NA	0.61 J	84
bon disulfide	NS	700	1993/94 HRL	< 12	< 67	NA	< 1	< 56
lohexane	NS	NS 700	NS 2000 LIBV	19	340	NA	7.2	120
hlorodifluoromethane (CFC-12)	NS 700	700 50	2009 HBV	19	190	NA	< 1 J	< 56
/lbenzene	700	50	2010 HBV	220	1500 J	NA	0.19 J	1200
ropylbenzene	NS	300	1993/94 HRL	19	74	NA	2.5	150
hyl isobutyl ketone (MIBK)	NS	300	1993/94 HRL	< 120	< 670	NA	< 10	< 560
hyl tertiary butyl ether (MTBE)	NS	70 NC	2000 HBV	< 59	< 330	NA	< 5	< 280
thylcyclohexane	NS	NS	NS	11 J	110	NA	41 E	73
hthalene	NS	300	1993/94 HRL	16	620	NA	< 1	270
ropylbenzene	NS	NS	NS	13	210	NA	2.8	150
opropyltoluene	NS	NS	NS	4.3 J	16 J	NA	< 1	< 56
-Butylbenzene	NS	NS	NS	6.3 J	18 J	NA	0.84 J	22 J
t-butylbenzene	NS	NS	NS	< 12 J	< 67 J	NA	0.2 J	< 56
ahydrofuran	NS	100	1995 HBV	< 59	< 330	NA	< 5	< 280
lene	1000	200	2009 HBV	< 12	73	NA	< 1	< 56
ylene & p-Xylene**	10000	300	2010 HBV	570	2000	NA	0.37 J	2300
ne, -o**	10000	300	2010 HBV	140	110	NA	< 1	260
al Xylenes*	10000	300	2010 HBV	710	2110	ND	0.37 J	2560
DCs								
Dimethylphenol	NS	100	1993/94 HRL	5.1	NA	NA	NA	NA
ethylnaphthalene	NS	NS	NS	3	160	< 10	NA	74
naphthene	NS	400	1993/94 HRL	< 0.2	1 J	< 10	NA	< 67
hracene	NS	2000	1993/94 HRL	< 0.2	0.29 J	< 10	NA	< 67
zo(b)fluoranthene ¹	NS	NS	1995 HBV	< 0.2 J	< 10	< 10	NA	< 67
2-Ethylhexyl)phthalate	6	6	2009 HRL/MCL	0.8 J	NA	NA	NA	NA
branthene	NS	300	1993/94 HRL	< 0.2 J	0.47 J	< 10	NA	< 67
brene	NS	300	1993/94 HRL	< 0.2	0.63 J	< 10	NA	< 67
hthalene	NS	300	1993/94 HRL	4.1	400	< 10	NA	180
nanthrene	NS	NS	NS	< 0.2	1.7 J	< 10	NA	< 67
ene	NS	200	1993/94 HRL	< 0.2 J	0.41 J	< 10	NA	< 67
zo(a)pyrene (BaP) Equivalents	NS	0.05	1995 HBV	ND	ND	ND	ND	ND
als								
mony	6	6	1993/94 HRL	NA	NA	NA	NA	NA
nic	10	NS	NS	7.8 J	12	< 10	NA	16
um	2000	2000	1993/94 HRL	280	460	230	NA	460
ium	NS	NS	NS	NA	NA	NA	NA	NA
omium***	100	100/20000	1993/94 HRL	< 10	< 10	< 10	NA	< 10
alt	NS	30	1995 HBV	NA	NA	NA	NA	NA
2	NS	NS	NS	NA	NA	NA	NA	NA
d ²	NS	15	No Basis ²	< 3	< 3	< 3	< 3	< 3
gnesium	NS	NS	NS	NA	NA	NA	NA	NA
inganese	NS	300	2008 RAA	NA	NA	NA	NA	NA
ckel	NS	100	1993/94 HRL	NA	NA	NA	NA	NA
tassium	NS	NS	NS	NA	NA	NA	NA	NA
dium	NS	NS	NS	NA	NA	NA	NA	NA

Table 7. Summary of Detected Constituents in Groundwater SamplesFord Twin Cities Assembly Plant, St. Paul, Minnesota

Feature or Area				16	16	20	138	152
Location ID		MDH Hea	Ith Based Water	AMW-14	AMW-15	AMW-13	ASB-145	AMW-12
Sample ID	EPA	G	uidance	AMW-14(20111107)	AMW-15(20111107)	AMW-13 (10/31/2011)	ASB-145_7-12(20110830)	AMW-12(20111107)
Sample Date	MCL	Value	Basis	11/7/2011	11/7/2011	10/31/2011	8/30/2011	11/7/2011
Interval				802.57 - 797.57 ft msl	801.79 - 796.79 ft msl	802.92 - 797.92 ft msl	7-12 ft bgs	802.30 - 797.30 ft msl
Vanadium	NS	50	1993/94 HRL	NA	NA	NA	NA	NA
Other								
Gasoline Range Organics	NS	NS	NS	7600	15000	< 100	510	13000
Diesel Range Organics	NS	NS	NS	1100 J	640	220	NA	620

Notes:

Results are reported in micrograms per liter (ug/l).

Results are repo	orted in micrograms per itter (ug/i).
AMW	ARCADIS Monitoring Well Location.
NA	Not analyzed.
NS	No standard.
ND	Not detected
E	Result exceeded calibration range.
J	Estimated result.
Shaded	Value is above the EPA Maximum Contaminant Level (MCL)
Boxed	Value is above the MDH Health Based Water Guidance
Italic	Reporting limit for non detect result exceeds MDH Health Based Water Guidance Criteria
HBV	Health Based Values
RAA	Risk Assessment Advice
VOCs	Volatile organic compounds.
SVOCs	Semi-volatile organic compounds.
MEK	Methyl ethyl ketone.
*	Sum of detected xylene results (m,p,o).
**	Criteria for Total Xylenes Used.
***	SRVs are for Chromium VI and Chromium III respectively, reported data is for total chromium and is therefore compared to the lower of the SRVs.
1	See Benzo(a)pyrene (BaP) Equivalents Action Levels.
2	Lead MDH Health Based Water Guidance Action Level at Tap.
fthaa	Fact halow energy developed

ft bgs Feet below ground surface.

ft msl Feet above mean sea level.

Page 6 of 6

Table 8. Summary of Available Background Data, Twin Cities Assembly Plant, St. Paul, Minnesota Twin Cities Assembly Plant, St. Paul, Minnesota

					Easte	ern USA						Min	nesota		
Metals	Units	Minimum	Maximum	A.Mean	SD	G.Mean	SD	Ν	Reference	Minimum	Maximum	A.Mean	SD	N	Reference
			=0				0.50	507			15		1.0		
Arsenic	mg/kg	<1.0	73	7.4		4.8	2.56	527	1	0.5	15	5.5	4.6	37	3
										2	700	35	115	36	3
Copper	mg/kg	<1.0	700	22		13	2.8	533	1	16	50	26	9	16	54
										3	24	8.6	6.2	11	28 (histoso
Iron	mg/kg	100	>100,000	25000		14000	2.87	540	1	500	50000	19527		37	3
Lead	mg/kg	<10	300	17		14	1.95	541	1	ND	20	13	4.5	37	3

References:

Data was obtained from "Elements in North America Soils", J. Dragun, A. Chiasson, December 1991.

Shacklette, H. T. and J. G. Boerngen. 1984 "Elements concentrations in soil and other surficial materials of the conterminous United States", U.S. Geological Survey Professional Paper 1270, 1 Washington D.C.: U.S. Government Printing Office.

Boengen, J.G. and H.T. Shacklette. 1981. "Chemical analyses of soils and other surficial materials of the conterminous United States", U.S. Geological Survey Open-File Report 81-197. 3

54 Pierce, F. J., R.H. Dowdy, and D.F. Grigal. 1982. "Concentrations of six trace metals in some major Minnesota soil series", Journal of Environmental Quality, 11, 3, pp 416-422.

58 Bloom, P.R., W.E. Elder and J. Grava. 1983. "Chemistry and mineralogy of mineral elements in Minnesota histosols", Papers Presented at the 26th Annual Manitoba Society of Soil Science Meeting.

Notes:

A.Mean Arithmetic mean. G.Mean Geometric mean. SD Standard Deviation. Ν Number of samples. Not given. ---ND Not detected. mg/kg Milligrams per kilogram. Less than. < Greater than. > USA United State of America. nce

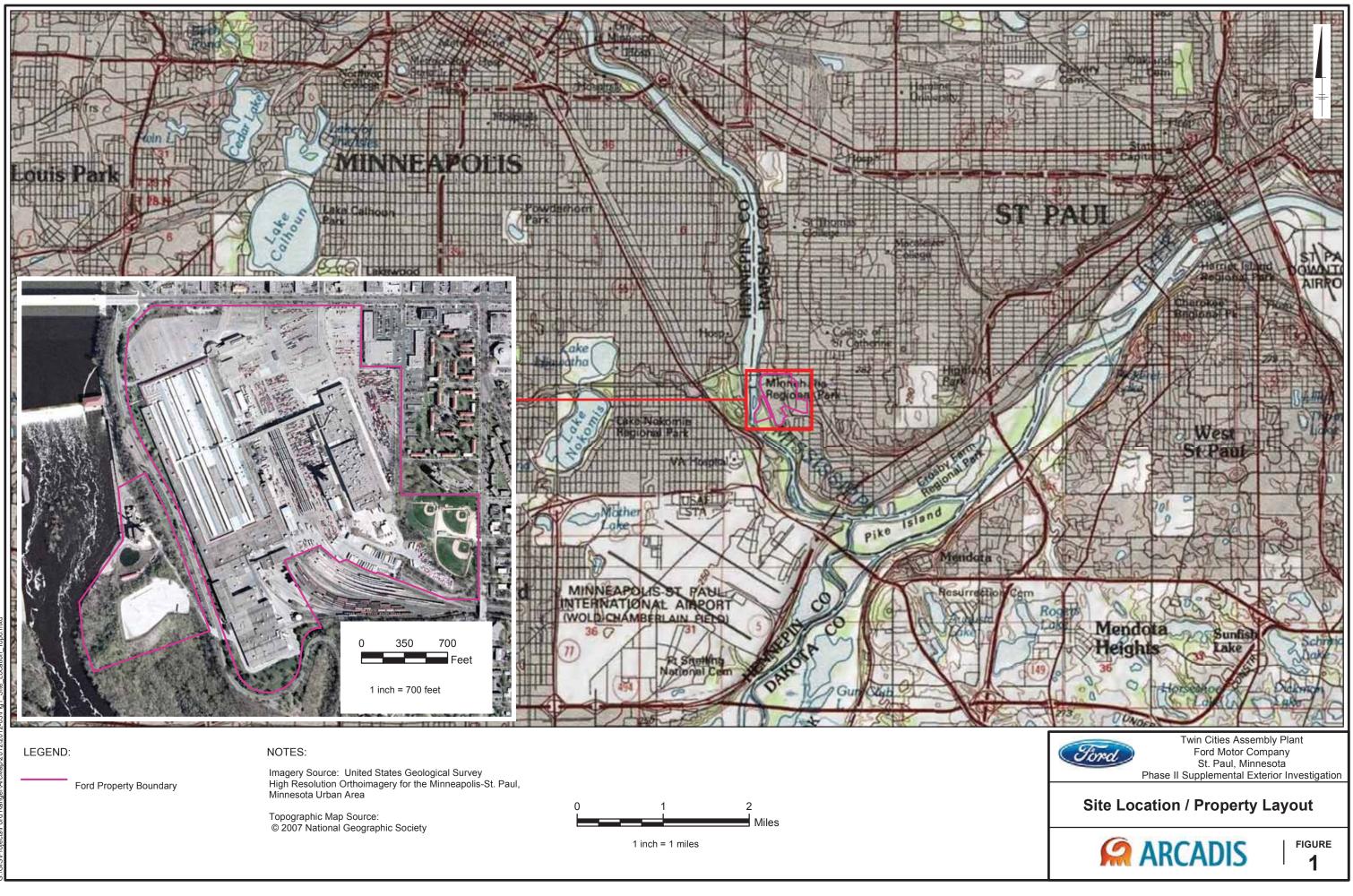
sols)

Figures

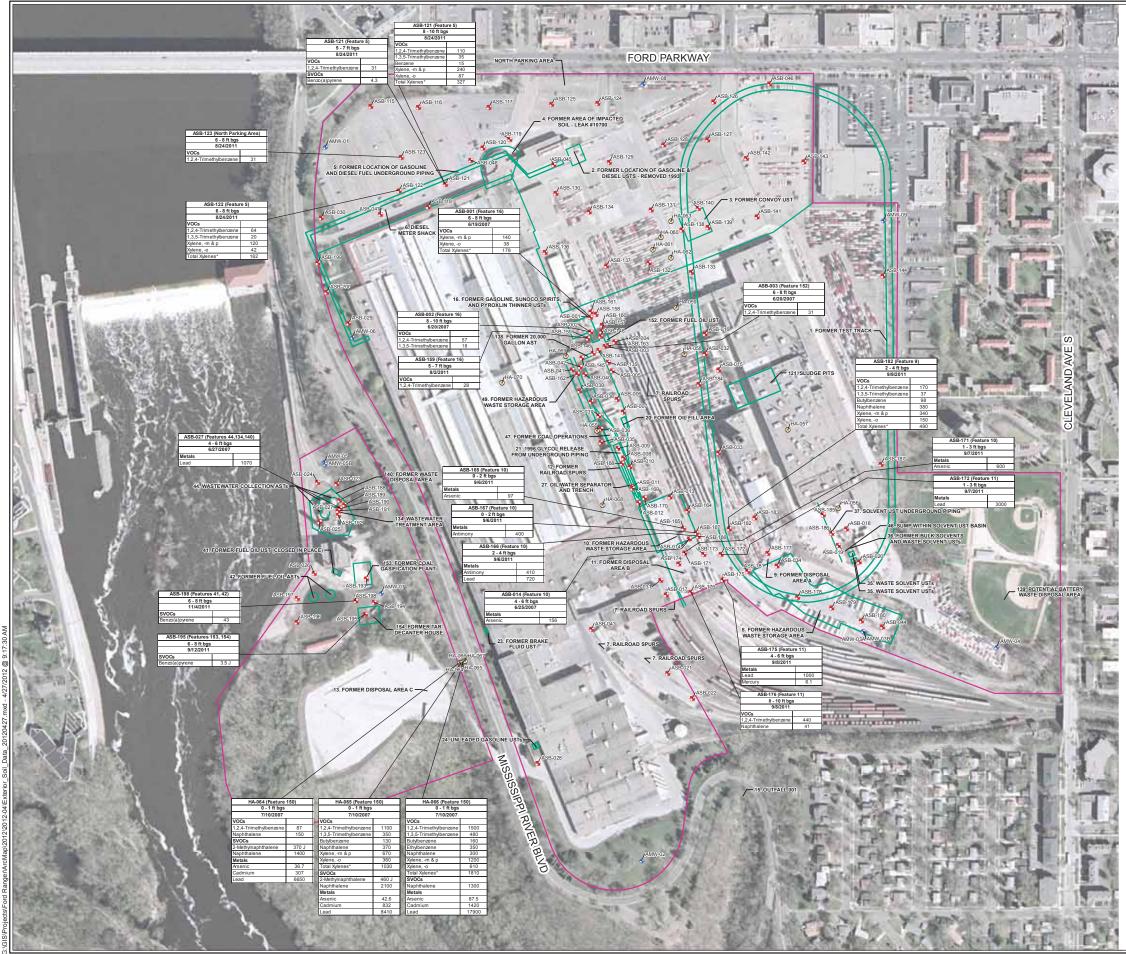
G:\PROJECTS\Ford-St.Paul\Working\Phase II Supplemental Exterior

Report\text\DRAFT Supplemental Phase II Exterior

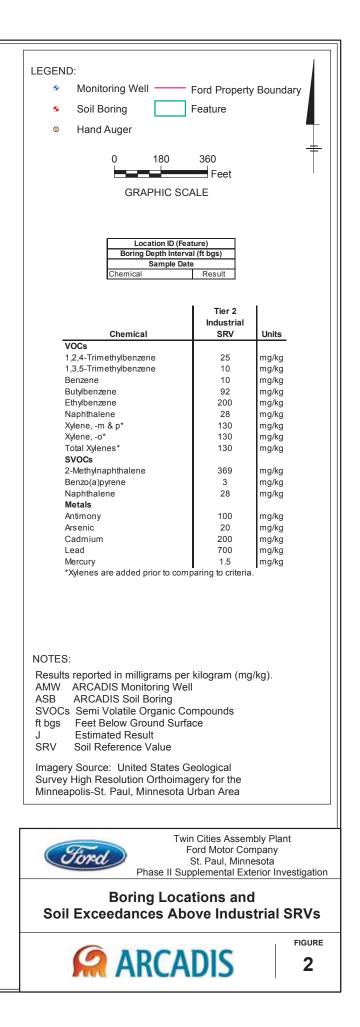
Report_042712.doc







:ITY: MPLS DIV/GROUP: IM DB: MG LD: TW ORD ST. PAUL





			1
LEGEND:	itoring Well		
	-		
Sector Tem	porary Monitorin	ig Well	
Ford	Property Bound	lary	
Feat			
real	ure		+
0	180 360		
	Fe	eet	
GRA	PHIC SCALE		
_	Location ID		
	ample Interval		
Chemi	Sample Date cal Result		
	EPA Maximum	MDH Health Based	
Chemical VOCs	Contaminant Level	Water Guidance	Units
1,2,4-Trimethylbenzene 1,3,5-Trimethylbenzene	NS NS	100 100	µg/l
Benzene	5	2	μg/l μg/l
Ethylbenzene	700 NS	50 300	µg/l
lsopropylbenzene Naphthalene	NS	300	μg/l μg/l
Xylene, -m & p* Xylene, -o*	10000 10000	300 300	μg/l μg/l
Total Xylenes*	10000	300	µg/i µg/i
SVOCs Benzo(a)pyrene	0.2	NS	µg/l
bis (2-Ethylhexyl)phthalate	6	6	µg/l
Naphthalene Benzo(a)pyrene (BaP) Equivalents	NS NS	300 0.05	μg/l μg/l
Metals - Total	10	NS	
Arsenic Barium	2000	2000	μg/l μg/l
Beryllium	4	0.08	µg/l
Cadmium Chromium	5 100	4 100/20000	μg/l μg/l
Cobalt Copper	NS NS	30 1000	μg/l μg/l
Lead	NS	15	µg/l
Manganese Mercury	NS 2	300 NS	μg/l μg/l
Nickel Vanadium	NS NS	100 50	µg/l
Metals - Dissolved			µg/l
Arsenic Manganese	10 NS	NS 300	μg/l μg/l
Thallium Vanadium	2 NS	0.6 50	μg/l μg/l
*Xylenes are added prior to compari	ng to criteria.	I	P.84
Shaded	Value is above the EPA Contaminant Level (MC		
Boxed/Bold	Value is above the MDI Guidance	H Health Based Water	
NOTES: Results reported in micro AMW ARCADIS Moniton ASB ARCADIS Soil B ft bgs Feet Below Grou J Estimated Result < Not Detected NA Not Analyzed NS No Standard Imagery Source: United Survey High Resolution of Minneapolis-St. Paul, Min	oring Well oring Ind Surface t States Geologic Orthoimagery for	al r the	
Groundwater Samp Above EPA Max and MDH Heal	Ford Mo St. Pau ase II Supplemen le Locations timum Conta	and Excee	stigation dances vels
	CIDI	-	FIGURE
AR	CADI:	5	3

Appendix A

Soil Boring Logs

۲

Unconsolidated Boring Log

0

Finish Tin	umber ne tion	DE00044 Ford TC. St. Paul, 8/11 KAH II30 Size	AP MN /II S/	1340		Boring Location Sketch Drilling Contractor Stevens Drilling & Environmental, Inc. Driller & Helper Drilling Method Sampling Interval Hammer Weight Drop Height	
A	В	С	D	E	F	G	
Sample Time	Sample ID & Type __	Sample Interval (ft bls)	Sample Core Recovery	Biow Count	PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics	
		0-1	12			0-12 Sond/Gravel, very sondy	
		1-2			172		
			-				
					28.4		
			- 22				
					36.3	•	
1212		5-8	27			10-10 CLAY Little mol-work sond to silk mod plasticity visable sold	-
					2.7	oder mottled green land group mosit - boken rock	
						10-16 SILT Some v.t- fine sand black, would	
				Z	524.1	10-29 SAND sitty frivaricy mostly and cour-suice little uncorse-granule to	mis peible
						strong dur wet black pour sort	
						Nottled greengrand black	
1220		8-12	48			5-31/2 SAND for granning musting work, odor, poor bot look, little	sity
					327.2	suber subr	l.
						31/6-3 SILT mettled gran/gray born hard - V, hard addi	
	× 2	- a:				B-16 broken up rack sand vit- isone, and graves the sill	
			1990		98.2	16-48 SILT V. solt- , had (fill) GUEY (4/10GY of granish)	(Chang

Refused @ 12' - sindle

BORLOG XLS xls 08/22/2011

Page ____of ___

Unconsolidated Boring Log

Finish Tin	umber ne tion	DE0004 Ford TC. St. Paul, KAH S(2) Size	AP MN 22/11	1545	4	Boring Location Sketch Drilling Contractor Stevens Drilling & Environmental, Inc. Drilling Contractor Drilling Method Drilling Method Sampling Interval Hammer Weight Drop Height Total Depth Drilled 9' Borehole Diameter 2'' Drilling Fluid Used Sample Device Dimensions 2' + 9'	
A	В	С	D	E	F	G	
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count	PID (ppm)	1 2 3 4 5 6 7 to 9 Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other Consistency Color Modifier Size Characteristics Content Characteristics	
1634		0-2	-		3.0		
1654		0-6	22		2.8	1-7.5 poinded much	
					60	The second se	
						TIC-DE SIEF and SAND the read tr. alloarsh - granules liber-suba slightly damp W. alay, purplettic, no dilatency ned still	
1550		4.5-8	37		54.8	0-19 SILT AND SAND (Not-Whed, monthly Fire) INDY dry-moist, little worke- Aril	" pessi
						pounded rock (2 12.5" small-ly pebblics suba	`
						mottled reitorisian brown	
	l.					19-24 SILT mottled nonplestict no dilatency slightly damp	
						Stift-v. shift tr organics	
					1.8	24-30 SILTY Lith sond fine-med-coarse, site day tr. growle-small pebble	
~						crimery ronplastic, as dilatory GAEY 1 5/10 Gy	
						2.5Y 5/6 Holive brown	
			-			30-37 SILT mothed, non plastic no dilaknuy, sighting damp, stiff	
1.0		. 0				0-9 SILT with sand (r.f-Ared) with his war wet lusic	
1615		8-9!	26	-	2.3		
					_	926 SILT mattled, non plastic so dilating visitil dry woundary 54 5/3	
L						9' ratural - shall	

18

.

10

Unconsolidated Boring Log

Boring/We Project Nu		DE00044	3-117-			Boring Location Sketch Drilling Contractor Driller & Helper
Client Nam		Ford TCA				Drilling Method
Site Locati		St. Paul,				Sampling Interval
Date	.011		8/23/11	 5. 		Hammer Weight
Prepared b	bv	KAH	Jer			Drop Height
	e and Date		8/23/11	0800		Total Depth Drilled
	ne and Date		8/23/11	1020		Borehole Diameter
	D with Lamp		4 1	24		Drilling Fluid Used
Calibratior	on Gas/Time/R	Results	ivo.	1.1 ppm	1	Sample Device mecocarc
		- 12	120	13 2	e	Dimensions 2' × 12'
	В	I C	T- D-	M E E	E E D	G
A Sample		Sample		Blow -	PID	
		and the second se	Core	Count-	(ppm)	1 2 3 4 5 6 7 to 9
, inte	1 1	(ft bis)	Recovery	2 6 5 6 6	(phu)	Deasity/ Soil Grain Size Grain Secondary Moisture Remarks and Other
4 8 1	1		(ft)	Sec. 25	LE PAR	Consistency Color Modifier Size Characteristics Content Characteristics
1014	1000	DH	36	A Start	2.7	U-1; STAND And -V. warse: little prosper small public pour sort, rule -sub-
1017	, ito		1	and the second	1000	S.S-7 SILT little Fried and suber soft, the plastic no dilating there cla
e	3 - 17	a	54 31		14.00	
		1	1.1	and the second	3.0	
′		P	1.35		-	
	18	T.	1 23	10 . 19	2.4	29.36 CILT SALF - Hill slack no-little plushing to clay little ut sond
п	Carlon Carlo	and y	See Mary	1	100	no dilation to organical is a
0812	1 24	5-8	46		1.4	0-22 SAND t-v. wark worth, motoward subarsuber little growing to small pebble
	S.	1 - 1 -		4	1. 2.	with por some - loose
	K	1.	2	2.0	19.84	6-9 17-20 SANTA ME STANDY SILT vil and yound not v. off
		Y 15	10. A.		1.9	122-39 SAND vit-him little sill west and dance sound will sof morthed
10.0	4	1 2		9	1	quer 1 5407 54 5/2 GUEY 15/564
e	· · · ·	1-5.3			1 2	31-46, SAND VITY, wase monly reduced 1.44 grance - march pebble
			1	1	1.00	
0835		5-12		200		Recovery - but mask to extrait metrocore from caring.
(1000		10.0		8	-	shale @ bottom of trijer (aley 1 4/1064)
	1 2 2			- ¥;		Shall to bottom on instage ULKY I YINY
		+	1 A A		1	
'					4	
("	4			S	1. 1. 1	

BORLOG.XLS.xls 08/22/2011 2

Page _ _ _ of _ _

Unconsolidated Boring Log

-	ell umber	DE0004	<u>3-(18</u> 40.0001			Drilling Contractor Stevens Drilling & Environmental, Inc. Boring Location Sketch Driller & Helper Des Hunter
Client Nar		Ford TC	AP			Drilling Method 320000
Site Locat	tion	St. Paul,	MN			Sampling Interval
Date						Hammer Weight
Prepared	by	KAH				Drop Height
Start Time	e and Date		8/13/1	1045	-	Total Depth Drilled 131
Finish Tin	ne and Date		8/2311	1350		Borehole Diameter 24
PID or FIL	D with Lamp	Size			÷	Drilling Fluid Used
Calibratio	n Gas/Time/	Results	100.	1 0000		Sample Device machacume
			,	d		Dimensions $2^{\prime} \times 13^{\prime}$
				E	F	G
A	B	C	D	Blow	PID	G
Sample	Sample ID	Sample	Sample Core	Count		1 2 3 4 5 6 7 to 9
Time	& Туре	Interval (ft bis)		Count	(ppm)	Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other
			Recovery			Consistency Color Modifier Size Characteristics Content Characteristics
127 -		O H	31		-	
1330		0-4	>\		-	0-4 Slough
				1	0.0	4-12SAWDY SILT (VE-med) down no plasticity/dilatercy and still block
					-	12-25
					0.0	25-31 SILT with road (vit-mear) no prostivity dilatering med, black
						moist
1130		5-8	38			0-4 Slaugh
		1 0	1		0.1	4-12 JANDY SILT (v.f.fin, round) tr medium a loft mo.it
1130						
1130					1	
100						no dilatency little - no plasticity black
					0.0	
					1	no dilatency little - no plasticity black 12-31 SANDY SILT (nf - md) little coord - fronche, mottled, shighting damp
					0.0	no dilatency little - no plasticity black 12-31 SANDY SILT (not - mad) little coord - provide mottled, shighthin domp no dilatency no plasticity to clay (in leases) med-high plasticity
					1	no dilatency little - no plasticity black 12-31 SANDY SILT (net - ned) little coose - fronche mottled, shighthin domp no dilatency no platicity to clay (in larses) ned-high plasticity 31-38 SILT little and argonics may no plasticity suft little dilatency b
		8-12	48	*.	0.0 3.7	mo dilating, little - no plasticity black 12-31 SANDY SLLT (nf - ma) little coose-fronce, mottled, slightly, damp no dilatency, no plasticity to clay (in leases) med-high plasticity 31-38 SLLT little bord, argonics met, no plasticity suft little dilatency b O-15 race met
		8-12	400	2	0.0	no dilatency little - no plasticity black 12-31 SANDY SILT (net - ned) little coose - fronche mottled, shighthin domp no dilatency no platicity to clay (in larses) ned-high plasticity 31-38 SILT little and argonics may no plasticity suft little dilatency b
		8-12	40,		0.0 3.7	no dilatency little - no plasticity black 12-31 SANDY SLLT (nf - nd) little coord - fronce mottled, slightly domp no dilatency, no plasticity to clay (in leases) and - hope plasticity 31-38 SLLT little sond organics wet no plasticity sett little dilatency to 0-15 race met 15-25 SAND med-v, word, mostly coorde to grance - med public
		8-12	400		0.0 3.7 11.4	mo dilating, little - no plasticity black 12-31 SANDY SILT (ml - md) little coose - fronce motiled, shighting domp no dilatency no plasticity to clay (in larges) med-high plasticity 31-38 SILT little and argonics wet no plasticity suft little dilatercy b 0-15 race met 15-25 SAND med-v, worth, mostly coorse to grance - med public potrol ador, black, trice sheets (2 mm)
-1172		8-12	400	*	0.0 3.7	mo dilating, little - no plasticity black 12-31 SANDY SLLT (nf - ma) little coord - fronce, mottled, slightly domp no dilatency, no plasticity to clay (in lease) med-high plasticity 31-38 SLLT little bad, argonics that, no plasticity suft little dilatency b 0-15 race wet 15-25 SAND med-v, worst, mostly coorde to granue-med public potrol odor, black, mice shuets (2mm) 25-48 SHALE, mottled to argonics clay low plasticity
<u>્રાત્ર</u>			2 2		0.0 3.7 11.4	mo dilating, 14th - no plasticity black 12-31 SANDY SILT (nh - nd) 14the coord - growner mottled, shighthen domp no dilatency no plasticity to clay (in leases) ned-high plasticity 31-38 SILT 14th 2010, organics well, no plasticity 20th 14the dilatera b 0-15 rea wet 15-25 SAND med-v, worth, mostly coorde to growner-med public potrol odor, block, mice shuts (2mm) 25-48 SHALE, mottled to arganics clay low plasticity 30-32 coord sond seen Q - 45 ayle 14the silt
		8-12	400 400 400 400 400 400 400 400 400 400		0.0 3.7 11.4	mo dilating, little - no plasticity black 12-31 SANDY SLLT (nf - ma) little coord - fronce, mottled, slightly domp no dilatency, no plasticity to clay (in lease) med-high plasticity 31-38 SLLT little bad, argonics that, no plasticity suft little dilatency b 0-15 race wet 15-25 SAND med-v, worst, mostly coorde to granue-med public potrol odor, black, mice shuets (2mm) 25-48 SHALE, mottled to argonics clay low plasticity
્રાત ે&			2 2		0.0 3.7 11.4	mo dilating little - no plasticity black 12-31 SANDY SLLT (nf - ma) little coorse-fronce motiled, slighting domp no dilatency no plasticity to clay (in leases) med-high plasticity 31-38 SLLT little bad argonics wet no plasticity suft little dilatency b 0-15 race met 15-25 SAND med-v, worse, mostly coorse to grance - med public potrol odor, block, mice shuets (2 mm) 25-48 SHALE, mottled to argonics clay low plasticity 30-32 coorse sond seem Q = 45° ayle little silt 0-9 see SHALE clay little silt, sond (if - coorse) hoist, shell - v shelf
<u>-गत्</u> छ			2 2		0.0 3.7 11.4	mo dilating, 14th - no plasticity black 12-31 SANDY SILT (nh - nd) 14the coord - growner mottled, shighthen domp no dilatency no plasticity to clay (in leases) ned-high plasticity 31-38 SILT 14th 2010, organics well, no plasticity 20th 14the dilatera b 0-15 rea wet 15-25 SAND med-v, worth, mostly coorde to growner-med public potrol odor, block, mice shuts (2mm) 25-48 SHALE, mottled to arganics clay low plasticity 30-32 coord sond seen Q - 45 ayle 14the silt

`@``

13' retuser (bedrack)

wet

Unconsolidated Boring Log

Boring/We		A>8				Drilling Contractor Stevens Drilling & Environmental, Inc.
Project Nu		DE00044				Boring Location Sketch Driller & Helper Dan Hunter
Client Nam	ne	Ford TC/	٩P			Drilling Method
Site Locati	ion	St. Paul,				Sampling Interval
Date		8/2	3/11			Hammer Weight
Prepared b	by	KAH	15			Drop Height
Start Time	and Date	317	13/11	1450 mag	F	Total Depth Drilled
Finish Tim	e and Date	1 e	0/23/11	1700	2 10700	Borehole Diameter 2*
) with Lamp		1 1.	2		Drilling Fluid Used
Calibration	n Gas/Time/F	Results	10	Wil mm		Sample Device mechoics
				11		Dimensions 2" × 12'
A	В	C	D	E	F	G
	Sample ID	Sample	Sample	Blow	PID	
	& Type	Interval	Core	Count	(ppm)	1 2 3 4 5 6 7 to 9
		(ft bls)	Recovery			Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other
			(1) -			Consistency Color Modifier Size Characteristics Content Characteristics
		0-4	39"			0-30.5 SAND
1625		10-1	1 31			0-30-3 SAND
1625		10-1	- 51			
1625			51		0.0	0-14 F-mil mostly and little sitt worse - growing to small pebble
1625		0-1			0.0	0-14 F-mil mostly and little sitt worse - growing to small public panded rock Suteven 11-11 poor sart, dry suba-subc
1625					0.0	0-14 F-mil mostly and little sitt worse - growing to small pebble
1972					0.0	0-14 F-mil mostly and little sitt worse - growing to small public panded rock Suteven 11-11 poor sart, dry suba-subc
1622						0-14 F-mil mostly and little sitt worse - gronerile to small publik portided rock Scheren 11-11 poor sort dry suba-subc 16-30.5 pied, to compe-gronele will sort orbor, elighthy deemp 30.5-39 stat some sord (ust-ned, subr-subo) little day invertiled
192						0-14 F-mil mostly and little sitt worse-growerle to small pebble pounded rock schemen 11-11 poor sort dry subs-subs 16-30.5 med, to compe-growele well sort Abr, elightly deepp
						0-14 F-mil mostly and little sitt worse-growing to small publik porticles rock Subwern 11-11 poor sort, dry subo-subc 16-30.5 pied, to coarse-growing will sort orbor, slightly deemp 30.5-39 stat some sord (uit-ned, subo-subo) fille day invetted dry, cruntly v. stat-hard
1525		5-8			0.0	0-14 F-mil mostly and little sitt worse-growing the small publik porticle rock subwern 11-11 poor sent dry suba-subc 16-30.5 pied, to over-growing will sont orbor, slightly deep 30.5-39 stat some send (unt-ned, subr-suba) fille day institled dry, cruntly vistill-hard
						0-14 F-mil mostly and little sitt worse-gronule tr snall publik parade rock subwen 11-11 poor sort, dry suba-subc 16-30.5 med, tr coarse-growne will sort Abr, elighthy damp 30.5-39 star some sond (uit-med, subr-suba) little day invelted dry, cruntly vistia-hard 0-6 slauph 6-27.5 sileT some sond uit-fine rafit possiplettic no dilete
					0.0	0-14 F-mil mostly and little sitt warse-growing to small publik panded rock Sutainen 11-11 poor sart dry suba-suba 16-30.5 med, to conse-growing will sort other, eligitity damp 30.5-39 sint some sond (uit-med, sub-suba) little clay inathled dry, crunity v. still-hard 0-10 slough 6-27.5 silet some sond uit-fine rafit padalplattic no dilate 14th: clay black moist
					0.0	0-14 F-mil mostly and little sitt warse-growing to small publik panded rock Sutainen 11-11 poor sart dry suba-suba 16-30.5 med, to conse-growing will sort other, eligitity damp 30.5-39 sint some sond (uit-med, sub-suba) little clay inathled dry, crunity v. still-hard 0-10 slough 6-27.5 silet some sond uit-fine rafit padalplattic no dilate 14th: clay black moist
					0.0	0-14 F-mil mostly and little sitt warse-growing to small publik paralel rock Subween 11-11 poor sart dry suba-subc 16-30.5 med, to owner-growing will sort other, slightly doing 30.5-39 stat some sord (uit-med, sub-suba) fille day monthled dry, crimity v. stat-hard 0-6 slowing 6-27.5 silet some sord wit-fine rafit padalplattic no dilete (ittle clay black moist 27.5-40 states SILT, vit soil little clay v. Joht and plasti
					0.0	0-14 F-mil mostly and little sitt warse-growing to shall publik panded rock Sutainen II-11 poor sart dry suba-suba 16-30.5 med, to conse-growing will sort other, digitity damp 30.5-39 start some sond (uit-med, sub-suba) little day inattled dry, crimity vistill-hard 0-10 stand 6-27.5 silet some sond uit-fine rafit peoplettic no dilate 14th: day black moist 27.5-40 start SILT with sond little cincy v. Joht and plast No dilatency maist 54 5/2
					0.0	0-14 F-mil mostly and little sitt worse-growing the small publik portade rock subwern 11-11 poor sert dry suba-subc 16-30.5 med, to over-growing will sort orbor, slightly demp 30.5-39 stat some send (uit-ned, sub-sub-) little day mattled dry, cruntly vistill-hand 0-16 slower 6-27.5 silet some sand uit-fine rafit madeplather no dilate 14th: view black moist 27.5-40 state SILT, vit sond little ciny 1. Joht and plast no dilatenery moist 54 5/2 (3) 37 of increased sind content Signor Silet fine
					0.0	0-14 F-mil mostly and little sitt worse-growing to small public parade rock subween 11-11 poor sart dry suba-subc 16-30.5 med, to owner-growing will out other, digitity damp 30.5-39 stat some sond (uit-med, sub-sub-) fille day monthled dry, crimity v. stat-hard 0-6 slowing 6-27.5 stillet some sond wit-time rafit peopleties no dilete 14th: view black moist 27.5-40 stillet sill with sond little cincy v. Joht and plast No diletering moist 54 5/2 15.37 increased sond content Signord SILT time 16.37 in percessed sond content Signord SILT time 16.37 increased sond content Signord SILT time
					0.0	0-14 F-mil mostly and little sitt worse-gronule to snall public panded rock subscen II-11 poor sart. On suba-subc IL-30.5 pied, to conse-gronule will contend of the output 30.5-39 SILT some and (unt-med, sub-suba) fille clay inallied One cruntly v. still-hard 0-16 slower 10-27.5 SileT some sand v.L-fine raft peopleties no dilete 14th: clay black moist 27.5-40 SILET sile SILET vit sond little clay v. Joht and plast no dilaterary moist 54 5/2 (r 37" increased sond content SANDM SILET fine 40-46 SHALE mostled Clay mid plastic v. still-hard ro dilaterary moist filt
					0.0	0-14 F-mil mostly and little sitt worse-growing to small public parade rock subween 11-11 poor sart dry suba-subc 16-30.5 med, to owner-growing will out other, digitity damp 30.5-39 stat some sond (uit-med, sub-sub-) fille day monthled dry, crimity v. stat-hard 0-6 slowing 6-27.5 stillet some sond wit-time rafit peopleties no dilete 14th: view black moist 27.5-40 stillet sill with sond little cincy v. Joht and plast No diletering moist 54 5/2 15.37 increased sond content Signord SILT time 16.37 in percessed sond content Signord SILT time 16.37 increased sond content Signord SILT time
1555		5-8			0.0 0.0	0-14 F-mil mostly and little sitt worse-gronule to snall public panded rock subscen II-11 poor sart. On suba-subc IL-30.5 pied, to conse-gronule will contend of the output 30.5-39 SILT some and (unt-med, sub-suba) fille clay inallied One cruntly v. still-hard 0-16 slower 10-27.5 SileT some sand v.L-fine raft peopleties no dilete 14th: clay black moist 27.5-40 SILET sile SILET vit sond little clay v. Joht and plast no dilaterary moist 54 5/2 (r 37" increased sond content SANDM SILET fine 40-46 SHALE mostled Clay mid plastic v. still-hard ro dilaterary moist filt

.....

Page ____ of ____

12

Unconsolidated Boring Log

31

Boring/We			-120	_		1	Drilling Contractor Stevens Drilling & Environmental, Inc.
Project Number DE000440.0001							Boring Location Sketch Driller & Helper
							Drilling Method
	Site Location St. Paul, MN						
Date	Y	3/2:	4/10			_	Hammer Weight
Prepared		KAH'	1 . 1.		-	-0	Drop Height
	and Date	¥	124/11		1002	0900	Total Depth Drilled <u>11.5'</u> Borehole Diameter
	e and Date		08/24/11		30	0200	
) with Lamp า Gas/Time/			100	11		
Calibration	n Gas/ Time/	Results		100	·1 pp	~	
						(ac	Dimensions $2^{\mu} \times 10^{0.5^{\prime}}$
A	В	С	D		E	F	G
Sample	Sample ID	Sample	Sample	Blow		PID	
Time	& Type	Interval	Core	Count		(ppm)	1 2 3 4 5 6 7 to 9
		(ft bls)	Recovery				Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other
_			(58) 67	1			Consistency Color Modifier Size Characteristics Content Characteristics
0945		0-4	11				0-2 Painded park
							2-8 SAND med there work -v. work - groule sube-subr love day
							poor sort
		1.1					8-11 CLANEY SILT some and F-med, dry crurking med still
		-					GLEY I SISGY
			1				CLEY ()/SUT
370		E D	42			1. 2	0-32 SILT Little cian/sond (nf-fine) dry-slightly dome (27") 5
838	<u> </u>	5-8	46			0.3	
							crimining low plasticity v-soft-soft color change @ 26.5"
						0.1	3242 SANDY SILT (Fine Suba) slightly dilatent low plasticity moist
							little mot- n worse, to provide soft - med still SY 4/2
							35-37 SAND little sift &-coarse suba-subar bange maist
0852		8-11.5	45			0.2	U-12 SANDAY HIMACTED wit
UUSE		10-11.3	1 2	-		0.6	
						تن	13-45 CLAY little silt weathered them mattered v. still-hard
							harplandle mist aday pounded rack @ 30"
							i nord Q 40" 5444
							11.5 EOB refuted due to bedrock (TLEY 1 5/1064

Page ____of ____

3

-

Unconsolidated Boring Log

	Finish Tim PID or FID	lumber me ition	Size	40.0001 AP	1117 1240 100.1		Boring Location Sketch Driller & Helper Image: Amage:
1	A	В	С	D	E	F	G
1		Sample ID	Sample		Blow	PID	
/	Time	& Туре	Interval	Core	Count	(ppm)	1 2 3 4 5 6 7 to 9 Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other
1	(/		(ft bis)	Recovery	-		Consistency Color Modifier Size Characteristics Content Characteristics
1148	1795		0-4	348	3	TX	0-3 Group
111-	1225	<u> </u>	0-4	36		++	0-7 Grace
1	[E=2]						7-25 CLAY method stift low desticity, no dilators GUEY 1 4/59 54 4/4
	<u> </u>				+		to control of the protection of the state of
	<u> </u>		+			1	
1			-			794	13-36 SANDY SILF projet-one soft-med dear
1 (A) /10					<u> </u>	198	Formed grained subs-subs little course - and public poor sort
	1122	<u> </u>	5-8	34			6-3 Slough
/	L'					ŦĸĿ	
1	('						moist shock IN work should persuited strong pertod ado-
/							12-15" pounded rock 24" pounded rock
1				1		657.V	28-34 SANDY SILT inthe cicy vit - med suba Still-Vistill
1				1			nonplattic - little plastic mothed stricture month
1	1/35		8-12	45		SICU	0-13.5 SANDY SILT wet-ve coarse sube-suber moist sett petril oder little clay
1	100		0			1.21.	lotie-med nation
1				1		+	11-13 SAND Seen mo-courty but in strong petrol odor black diletert
y			+			400.9	
	<u> </u>					170.1	
	4		1			- 11 - 12 -	40-45 SANDY SILT med user ist - med deale with patrol odor
	<u> </u>		-	+	+	+	· · · · · · · · · · · · · · · · · · ·
							tr organics, matted CILEY 1 6/1000

Unconsolidated Boring Log

Finish Tim PID or FIL	umber ne tion	DE00044 Ford TCA St. Paul, KAH	AP MN 24/11 2/24/11	140 145 2,1	0 5	Boring Location Sketch Drilling Contractor Driller & Helper Drilling Method Sampling Interval Hammer Weight Drop Height Stevens Drilling & Environmental, Inc. Don Hunker Sampling Interval Hammer Weight Drop Height Stevens Drilling & Environmental, Inc. Don Hunker Drop Height Drop Height Stevens Drilling & Environmental, Inc. Don Hunker Sampling Interval Hammer Weight Drop Height Image: Contractor Drop Height Total Depth Drilled Borehole Diameter Drilling Fluid Used Sample Device Dimensions Image: Contractor Dimensions
Α	В	С	D	E	F	G
Sample Time	& Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count	PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics
14			(#)			
		11			- h	e construction of the second se
					N	n and a second sec
1408		2-4	24			0-10 Pounded rock, granes
					133.7	10-24 CLAY istiff not plathe no dioting nottled
			- C			
	·					Silt seam O 22" (block organic)
1410		4-8	43			D-7 panded rack
					149.2	7-23 CLAY mud stiff motiled Isin plasticity in dilatory method
						7-11 SILT some sound vif-med to coose slightly domp subt
					166.9	23-33 SILT some sond vit-fine to red muist to clay very solt bles
						Strong putrol odar
					494.6	
						oder, sula-sula in a warde - small peoble
1421		8-12	48		03	0-48 SAND Found tound - subr will sitted much dense, wet
					454.1	mustly med
					271-8	

EOB Réfusel @ 12"

BORLOG.XLS.xls 08/22/2011

-

1

-10

-38-

Unconsolidated Boring Log

14,

Finish Tin	umber me tion	DE00044 Ford TC/ St. Paul, KAH	AP MN 4¥µ	1524 1640 100.1 pr-		Boring Location Sketch Drilling Contractor Stevens Drilling & Environmental, Inc. Driller & Helper Drilling Method Sampling Interval Hammer Weight
A	В	С	D	E	F	G
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery (#) ²¹	Blow Count	PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics
1550		0-4	32			0-11 Fill
						11-20 ChAy motiled v. stiff low plasticity in dilateray tragonics
	1					tr send form-med slightly motist
					180.3	20-25 SILT to clay sond orsance day - shitten damp med still Shotten
						25-32 Chan mottled to sitt V.F. Fine cord low planticity no dilateray
						14 proble Q 27" Shightly great
1525		5-8	46		1420	0-36 Chan mottled to silt highly postic moist, no dilaterary V.Sold-st. fl
						Slight petrol sour to day
					600.3	36-46 SILT to clay little land slight potrol oder
						proposed black crushy day - slightly damp
						44-46 color change damp some sond vit-frim round
						V. such 215 Y 3/1
1538		8-10.5	22			0-12.5 SILT to clay is soft wet in organici ort-fine sond SY 4/1
						Vislight oddr
					1:27.3	12,5-19 SILTY SAND wet wifine - v warge suba-subr wet, pour surt
						mostly med islack color Kis-15" strong petros od
					10710.3	19-22 SANDY SILT day country so plasticity/dilatening
			-			
						13 perla @ 19" 2154 5/4 Refuel @ 10.5" Unextone
XLS.xis						Pageof

Unconsolidated Boring Log

Finish Tin	umber ne ion	DE0004 Ford TC St. Paul KAH 8/2 Size	AP	1655 1830 100.1 pp	M	Boring Location Sketch Drilling Contractor Stevens Drilling & Environmental, Inc. Drilling Contractor Drilling & Environmental, Inc. Drilling Method Sampling Interval Hammer Weight Image: Contractor Drop Height Image: Contractor Total Depth Drilled Image: Contractor Boring Fluid Used Image: Contractor Sample Device Image: Contractor Dimensions Image: Contractor						
A	В	С	D	E	F	G						
Sample Time	Sample ID & Type	Sample Interval (ft bis)	Sample Core Recovery	Blow Count	PID (ppm)	1 2 3 4 5 6 7 to 9 Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other Consistency Color Modifier Size Characteristics Content Characteristics						
1800		C T	37			0-7 FII						
		1-5			0.4	7-24 CLAYEY SILT med dense block slightly damp						
						no plashinity dilatoray little sond (vif-med subr)						
					0.0	24-37 SAND/GRAVEL F-STAMLE little sitt smil-med pellon						
						pour sort slightly damp libe - subr						
10-5		5 0				0-4 SILTY SAND med - 11 works to swell-med petble poor sort day intern						
1905		5-8	46									
					0.0	4-9 SAND coarse little . wase well sort project site lasse						
				-	0.0	17-19" Small-med perboy						
					-	GLEY 1 5/5G 2,5 Y 5/6						
					-	GLET I S/SGY @ Lak						
						and append and						
				-	_							

Unconsolidated Boring Log

Client I Site Lo Date Prepan Start Ti Finish	Number Name cation	DE0004 Ford TC St. Paul KAH Size	AP	818 920 1001	ę.~	Boring Location Sketch Drilling Contractor Stevens Drilling & Environmental, Inc. Drilling Contractor Drilling & Environmental, Inc. Drilling Method Sampling Interval Hammer Weight Image: Contractor Drop Height Image: Contractor Total Depth Drilled S' Borehole Diameter Z' Drilling Fluid Used Sample Device Dimensions Z'	
A	В	С	D	E	F	G	
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count	PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics	
085	δ	1.5	33		2	0-91/2 SAND vf- medium little sitt to wase grownle day pour soit	
		-				lasse-med danse to snak-med pebble	
						91/2-11 ponded rack	
	0	10					grounds
	_	1				NUL-15/2 SILTY SAND (FII)	
					0,0	151/2 - 19 SAND come - grounds multily work for little - med pebble damp poor sut	Subasubr
	_		-		-	19-33 CLAY to site dry no prostring (dilatency hard, vi still it said us-	MAL CZ
0825	0	5-8	E 2	lp	_	0-5 STLTY CLAY Little sond not - charge sha when prosting	
6						v. soft wet -> due to indas vac	
14	_				0.3		may
					0.0	28-36 SHALE had day	
					0.0	(clay side) GLEY 1 4/5 4 (dk greenist grey)	
						8' EOB returned due to shullbedrock	
-		1				o bor (Entre over to small sorock	and the second s
						at the second	14
	_						
					. f.	e the	
	-						1000

Unconsolidated Boring Log

Finish Tirr PID or FID	umber ne ion	DE00044 Ford TC St. Paul, KAH	AP MN 3/25/11 3/25/11 0/25/11	or the Int Ior		Boring Location Sketch Drilling Contractor Stevens Drilling & Environmental, Inc. Drilling Location Sketch Drilling Method Drilling Method Sampling Interval Hunker Hammer Weight - Drop Height - Total Depth Drilled Sample Device Drilling Fluid Used - Sample Device - Dimensions 2' x g'
A	В	С	D	E	F	G
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count	PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics
1115		0-4	39			0-9 Fill (Sand Grander angular vil sond - by public)
					OB	9-191/2 Clayer Silt damp crimbles black no plasticity follotery
				~		med stiff little jond with fine round to med ground
					0,0	191/2-39 CLAY mothed doong to sad (i.H vit med suba
						and stiff no-little platterity, no dilaterary
						29-341/2 yound nuck (by-v. i) publics, suba)
						ruch from secons the integray
1052		4-8	46		0.0	0-46 CLAY mottled dame houttle derticity as dilatency
1056		1	10		10.0	med still - word "Its day at back
					0.0	trace 's angular publics @ 24.25", 31-33" \$4"
		-			0.0	31-36-3 hittie smill- 13 persones angular
1 3	Ser 25	P		25	198	tr agailes (rock Flour 9"-16"
	~ ~			A)		8' retuice du to show bedronk

Reg

Page _____of ____

Junconsolidated Boring Log

С , т.			_									
Boring/W	ell	ASE	-127				Drilling Contractor Stevens Drilling & Environmental, Inc.					
Project N	umber	DE0004	40.0001				Boring Location Sketch Driller & Helper					
Client Na	me	Ford TC	AP				Drilling Method guopobe					
Site Loca	tion í	St. Paul					Sampling Interval					
Date		8/0	5/11				Hammer Weight					
Prepared							Drop Height					
Start Time	e and Date		8 25 11		13	13	Total Depth Drilled					
	ne and Date		9/25/11		14	05	Borehole Diameter 24					
	D with Lamp	Size	12102/1C				Drilling Fluid Used					
	n Gas/Time/F		10	p.q	nter		Sample Device mecrouoru					
1989 699109 1990 699		100000000			VU -		Dimensions 2'x 12'					
А	В	C	D		E	F	G					
Sample	Sample ID	Sample	Sample	Blow		PID	2					
Time	& Type	Interval	Core	Count		(ppm)	1 2 3 4 5 6 7 to 9					
		(ft bis)	Recovery				Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other					
		· · ·	(5) "				Consistency Color Modifier Size Characteristics Content Characteristics					
1340		0-4	38				0-3 JAND little site intermed making and little come to growine					
							the analysis set of the local					
						100	damp par sont suba-suba loute with no no 3-25 1/2 SILT inthe damp black med dense in planticity [d. latering					
						5.0	5-4572 SILT itle day damp black med derric an platinity d latering					
							tr orignici					
						1.2	15/2-32 sith clong little and With med some mottled low destricity no difter					
							tr organiz,					
				1	12		32-38 SANDY SILT my grained damp med danke					
17/7		-	2.1			0.7						
1313		5-8	34			0.3	0-34 CLAY silly to sond not well withed domp-day no planticity (d) late					
						0.0	"coartel vard seams C 7" 11" 20", 23" 29" Saft-hard					
1325		8-12	37				D-61/2 cloyer indy SILT will v. Soft v.f- warse subersend inonplastic					
1367		0-10	177	-	_	0.0	U - 6/1 Chunger Joye Jim were U sort Vit work Joye Joye White the					
							1612 1 Sitty SAND/GRAVEL VIT - Granule little small perble to med-ly perble					
						0.0	1012-34 Sitty SAND/GRAVEL V.F- growne little snot peible to med-1g pelber sure-subre wet par sont donse					
							15-19 sity class noticed any stift-in stiff nonplastic / no dilatory					
1												
					_							

K.

Unconsolidated Boring Log

Finish Tir PID or FI	umber me tion	KAH S	0.0001 IP MN 25/11 25/11 25/11 25/11	14: 17 {}^	પ્ <u>ર</u> પુર	Boring Location Sketch Drilling Contractor Stevens Drilling & Environmental, Inc. Drilling Method Sampling Interval Image: Contractor Boring Location Sketch Drilling Method Sampling Interval Drilling Method Sampling Interval Image: Contractor Hammer Weight Image: Contractor Image: Contractor Drop Height Image: Contractor Image: Contractor Drop Height Image: Contractor Image: Contractor Drop Height Image: Contractor Image: Contractor Drilling Fluid Used Image: Contractor Image: Contractor Sample Device Image: Contractor Image: Contractor Dimensions Image: Contractor Image: Contractor
A	В	С	D	E	F	G
Sample Time	Sample ID & Type	Sample Interval (ft bis)	Sample Core Recovery	Blow Count	PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics
1425		2-4	25			0-8 sitty SAND with coards mostly fine little grounder south pebblic
						to med perioles - 18 petites, wet (from hydro roc)
					0.0	8-20 rith chay no-low plasticity to dilatery still - with
		20				little sand interned multiled
						12-13/2 SILT black some send not-fi still dome-on
						20-25 SLUT some sond with five round -subs damp lovie-med stake
						to snoth- in peoples silve Von crubin
1440		4-8	371/2		0	0-8 SANDY SILT wet into fine little med-granule to smill-mid public
1.000						va soft
				7	0.0	8-22 SAND AND SILT HALL way black vidence
						with much sond site - round site in up
					60	22-34 CLAY little silt it freed rand have med planticity no dilatoria
					0.0	mud that med sond seen Q Jos to small-1, pebbles
	23			5 N		34-37/2 SAND it-med mostly med wat ned denve to site
					- 13	well sort
1450		8-101/2	36		0.0	0-12 SAND V.F-med mostly Fire littly sitt not med denic well sort
<u> </u>					0.0	12-30 devery lift mutted dighting Jon and still-hand
						in the sond int-mud rand
L		.l				
						QLEY 5/5G1 puit color seems (271/2, 29, 30, 32, 331/2

Page _1_of _1_

BORLOG XLS.xls 08/22/2011

Unconsolidated Boring Log

	Boring/We	ell	ASB	- 129			Drilling Contractor Stevens Drilling & Environmental, Inc.
	Project Nu	umber	DE0004	40.0001			Boring Location Sketch Driller & Helper
	Client Nar	ne	Ford TC	AP			Drilling Method
	Site Locat	ion	St. Paul,	MN			Sampling Interval
	Date		812	11/01			Hammer Weight
	Prepared	by	KAH `	•		2	Drop Height
	Start Time	e and Date		120/11	07	50	Total Depth Drilled
		ne and Date	2	3/24/11	10	00	Borehole Diameter 2."
-	E FIL) with Lamp	Size	1 1			Drilling Fluid Used
	Calibration	n Gas/Time/F	Results	1.60	1 ppin		Sample Device meens with
					44		Dimensions 2" > "12"
r							
ļ	A	В	C	D	E	F	G
		Sample ID	Sample	Sample	Blow	PID	
4	Time	& Туре	Interval	Core	Count	(ppm)	1 2 3 4 5 6 7 to 9
			(ft bls)	Recovery			Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other
ł	all a d		1.1.1	1			Consistency Color Modifier Size Characteristics Content Characteristics
ļ	0000		0-4	31			0-31/2 sitty sondy Fill little granule- and people
1	6					0.1	31/2-26 clayer SILT little ref-med round-sile no plasting / dilaterary
1	- S					-	slightly doing ned stift-soft black
	-			10			
	-		<u> </u>				27" med peblie subc
	diff					0.	27-31 SANDY SILT int-mid little in coarse- granule to small-modelike
I			1				dry mid still black
1	0803		4-8	40			6-31/2 Slangh
ł	4000		1-0	1.0	1		
ł						0.0	
						S	little groundersmul persbus to med publics por sort 2,5 y 4/3
	2						20-24 sondy silt vit-worse suba-sub soft an moint
ĺ							25-27 rock allow
Ì						60	27-40 with sandy I wit- ware little v. warde - small reble
1						0.0	
ł			<u> </u>			_	to med public mottled and stift slightly moist 25 Y 4/2
Į					-		no-little plasticity no bilotering GLEY 1 6/500 15
	818	1	8-12				It stuck in we pube
I			10.10			0.0	8-9 SAND fined-v. course mostly mid sing-suba
							IN grance-small passe pour sort wet
I						0.0	1011 sondy site little clay mod dense muist
4		J	<u></u>	<u></u>		1	st-v. course subr-suber for granule - med public

11-12 SHALE hard meeting nust colors endert dry

GLEY 1 4/56

12' retusal bedrick/share

BORLOG.XLS.xls 08/22/2011

Page ____of ____

Unconsolidated Boring Log

Client Nan Site Locati Date Prepared I Start Time Finish Tim PID or FID Calibratior	Project Number DE000440.0001 Client Name Ford TCAP Site Location St. Paul, MN Date Sl2b/II Prepared by KAH Start Time and Date Sl2b/II Finish Time and Date Sl2b/II PID or FID with Lamp Size Sl02b/III Calibration Gas/Time/Results 1004 ppc					Boring Location Sketch Drilling Contractor Stevens Drilling & Environmental, Inc. Drilling Method Sampling Interval Image: Contractor Sampling Interval Image: Contractor Stevens Drilling & Environmental, Inc. Drilling Method Sampling Interval Image: Contractor Drilling Method Sampling Interval Image: Contractor Hammer Weight Image: Contractor Image: Contractor Drop Height Image: Contractor Image: Contractor Drilling Fluid Used Sample Device Image: Contractor Dimensions Image: Contractor Image: Contractor	A.1
A	B	C	D	E	F	G	
•	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count	PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics	
1254		6-4	28			0-3 Fill wet	
1 1		· · ·		2	0.0		obles
¢.					0,0	71/2-25 SILT little utofsand every no-little porticity no dilatency black is maint organics	
1						25-28 see will geboles	
1100		4-8	48			0-4 see wet	
				1	0,2	4-18 SAND vit-V. corse mostly med sub- little granule free shall-ned peoply	silt
	12-2		-		-	wat pair sort dense broken is persons @ 14-16"	Kach
			2		0.0	1848 clayer SILT mothed little wif sond medistill-hard GLEYI 5 Inthe-no-tasks planticity moist-vidry	KOGY 10 YR Y
_				1		color change e 27° 5 Y 5/4 dry (232"	
						38" hard @ 41"	
				10	-	8' EDB bedrack/sharp refuser mothing is distinct in	. 29"
	1	13	i C			then less genou	
		1	22			but still evid	June 727
	1	1 pr	1.000	2			
		0.14.6	19 23				

 $i_{\rm c}$

.

÷

a.

Unconsolidated Boring Log

	umber me lion	DE0004 Ford TC. St. Paul, St. Paul, St. Paul, St. Paul, St. Paul, St. Paul, St. Paul,	AP MN	100.1	HO Ppm	Boring Location Sketch Drilling Contractor Stevens Drilling & Environmental, Inc. Drilling Method Sampling Interval Y' Hammer Weight Y' Y' Drop Height Stevens Drilling & Environmental, Inc. Doo Total Depth Drilled S' Sample Device Drilling Fluid Used Sample Device Dimensions
A	B	C	D	E	F	G
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count	PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics
1255		0-4	40			0-9% sandy SILT infined subr soft-med Hill no plasticity (dilatency
						4-6 broken asphalt
					0.0	9%-18 chayey SILT little sond vit-f tr medium dry no plathin ty/dilation
						black med still-still
79						18-27 CUAY take send v. 6 - find trace silt to plasticity and dilatora
and the						and still slightly damps mattled 104R 3/3 107F 1/6
		_	-		0.0	29-34 sody SILT if med morthy wed slightly doup TV viceore-snall person
		-				not perform l' pebble @ 33" inter the to the
						34-39 SAND day vit and trace day little grande small people day pour vart essaste
10.0		Ji O	105			39-40 Loven up sondstome 7.5 YR 7/4
1310		4-8	45			D-4 SAND coartes to a coarte sub-round, to groude wer, well son
						1 José 10 Contraction of the second s
					0.0	4-12 SAND f-med, mostly med, little coarse, to vi warre-small pesses
	l				-	subscribber day pair soft
					0.0	12-23 SAND f-med mothy med for crossesmell person, wet, well sint and dense siler-round 23-40 sitter CLAY mothed dry wetward v stiff-hard
					0,0	23-40 sitty CLAY nottled dry weathered V stift - hard
<u> </u>	1				-	B' refusat due to shall bedrock
				1		B' refused due to shelf bedrock

Torna a

Unconsolidated Boring Log

12

Boring/Well ASB-132 Project Number DE000440.0001 Client Name Ford TCAP Site Location St. Paul, MN Date B/22/14 Prepared by KAH Start Time and Date B/22/14 Finish Time and Date B/22/14 Calibration Gas/Time/Results 100-1							Boring Location Sketch Drilling Contractor Stevens Drilling & Environmental, Inc. Drilling Method Drilling Method Drilling Method Sampling Interval Hammer Weight Drop Height Drop Height Total Depth Drilled Hammer Borehole Diameter Drilling Fluid Used Drilling Fluid Used Sample Device Immensions Z* X1!
A	В	С	D		E	F	G
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count		PID (ppm)	1 2 3 4 5 6 7 to 9 Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other Consistency Color Modifier Size Characteristics Content Characteristics
108		0-4	39				0-2 SAND IN sitt uf-med mostly fine to coarse - small pebble sub-sub- poo
							3 on lock
			-				2-The sandy sitt with sond round the varie-small parties sube day pour north
							color change C 6" 54 5/3
						0.0	7-22 sondy SILT whitine round trace day slightly damp med dense no plasticity Idilateric, black
						B 1	to coarse - is public algular - suba
	14					0.0	22-39 CLAM trace sith uf-ned sand round, matthed
×							+ low-no plasticity no diretering slightly mulit (moldable) to dry
							nust scows @ 36,38,39" in growie - suit power
							4' refusal due to shake bedrack
							FOB
							3

Unconsolidated Boring Log

Sec. 1

Finish Tin	umber me tion	Size	40.0001 AP , MN	99.7	1128	Boring Location Sketch Drilling Contractor SDE Driller & Helper Dan Hunter Drilling Method geoprobe Sampling Interval 4' Hammer Weight
A	В	C	D	E	F	G
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count	PID (ppm)	1 2 3 4 5 6 7 to 9 Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other Consistency Color Modifier Size Characteristics Content Characteristics
1142		0-4	29		0.0	0-29 SAND with little med-cooks the viceoste-grown round-sub-
					0.0	slightly maist - maist (19ª) were sort loose-med dense 10 VR 4/4
						Color change O 24" to bience 7 asochest 24-29"
1154		4-8	46			O-10 slough (concrete louder)
						W-22 sondy silty chan up broken my chests dolomitic? : Clasts ranging from gronule- 19 pester size
					ପ୍ର ପ	22-40 chay matted hard sughtly mout dry no plasticity dilation
						remorked Q 36"
					0.0	40-46 Share CHEY 1 5/59
					2	EOB B' Shall
					_	
		1				

н.

14

2

Unconsolidated Boring Log

Finish Tir	umber me tion	DE0004 Ford TC. St. Paul, KAH	AP MN 5/20/11	{00.(1525 160		Boring Location Sketch Drilling Contractor Stevens Drilling & Environmental, Inc. Boring Location Sketch Driller & Helper Drilling Method Sampling Interval Hammer Weight Image: Contractor Drop Height Image: Contractor Drilling Contractor Total Depth Drilled Def Def Borehole Diameter Drilling Fluid Used Image: Contractor Drilling Fluid Used Image: Contractor Dimensions
A	В	С	D		E	F	G
Sample Time	Sample ID & Type	Sample Interval (ft bis)	Sample Core Recovery	Blow Count		PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics
1530	الصفرية	0-4	40			0.0	0-14 SAND f-med little worse-v corse to growles damp
							2 round -sub - pour sort losse
	1 1					0.5	14-20.5 sitty SAND vit-fine little the state of the the the state of the the state of the state
							poir sort day subr-sub- med dense to v coarse-med people
						0.0	20,5-28 see color charge - black
							29-40 SILT some wift said med still sliphtly damp no plasticity dilutere
							black fr clay
							color change () 310" "less black"
1545		4-8	44			6.0	0-3 see wit
		1	1.1			0,0	3-9 SANDIGRANEL informat sub-staround informate - and pebblici
							was sout wet denk
						0.0	9-44 CLAY mutted to sh-med sand round-subs
10							maint to dry QZI" med stiff
		1					mid -> no platition
							No dilatency
<u> </u>							

*

Unconsolidated Boring Log

Finish T PID or F	Number ame ation	DE0004 Ford TC St. Paul KAH Size	AP MN 126/11 26/11 26/11	00.1	1625 1740 1740		Boring Location Sketch Drilling Contractor Stevens Drilling & Environmental, Inc. Drilling Method Sampling Interval Hammer Weight	
A	В	C	D	1	Е	F	G	
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count		PID (ppm)	1 2 3 4 5 6 7 to 9 Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other Consistency Color Modifier Size Characteristics Content Characteristics	
1630		0.4	311/2			5.1	0-4 Slough asphatt	
					-	7.0	4-10 SAND with methy med to litty viccose - small person pour sort of	in b
							pounded nock @ 9"	L
						329.3	10-31/2 soldy SAND wit-med subr med dense inack little cooke-small pertice	
							dry petrol dos ponded rock 12-13/2" to med pebblis	
1635		4-8	22			14.0	C-175an	
		1.8					Wet Piz" iolor change p 51/2 to brownish	
							is peptice P7-8"	
						694.4	1772 sondy SILT VIT-fine sand round moist black	
2.5							notrol ofor tr-little even plasticity pilatera	
							10 albour @ 20" Low mkd 7 "	
							color dronge PZIY: LALEYI 4/1064	
1450		38	-A 12				O-31/2 sitty SAND ony (slow/2)	
			1	1		293.2	3/2-9/2 sandy SILT int-fine sond, rand moist GLEYI 4/ 10/64	
1.1						1.1.2	GLEY L 7/56 (28"	
							stray octrol adar	
							91/2-12" bounded isedwick	
			1	-			9* EOB due to bestock	

40. C

Page ____of ____

Unconsolidated Boring Log

Finish Tir	umber me tion	DE0004 Ford TC St. Paul 82 KAH 82 Size		082 0910 [00 - (Boring Location Sketch Drilling Contractor Stevens Drilling & Environmental, Inc. Drilling Method Sampling Interval Hammer Weight Hammer Weight Image: Contractor Image: Contractor Drop Height Image: Contractor Image: Contractor Total Depth Drilled Image: Contractor Image: Contractor Sample Device Image: Contractor Image: Contractor Dimensions Image: Contractor Image: Contractor
A	В	C	D	E	F	G
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count	PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics
0830		0-4	44			10-4 sandy SILT slightly domp could as platticity platency block
						int-med cour-side little vicione-growie to similar petitien slight ador
						4-6/2 pandel Nik
					2.0	1072-13 SAND AND SILT of med worth med little v. worke and particle
	1 1					pour sort slightly some jud dente
					0.4	13-44 CLAY motiled little sand site vit-med to a course = med public
						dry med still no plasticity/dilatering
0840		4-8	24			G-2 SAMS GOARK-vi wark matty coase into the loose will sort maint
					8.2	2-8 sondy clay Isilt day monolositic /d. lastert soft-med still
						unother with victorie siber-side actual oder
						8-10 pounded rock
					5.3	10-17 Sendy SILT wet strong petrol ador int-med mostly fine
	1				-	soft as plasticity/diluting black
						17-19 Silly SAND vil-med moting had little coarte - granule subar-subr
						point sort with potrol oddar
		- Ч			14.5	19-24 CLAY mottled dry no plasticity/dilateron slight petrol oder
						Ato slightly moist soft-wed atthe
0854	1	8-11	42		0.7	0-18 S. ILty SAND wet vot- Fine to med - small perby subr-sube poor sort
.XLS.xls I1						13-29 SILT moist iow-mus platterity little of sand little day color days P 21 13 persu 27-29. 29-344 days the subtract of the owner and the owner and public subtract 34-42 CLAY vistill-hard slightly matual slightly down platticity SY 5/3 EDB C In' refused due to bedruck (shole

Unconsolidated Boring Log

Boring/W	ell	ASR.	137				Drilling Contractor Stevens Drilling & Environmental, Inc.
Project N		DE0004					Boring Location Sketch Driller & Helper
Client Name Ford TCAP							Drilling Method Geoloby
Site Loca		St. Paul					Sampling Interval
Date		8/25	,				Hammer Weight
Prepared	by	KAH	<u></u>				Drop Height
•	e and Date		13/11		12	05	Total Depth Drilled
	he and Date	0	29/11				Borehole Diameter
-	D with Lamp		BZYU				Drilling Fluid Used
	n Gas/Time/			1.00			Sample Device
	2			00.1	10-		Dimensions 2" × 11'
	7.0						
А	В	C	D		Е	F	G
Sample	Sample ID	Sample	Sample	Blow		PID	
Time	& Type	Interval	Core	Count		(ppm)	1 2 3 4 5 6 7 to 9
		(ft bis)	Recovery				Density/ Soil Grain Secondary Moisture Remarks and Other
			(ft) 41				Consistency Color Modifier Size Characteristics Content Characteristics
1245		0-4	30.5				Q-4/2 SILT sindy refined-v. ware little granch - smell pebble dry
							The plasticity dilaterary for angular book
				-		0.2	
				-		0.0	
_							dry-slightly must slightly matterial to vicionse-med petioles jubr-
						0.3	2.12-301/2 CLAY to silt some said of f morthy u.L. little corre-small per
							med plasticity moist black med still by public of bittom
1220		4-2	40.5				O-FI Size
1600		10	70			10.2	
						0.0	19-34 SAND V.t-f word wet dense well sorted to sith
						0.0	34-40.5 mix of sond above, sith below, and chan below the
1230		8-14	46				0-8 supply SILT at wet no plasticity high dilationary v. suff
1		10 1	+ <u> </u>			0.3	8-11 CUAY with high plaiticity dilesterit gott struthy mothed
		1		-			
			+			0.4	
				-	_		v sind - hard
							28" brong such and what change to GLEY 1 4/1044
					_		
	1						

or 4

4

BORLOG.XLS.xls 08/22/2011 .

Unconsolidated Boring Log

Finish Tin	umber me tion	DE00044 Ford TC, St. Paul, KAH & 2 KAH Size	AP MN 1[11 27]11 27]11	1505 1600 00.1 ppm		Boring Location Sketch Drilling Contractor Stevens Drilling & Environmental, Inc. Drilling Method Sampling Interval Stevens Drilling & Environmental, Inc. Hammer Weight Stevens Drilling & Environmental, Inc. Drop Height Stevens Drilling & Environmental, Inc. Total Depth Drilled Stevens Drilling & Environmental, Inc. Borehole Diameter Stevens Drilling & Environmental, Inc. Drilling Fluid Used Stevens Drilling & Environmental, Inc. Drilling Fluid Used Stevens Drilling & Environmental, Inc. Drop Height Stevens Drilling & Environmental, Inc. Drilling Fluid Used Stevens Drilling & Environmental, Inc. Dimensions Z'''
A	В	С	D	E	F	G
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count	PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics
1513		0-4	30			0-3 pounded concrete
						3-10 SAMD and - coarde mostly and trivearse - small perous round - subr
						daudence are such units
	1				0.0	6 the sondy silt (AND SAND) must no plasticity/dilationary find little corse
-					10.0	to ve coarse - le periori saft
						15-17 punded rock
						13-22 SAND to silt fordcoase multiplemed sile-round little provide- and pebbic
						domp-moist poor sort pools beginning to be wet Q2.
					0.0	22-30 CLAY nottled dramp to site with said no plasticity dilatering
						hard rust wher formations @ 2412"
1554		4-8	40			0-40 see no lamontions, day GLEY 1 5/5 GY
						@31" shall GLEY 1 4/10 GY
						(2 19" angular med periodes (18/2-20/2")
						brown laminution P15"
					1	
			1		1	
	-		1		1	
L	1		1			

Page _____of ____

Unconsolidated Boring Log

Finish Tim PID or FID Calibratior	umber ne by e and Date ne and Date) with Lamp n Gas/Time/f	Size Results	40.0001 AP , MN 3(11 23(11) 5(23(11) 5(23(11) 5(23(11))			Boring Location Sketch Drilling Contractor Stevens Drilling & Environmental, Inc. Drilling Method Drilling Method Drilling Method Sampling Interval Hammer Weight Hammer Weight Drop Height Total Depth Drilled B' Borehole Diameter Drilling Fluid Used Sample Device Dimensions 2'' × 5'
A Sample	B Sample ID	C Sample	D Sample	E	F PID	6
	& Type	Interval (ft bis)	Core Recovery	Count	(ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics
1645		0-4	412		0.0	0-15 SAND Little silt inf-med little coarse-granule to small public
					_	dry-slightly damp 4-7" Wack
						7-15" brown
- 2					T	15-16/2 CLAY little silt some and vit-F trind doing no-low plasti
						no dilatering med stift
						16th-23 SANDY SILT NE-Fin doming to vi coose - med public
		×	1.1.1			no plasticity dilating med stift
					2.1	23-42 ("VAY mattered no presticity dilatency damp saft med still - V.S
						trsitt
						rock flour Q 27 (seen) 36
1700)	4-8	481/2			D-31/L Slangh
					3.1	31/2-48/2 CLAY mitted no plesticity diletercy slightly damp - day
						stiff-hard slight odor
					11.3	1000/100 Norm C11, 17,20" GREY 1 5/54
						Vis person C 39"
					_	
						EDB C B' due to shale / hedrick
						8

ž

Unconsolidated Boring Log

Boring/W		ASB-				Drilling Contractor Stevens Drilling & Environmental, Inc.
Project N	umber	DE0004				Boring Location Sketch Driller & Helper Dan Hunter
Client Nat	me	Ford TC	AP			Drilling Method
Site Loca	tion	St. Paul,	MN			Sampling Interval
Date		8/30	11			Hammer Weight
Prepared	by	KAH				Drop Height
Start Time	e and Date	\$ 30	lu	0805		Total Depth Drilled
Finish Tin	ne and Date		11	0850		Borehole Diameter
PID or FI	O with Lamp	Size	1			Drilling Fluid Used
	n Gas/Time/		10	ma 0.00		Sample Device mecrocorc
				- H		Dimensions 2° × 4'
A	В	С	D	E	F	G
Sample	Sample ID	Sample	Sample	Blow	PID	
Time	& Type	Interval	Core	Count	(ppm)	1 2 3 4 5 6 7 to 9
		(ft bls)	Recovery			Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other
		ľ, í	(m) M	1		Consistency Color Modifier Size Characteristics Content Characteristics
0814		0-4	36			0-74/2 pounded concrete
	1				28	21/2-13 SAND AND SILT wit-med little angular-sube coarse-med rester
						no plasticity /dilatoricy med dente black
						13-15 SAMD with med. little course suit - and med dense damp
						00. Sort
		_				15.20 sitty SAND/GRAVEL vit soud - vilg publici suice-anymier moor sort
-						broken up slightly damp
		1			11	
					1.6	20-36 CLAY nothed now plaining no diluting must still - still
						sh domp
0825		4-8	45		20	0-40 saa damp - day to sand gravel up to med -13 perble suba-ang
4003	5				1000	i i j para i i i i i i i i i i i i i i i i i i
						035 37
					22	40-45 SHALE GLEYI 4/56
					12	
-		1	1			
		-			-	či.
					-	
						E E
L				.l		

Unconsolidated Boring Log

Finish Tin PID or FII	umber me lion	Size	40.0001 AP MN 0/11 50/11 3(30/11	197 19 0. 0001	10 07-0	Boring Location Sketch Drilling Contractor Stevens Drilling & Environmental, Inc. Boring Location Sketch Drilling Method Sampling Interval Hammer Weight Image: Contractor Drilling & Environmental, Inc. Drilling Method Sampling Interval Image: Contractor Hammer Weight Image: Contractor Drilling & Environmental, Inc. Drop Height Image: Contractor Image: Contractor Total Depth Drilled Borehole Diameter Drilling Fluid Used Sample Device Image: Contractor Image: Contractor Dimensions Drilling X Image: Contractor
A	В	С	D	E	F	G
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count	PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics
935		6-4	40		1.0	G-131/2 SAND il- write with medium little silt damp she-sub-
					1.8	13/2-40 CLAY mitted moist-any med plasticity in dilaterup
						med still-still to gravel anyvior-sile
0945		4-8	46		2.8	C-31/2 Nouse
					5.9	342-46 CLAY Slightly protted dry low-no platicity no dicting reworked being 374 med-snill av snill
			-	1		younded rock 7-9" - a clis a rust seem
						mut seen (2 37", 25"
	-					EOB BI due to show bedrak
L						
	/					· · · · · · · · · · · · · · · · · · ·
		-				
			1			

Page _ _ _ of _ _ _

2

5

Unconsolidated Boring Log

Boring/Well ASS-142 Project Number DE000440.0001 Client Name Ford TCAP Site Location St. Paul, MN Date Bi30/11 Prepared by KAH Start Time and Date Si30/11 Pipor FID with Lamp Size Calibration Gas/Time/Results (00.0						Boring Location Sketch Drilling Contractor Driller & Helper Drilling Method Sampling Interval Hammer Weight Drop Height Total Depth Drilled Borehole Diameter Drilling Fluid Used Sample Device Dimensions Stevens Drilling & Environmental, Inc. Stevens Drilling & Environmental, Inc. Don Height Group Height Total Depth Drilled Borehole Diameter Drilling Fluid Used Sample Device Stevens Drilling & Environmental, Inc.
A	В	С	D	E	F	G
Sample	Sample ID	Sample	Sample	Blow	PID	
Time	& Type	Interval	Core	Count	(ppm)	1 2 3 4 5 6 7 to 9 Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other
		(ft bls)	Recovery			Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other Consistency Color Modifier Size Characteristics Content Characteristics
1		0-4				
1055		0.9	36			0-3 sondy suit any block what little work- and find peille lash no platinity / dilateray
						3-11 SAND with moder silt ittle course - med public
					2.2	subar-subar slighting damy pour surt med dente
						11-17 SAMS if-med nothing ned to ward - granule dome well sort into mand
	**					mid dance
	h					the second is the second is the second s
					3.2	
					2.6	
						23" pounded rock seem is parting P 26" crypnics
						351/2-32 dolomitic limetone
×						EOB due to dolormic linertone (bedrock)
					1	
		-				
	-					

i.

Page ____of ____

Unconsolidated Boring Log

	mber ne on oy and Date	Size	0.0001 AP MN	1135 1200 100.0		Boring Location Sketch Drilling Contractor Stevens Drilling & Environmental, Inc. Boring Location Sketch Driller & Helper Den Hunter Drilling Method Sampling Interval Image: Contractor Hammer Weight Image: Contractor Image: Contractor Drop Height Image: Contractor Image: Contractor Total Depth Drilled 31 Borehole Diameter 2" Drilling Fluid Used Image: Contractor Sample Device Image: Contractor Dimensions 2" x 31
A	В	C	D	E	F	G
Sample	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count	PID (ppm)	1 2 3 4 5 6 7 to 9 Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other Consistency Color Modifier Size Characteristics Content Characteristics
1140		0-3	30		4.0	0-91/2 sitty SAND vit-cook mostly ned little v. wark-small work
					4.7	91/2-11/2 SAND f-warse mostly not slightly maist med dense subr well sort 11/2-18 Charly suightly motiled to find sond solor-round 100-med plasticity sugliting moult no dilatency med stall-stall
					4.8	18-30 shale GUEY 1 4/5 9 dry
						8

Unconsolidated Boring Log

Project N Client Na Site Loca Date Prepared Start Tim Finish Tin Calibratio	Boring/Well ASB-144 Project Number DE000440.0001 Client Name Ford TCAP Site Location St. Paul, MN Date Bi30(II Prepared by KAH Start Time and Date Bi30(II Finish Time and Date Bi30(II Fild with Lamp Size Calibration Gas/Time/Results						Boring Location Sketch Drilling Contractor Driller & Helper Drilling Method Sampling Interval Hammer Weight Drop Height Total Depth Drilled Borehole Diameter Drilling Fluid Used Sample Device Dimensions Stevens Drilling & Environmental, Inc. 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9						
A	В	С	D	E		F	G						
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count		PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics						
1340		0-4	37				0-5 pounded importe						
						37	5-10 SAMD fined must used little correr v correr to granule-small kelle						
	1	1					round -subre weldence your sort slightly movit						
							10-25 the SILT little sand, clay with muist still no platicity dilatere						
							multiple and						
			,				to the 12 black (221.5-23						
		-											
<u> </u>													
						41	25-37 SPAND to sitt vit - med mostly ned to coard-med peblin						
							poor sort and deash shightly anoist						
							rust voloand 27-30"						
1355		4-8	46	1	~		0-6 Slough						
		No.	1			3.0	6-15 SAND vit-med, med -> F mostly P 10" little work to vi werte - grande						
		\$9 3%			12	1	well sort and dense silr-round @ 15" nest colored, growing med perologic						
			4			1.0	15-36 CLAY sliphtly would (revorked) slightly moist-one no plasticity						
		1.3					modulationary hard						
							36-4% SHALE GLEY 1 4/59						
	-	-					se le manae cher i had						
			-										
				1	_								

Unconsolidated Boring Log

Finish Tin FID or FII Calibratio	umber ne ion	DE00044 Ford TC/ St. Paul, KAH	AP MN 0 11 30 11 30 11	1515 17₹0 ກວ,ວ E		Boring Location Sketch Drilling Contractor Drilling Method Sampling Interval Hammer Weight Drop Height Total Depth Drilled Borehole Diameter Drilling Fluid Used Sample Device Dimensions Stevens Drilling & Environmental, Inc. Drilling Contractor Drilling Method Sampling Interval Hammer Weight Drop Height Dan Hunter Drilling Contractor Drilling Method Sampling Interval Hammer Weight Drop Height Dan Hunter Drilling Fluid Used Sample Device Dimensions Dan Hunter
A Sample	Sample ID	Sample	Sample	Blow	PID	
Time	& Туре	Interval (ft bls)	Core Recovery	Count	(ppm)	1 2 3 4 5 6 7 to 9 Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other Consistency Color Modifier Size Characteristics Content Characteristics
1520		0-4	30		21	O-10 sither SALVED for wears, mostly found loose med danse sub-tube
	3					little viscore-small pickle to med peticle pourt sort an- dama
					208	10-30 sandy SILT tr-little clay wit-mid sub-round with coarse-in-14 per
						low plasticity no dilatoricy project to med will
1525		4-6	19		29	Q-9 saa vet (6"
						9-14 pounded sock
					4.8	14-19 SAND former mostly med to corrie-viceous well sont sub-room
						joss wat
1530		68	28			0-8 slad
					41	8-28 SAND France mostly made to charge will sort with med denil loope
						LOID' Charge C 13.5, 20" 543/1 - 2.543/3 - 543/1
1545		8-12	48	2 8.6'	4.5	0-27 500
		7		Ľ		27-38 vorved mattled clay silt and from about what poor stro
					31.1	38-40 busted route wish use @ 41"
, 16.	int "			10		44-43 CLARY monthed med still -still ned plastic as dilaterary
			-	2		the med publicies massi
	-	1	£.			
	1.0					

i.

Page _____of

Unconsolidated Boring Log

Boring/We		ASA	-146				Drilling Contractor Stevens Drilling & Environmental, Inc.						
Project N		DE0004					Boring Location Sketch Driller & Helper Dan Hunter						
Client Na		Ford TC					Drilling Method atoprotes						
Site Loca		St. Paul					Sampling Interval						
Date		8/3					Hammer Weight						
Prepared	hv	KAH	10				Drop Height						
	and Date	81	alla -		0755		Total Depth Drilled						
	ne and Date		31/11		0915		Borehole Diameter						
	D with Lamp		squ		- 113		Drilling Fluid Used						
	n Gas/Time/		100	D. D op	~		Sample Device						
Quilling				11			Dimensions 2" X 12'						
A	В	С	D		E	F	G						
Sample	Sample ID	Sample	Sample	Blow		PID							
Time	& Type	Interval	Core	Count	- 1	(ppm)	1 2 3 4 5 6 7 to 9						
		(ft bis)	Recovery				Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other						
			(HT A				Consistency Color Modifier Size Characteristics Content Characteristics						
0805		0-4	33				0-4 pounded concrete						
						3.0	7-15/2 SILT to clay little vit sond black slightly malit med itill still						
							no prestinty (dilateray						
-				1		4.4	1512-3012 SAND						
				-		7.1	15/2-20 sitty send of - med & some grance little small - med public sule sule						
0		-				_							
						_							
							26-3012 send f-med northy med round-subs med dense-loose						
							to coorde-small public well sort						
	1						30%-33 CLAY metted slightly wilt day to platticity platency hard						
0810		4-8	34				07 sloui						
						3.5	7-12 with sAND into the med slightly domp well soit round-sub- and dented						
							12-18 sond and sitt, without little v. coase-granule to small-and poul						
							dry-out @ 17"						
				-			18-21 sandy SILT wet black no plasticity dilations in saft inf f sord						
				1			Q 20" h authe						
		-				973.1	21-24 CLAY method the march moise no plasticity / dilateray soft						
	1	-	-			110	24-34 SILT soft black organics petrol ador slightly worth the plasting						
		-											
			1				no dilatening						

5

Page _ of 2

ARCADIS Unconsolidated Boring Log

Boring/We	ring/Well	ASB	- 146			Site Location St Paul MN	
Project Nu	mber	DEC	200440	0001		Site Location St Paul MN Date 5131/11	
Client Nan	ne		TYN			Prepared by KAH	
					1.1		6
А	В	С	D	E	F	G	
	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count	PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics	
0820		8-10	4			D-F clorest	l
					740.8		trol co
0830		10-12	48		99.8		-
haid	6	10 (1-	10		11.0	n solt	Y
-4-1	11				(9.2	24-48 CLAY mutted alightly musist - day no plasticity (dilatoring	
1	A the second second			1		V. SHILL-MART GLEY 1 8/10GY	
	2.49	Sec.		25.		K. I	
	A ANTA	1	24. S. I.			12' E08	
	- and		1		54 		
	「小田町		1 + + 3			and the second	
	-		-		S		
	and a second	- Marine	N.F.				1
	1	「本	1.2.2	7-e-1			
	15	1.1					1
	an	- CO.					
		ti it					
		ń.					
						and the second se	

BORLOG.XLS.xls 08/22/2011

R.,

Unconsolidated Boring Log

Boring/We	:11	ASB-	197			Drilling Contractor Stevens Drilling & Environmental, Inc.
Project Nu	Imber	DE00044	0.0001			Boring Location Sketch Driller & Helper
Client Nam	ne	Ford TCA	NP			Drilling Method Geopoles
Site Locati	ion	St. Paul,	MN			Sampling Interval
Date		81	31/11			Hammer Weight
Prepared b	Dγ	KAH				Drop Height
	and Date	81	31/11	09	46	Total Depth Drilled
	e and Date		83111		00	Borehole Diameter 2"
D or FID	with Lamp S		- Pape			Drilling Fluid Used
	n Gas/Time/R		10	0.0		Sample Device mounture
				10		Dimensions 2" × 12'
A	В	C	D	E	F	G
	Sample ID	Sample	Sample	Blow	PID	¢
	& Type	Interval		Count	(ppm)	1 2 3 4 5 6 7 to 9
inte	- ' <i>'</i> ''	(ft bls)	Recovery		Merely 1	Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other
			(1) 7		/	Consistency Color Modifier Size Characteristics Content Characteristics
0955		0	28			0-41/2 panded concrete
	1				-	41/2-10 samp f- work morth and to viscore- such public dry.
					13.10	losse por sort concrete le public size @ 8-10"
						10-18 sanding SILT black dry crushing no dilatency no plasticity
						vit-fine and dense
					\$3	18-28 SAMIS ut - mostly and little coarse-grouvie to small politich - med public
						dry - slightly mality poor last and dense subraste
						Color change 625" 104R 5/6-7 104R 3/1
1000		1.1 9			+	
000		2-8	30			0-9 Slaugh
				J	14.8	9-19 SAND formed musting and little coarse to is work - and periode
						roma-subre must med dense poor sort
					422.4	
					1	
						prost sort and dense with Frong patrol odor block - gray block
1010		812	46			Q-13.5 sac slight then visith with
					421.3	13.5-18 SILT little day organics v. maist high plasticity soft
						Color therese P 15th
					849.1	18-321/2 SAND AND CLAY SAND, CLIFY mother varied petrol odor
				4		is med-high plasticity nother vit- and northy wit- f modilatency soft mus will was
						cand met wit- work little vivarie-small pathle, to med pathle, poor cirt, net deal

pounded rock= 25%-29

Page _____ of ____

Unconsolidated Boring Log

Boring/W	/ell	ASA	-142			Site Location St Paul, Mrs
Project N	lumber	DE	000440	0001		Date 2/31/11
Client Na	ame		Ford T			Prepared by KAH
A	В	С	D	E	F	G
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery (ft)	Blow Count	PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics
					24.8	
					_	st moist
						remarked @ 44"
						P-
					Ń	
						2
			_			
					17 N. 35	
		_				
				к.	-	
			_			9
					+	8 21.0
1					12	k
			1			
	-		-		_	
				1		

0.

BORLOG.XLS.xls 08/22/2011 Page 2 of 2

657 485-4819

ARCADIS

Unconsolidated Boring Log

Finish Tin	umber ne lion	DE00044 Ford TC/ St. Paul, KAH			115- 1250	Boring Location Sketch Drilling Contractor Stevens Drilling & Environmental, Inc. Driller & Helper Don Henter Drilling Method Seoprobec Sampling Interval 41 Hammer Weight
А	В	С	D	E	F	G
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count	PID (ppm)	1 2 3 4 5 6 7 to 9 Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other Consistency Color Modifier Size Characteristics Content Characteristics
1125	2	0-4	32			0-2 slavel (panded concrete)
	se	antange-			24	2-92 SAND VE-med mostly and little coard - small person to med person
		14		140	23	dry-slightly maist and dente war set some subr
1131		4.8	48		3.2	D-II Sloval A
1001		10	10			11-36 sea wit @ 33" Jossi-ned dense
					1060	36-48 SAND little selt (sean (38") intrané mostly true tr were
					1080	nut black stractor dor med desk
i138		8-12	23		1651	0-15 slough 7
		0.15			-	15-23 Sac
1148		12-16	48		138.0	
1190		10 10	10		130.0	
		1/			301.9	
					371-1	
						IOYE YZ

Ŧ.,

BORLOG XLS xls 08/22/2011

Page _____ of _____

on pebbu

Unconsolidated Boring Log

Boring/Well ASB-157 Project Number DE000440.0001 Client Name Ford TCAP Site Location St. Paul, MN Date ALL Prepared by KAH Start Time and Date ALL Finish Time and Date ALL PID or FID with Lamp Size Calibration Gas/Time/Results						Boring Location Sketch Drilling Contractor SDE Driller & Helper Dan Hunter Drilling Method geoprobe Sampling Interval 4' Hammer Weight
A	В	C	D	E	F	G
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Bìow Count	PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics
1428		0-4	33			0-4 sloud (pounded concerte)
					0.0	4-33 FAND vit-med little work diversite and peakle
					0.0	pour suit and dense growner to small-ned pebble sightly month
						round-sulr
1+34		4-8	41		45	0-12 slough 1
					0.0	12-41 spa / wet P 24"
					0.0	26-41 SAMYS med- v. wark mostly course - vo ware little granche - and able
						poor sort wet round-sub- meldense Allere Je sill
1441		8-12	33			C-11/2 Slowly 7
		1010			0.0	11/2-21 500
				0	33.4	21-30 sondy silt V.f-mus fritter coarse - le pebble round -subr viet
			- X			dilatert to day med desitienty betal odor
					423 3	30-33 Stalls med-coorte petrol odos (hun dible with ittle v. coerse- grownie
-					110.0	found-subor for small public lossed polor sort
-			82.L			
						EOB 12'
			1		e	
					_	N
L						

.4

Unconsolidated Boring Log

		-	-			
Boring/W	eli	ASB-	-158			Drilling Contractor SDE
Project N	umber	DE00044				Boring Location Sketch Driller & Helper Dan Hunter
Client Na	me	Ford TC	AP			Drilling Method geoprobe
Site Loca	tion	St. Paul,				Sampling Interval 4'
Date			9/1/11			Hammer Weight
Prepared		KAH				- Drop Height
	tart Time and Date 1/11 1537					Total Depth Drilled 12'
ALL AND AND A CONTRACTOR OF A	ne and Date		4/1/11	1	640	Borehole Diameter 2"
	D with Lamp					Drilling Fluid Used none
Calibratio	n Gas/Time/I	Results	9	1.7		Sample Device macrocore
			1			Dimensions $2^* \times 12^{\prime}$
A	В	С	D	E	F	G
Sample	Sample ID	Sample	Sample	Blow	PID	
Time	& Type	Interval	Core	Count	(ppm)	1 2 3 4 5 6 7 to 9
		(ft bls)	Recovery			Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other
			(f2) *			Consistency Color Modifier Size Characteristics Content Characteristics
1545		0-4	35			0-6 stonet (bounded concrete)
			-		0.3	6-17 sigh SAND without tittle coard-small pebble our sort Slightly moist
			<u> </u>	ł	10.0	
		-			-	round-sube mud dense
· · · · · · · · · · · · · · · · · · ·						17-26 sondy SILT both to to the clay mothed what sond round-super
						no lottle plasticity no diletency to viscorie and pechles slightly minist
				~		med staff
					0.0	20-35 SILT some your at to good little day black mostly ned denke
-						me plasticity no diluterary organics
1550		4-8	33			D-772 Slowyh
1					187.4	71/2-33 SAND u.f med little v. warste-grounde to smell-med petite pounded rock C 140
				P	_	poor sort round-subce slightly monst-wet @ 20",
					490.5	color change @ 22" 25 12" brown -> 25 Y 5/1 25 Y 4/1 -> black
2						strong putros adar @ 24"
1600		8-12	46		631.5	0-6 sec strong petrol odur
-8	1.1				25.8	is-21 city noticed is sont with petrol ador jittle soud fillt with they broken not 211"
						briken rock/sond scan & 19"
					21	21.391/2 CLAY noist-shighty noist is hard remarked no plasticity dilateray 57 5/3
					10.7	311/2-46 weathered share GLEY 1 4/1064
<u>,</u>						

the state

-

Unconsolidated Boring Log

Finish Tin	umber me tion	DE0004 Ford TC. St. Paul, KAH 9/2 Size	AP MN AU	0°	305	Boring Location Sketch Drilling Contractor SDE Driller & Helper Dan Hunter Drilling Method geoprobe Sampling Interval 4' Hammer Weight 12' Drotal Depth Drilled 12' Borehole Diameter 2" Drilling Fluid Used none macrocore 2* x 12_
A	В	C	D	E	F	G
Sample	Sample ID	Sample	Sample	Blow	PID	
Time	& Type	Interval (ft bis)	Core Recovery	Count	(ppm)	1 2 3 4 5 6 7 to 9 Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other
		(IT DIS)	(E) h			Consistency Color Modifier Size Characteristics Content Characteristics
0820		0-4	35			0-272 Slough
					1.2	21/2-35 SAMD f-med little coarse-small peoble to med-10 peoble round-suba
		-			- let	
					-	poor sort med dense slightly most moist
					0	odor paying Q 29" potrol adur strong 31-35"
		-			92.4	color change to black Q 30"
					_	31-3's" CLAY molit
	<u> </u>					8-12 setting litt at if little and grandle to shall-med piblic little clay
						low-med plasticity
0826		4-8	38			0-10 slage
					1057	10-38 sandy SILT no plasticity/dilating black and still v.f-f little med
					1	to charge - small public wast moist-with strong petrol ador
				. ×	8425	16-17, 2012-25, 27,28 30-31 sith SAND f-med to VWari-grown ashed
						28-30 CUBY and still mast and high plasticity.
6332		8-12	46		201 1 BI	U-4/2slough
		10.00	1	1	1264	1/2-10 serdy SILT of-med little correct of vivare - Small peblik west no plasticity
1				1	1	direct
					_	
						poor sort subreshe such visible black odur
		1				

Unconsolidated Boring Log

Boring/W	ell	ASB-	159			Site Location St Paul, MM
Project N	umber	DEC	00440	10001		Date 9/2/11
Client Na	те	For	d TCA	९		Site Location St Paul, MM Date 9/2/11 Prepared by KC+
A	В	С	D	Ε	I F	G
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery (ft)	Blow Count	PID (ppm)	1 2 3 4 5 6 7 to 9 Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other Consistency Color Modifier Size Characteristics Content Characteristics
						24-34 sitty sondy gravel broken up rack wet - cilighty mult petrol wet- in worse matted day seen (2 27-20"
					77.0	0 34-46 chan notted med stift -visited law plasticity no dileter clightly minist sitter & soud planting Q 42"
					_	
					_	

Unconsolidated Boring Log

Boring/Well ASB-160 Project Number DE000440.0001 Client Name Ford TCAP Site Location St. Paul, MN Date 9/2/11 Prepared by KAH Start Time and Date 9/2/11 Floish Time and Date 9/2/11 Full or FID with Lamp Size 00,0 Calibration Gas/Time/Results 00,0						Boring Location Sketch Drilling Contractor SDE Drilling Contractor Dan Hunter Drilling Method geoprobe Sampling Interval 4' Hammer Weight
					_	G
Sample	Sample ID	Sample Interval	Sample Core	Blow Count	PID (ppm)	1 2 3 4 5 6 7 to 9
Time	& Type	(ft bls)	Recovery	Count	(ppm)	Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other
			(III)			Consistency Color Modifier Size Characteristics Content Characteristics
1020		6-4	31			0-6 sondy sitt dy-such moist lovie-med dence white white worke-growle
					2.4	to small-med public - 7.5 y 2.5/3
						6-31 SAND AND SILT INF- med to clay slightly mouth and stick
					13.8	little work to vi work-med public nord-sube nust coloronisms nee
					12.0	27-31 black right petrol odor
1221		4-8	35			
1026		7-0	25		-12	0-8 Mayle 8-141/2 Slop block mould little rolf sand potrol odor no pluticity/dilatency
					2342	
_		-		0	121.7	14/2-32 SAND f-med little worker. work to growth - med perch
				Ry.	1363	round-side moist to wit @ 26" black petrol odor
				-	_	32-35 Silt black no platicity (dilatency organics slightly mist the
						putral ador
(033		8-11-	50	5		BB SAND - Dacap
10						
						B-12 SILT wet trace ist sond, clay grey ablack C5th organics as plaintinity direct
		-		E.	1200	
						small peblole to one politic poor cost black
					211	19-50 chay nothed red still in plasticity no dilating

10

FR

Page _____ of _____

1

purched top "

100

19

Unconsolidated Boring Log

Boring/Well ASB-161 Project Number DE000440.0001 Client Name Ford TCAP Site Location St. Paul, MN Date 9/2/(<i>i</i>) Prepared by KAH Start Time and Date 9/2/(<i>i</i>) Pinish Time and Pinish Time 9/2/(<i>i</i>) Pinish Time 9/2/(<i>i</i>)						Boring Location Sketch Drilling Contractor SDE Driller & Helper Dan Hunter Drilling Method geoprobe Sampling Interval 4' Hammer Weight				
A	В	С	D	E	F	G				
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count	PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics				
1205		0-4	23		1	0-23 SAND SILTY wit-mud little coard to v. work- mid petite				
					1.4	dry - slightly noist med dense rand-suba				
						19 person @ 22" 10 YF 7/2				
					\$ 5	0-5 sondy SILT day int-file little med-v. work to granule-small public				
						Look jo YR 364				
1210		48	A			0-3/2 slonge to pebble @ 3/2				
Ino	-	1.0			118.4	31/2-11 SAND black petrol odor wet intercontre will sort mus dense				
						rand-sube				
						11-17 SILT little day block organics in moist -v. maist med dense ned-hoge presticity no delating little with sond				
1700		8-12			-	Lost not down borehole				
1300		10-16			_					
			-			NO PLONT				
					_					
						182 EDB				
					_					
					_	*				

D

ARCADIS

Unconsolidated Boring Log

Boring/We	eli	AS	5-142			Drilling Contractor SDE
Project Nu		DE0004				Boring Location Sketch Driller & Helper Dan Hunter
Client Nar		Ford TC	AP			Drilling Method geoprobe
Site Locat	tion	St. Paul,				Sampling Interval 4'
Date		4/6/	in.			Hammer Weight
Prepared	by	KAH				Drop Height
Start Time	e and Date	410	111	052		Total Depth Drilled
	ne and Date	910	711	0930	>	Borehole Diameter 2"
the second se	D with Lamp					Drilling Fluid Used none
Calibratio	n Gas/Time/F	Results	le le	7Q.1		Sample Device macrocore
				3		Dimensions $2'' \times 12'$
A	В	C	D	E	F	G
Sample	Sample ID	Sample	Sample	Blow	PID	
Time	& Туре	Interval	Core	Count	(ppm)	1 2 3 4 5 6 7 to 9
		(ft bis)	Recovery			Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other
			(94) -		_	Consistency Color Modifier Size Characteristics Content Characteristics
0834		0-4	36			Only slough (broken up concrete)
					6.3	6-36 Chay matted noist little sond wat fine to sith and plasticity
						broken rock (2 23,334 med still
					0.3	10-17 SILT Leck moist little day no plasticity/dilatercy loose/10ht-med little with sond
0840		4-8	32	-		0-19 CLAY matted low practicity day-month and dense
					0.5	6 672" med-have plasticing v. maint solt-v. soft
-						19-29 Sandy SILT is mouth soft to wet
					-	it-med sile-round little work to ve work- small pelse by pesber @ 25,26"
					0.4	29-32 sitty SAND med - coarse little us wask wet louse nound-side for sort
					× .	tr growne-smell publice
0854		8-12	49		Y	0-4 stank
1.44				6 May 11	0.7	4-9 silt sprip f-coarse might to incorre-ment pesses poor sort sound-sub-
	A.		-		- 0.1	LOUSE
	2			+	0.3	8-15 CLAY withed stightly moist shale @ 9-1012 soft med dense
	1	1		1	-10-2	
		1		+	-	busted nik (13-15" wet
		1		+	0.4	
				1	-19.7	13-47 SILT SME SAND string virwist-met soft GLEY 15/564
L		1				1 (a di sici anne sun prante sun contrante sull'anti

Page _____of ____

1

-

1.52

Unconsolidated Boring Log

Boring/We	ell		-163			Drilling Contractor SDE	1.00
Project Ni	umber	DE0004				Boring Location Sketch Driller & Helper Dan Hunter	
Client Nar	пе	Ford TC	AP			Drilling Method geoprobe	
Site Locat	lion	St. Paul,	, MN			Sampling Interval 4'	
Date		9/6/1	1			Hammer Weight	
Prepared	ed by KAH					Drop Height	
Start Time	and Date	9/	111	í	00	Total Depth Drilled 12	
Finish Tim	ne and Date	91	in		210	Borehole Diameter 2 th	
	D with Lamp		epu	,		Drilling Fluid Used none	
	n Gas/Time/I		105	1 ppm		Sample Device macrocore	
				I		Dimensions $2^{\prime\prime} \times 12^{\prime\prime}$	
A	В	l c	D	E	F	G	
Sample	Sample ID	Sample	Sample	Blow	PID		
Time	& Type	Interval	Core	Count	(ppm)	1 2 3 4 5 6 7 to 9	
	- ''''	(ft bls)	Recovery		(99911)	Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other	
		(10 010)	(51) 4			Consistency Color Modifier Size Characteristics Content Characteristics	
10		0-4	-			Silty :	
109		0-4	31			0-15 Shall /Ghavel dry pour sit salad-sub-angular the v.f. mach	
						Some wash w. wask little growle - med petthe	
					21.6	15-26 SULT black some road out moist no plasticity dilaterany gold - and denke	
					~	crushy to chang Slipholo add r	
					177.8	26-31 SAND &-worke northy ned round-sub- loute slightly mist will sort	
7					101110	tr v. coarde small public	
1114		4-8	23			0-21/2 Storyie	
14 1		110		\bigtriangledown	1437	27/2-16 SAND fried mostly ned and work-med public with - wet (P94)	3.
				h,		well sort Loose-med dense round-side	
					668.2	Wor changed black 10-14" 2.54 4/4 5.7"	
						Slight-strong petrol oder (2 ~ 10"	
					920.7	16-23 SILT organics v. mist putrol odor black to clay lithe unt sand med	resta
						no dilatening sitt - and dense	
1120		8-12	46			O-111/2 Slow 7	
					862.1	11/2-14 saa	
2						14-46 CLAY method	
					70,2	14-18 SAND AND CLAM counder maint- wet non plastic delationt	
						10-46 mint-day and the hard (P 42") no plasticity/dilatory	
						green a grante level of 32° visite soud site tommation	

BORLOG.XLS xls 08/31/2011

Page _____ of ____

Unconsolidated Boring Log

Boring/Well ASB-164 Project Number DE000440.0001 Client Name Ford TCAP Site Location St. Paúl, MN Date 9/6/((Prepared by KAH Start Time and Date 9/6/(1 Finish Time and Date 9/6/(1 PID or FID with Lamp Size Calibration Gas/Time/Results						Boring Location Sketch Drilling Contractor SDE Driller & Helper Dan Hunter Drilling Method geoprobe Sampling Interval 4' Hammer Weight	
					_	G	
Sample Time	Sample ID & Type	Sample Interval	Sample Core	Blow Count	PID (ppm)	1 2 3 4 5 6 7 to 9	
	la rype	(ft bis)	Recovery			Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other	
			(ft) "			Consistency Color Modifier Size Characteristics Content Characteristics	
1239		0.4	29	0		0-3 SAND AND SIGT Slightly moist - any vit of little med-ware to vicoase	Coll eetil
	v a			7		to clay non yeartic / dilatint	- [
					0.0	3-29 SANTS with what round med dense dilutent well ported	
		1				to silt slightly nottled to formed graned who change p 19"	
1244		4-8	26			0-6 sea (storge)	
10-11		1				6-11 SANDY SHE SILT withed what little med - more soft no plasticity	
		1				dilatent	
		1- 1			0.1	11-24 CLAY dry no electricia dellation hard	
					0.1	Pound nuc P 24" GLEY 1 S/1064	
		8-11.5	34				
		0-11.5	57			0-342 Slover 7 342-74/2 Sea	
					0.0		
					10.0	7/2-17/2 SILT some nt . I send organics in mist saft med stich little clay	
						mothed pletticity black-d'é gran (@ 15")	
					6.0	1742-2742 CLAY some sond must and platticity as dilaterary	
							motilid
						4LEY 1 5/10 GY	ŝ.
						27.12-34 pointed rock bratterine wat little silt	
						11/2' EDB returned	

Ĵ.

-4

٦,

9

16



Unconsolidated Boring Log

Boring/W		ASB-115 DE000440.0001				Drilling Contractor SDE				
Project N		Ford TCA				Boring Location Sketch Driller & Helper Dan Hunter				
Client Na						Drilling Method geoprobe				
Site Loca	tion	St. Paul,				Sampling Interval 4'				
Date		3/6/1	1			Hammer Weight				
Prepared	-	KAH				Drop Height				
	e and Date	9/4	11		1405	Total Depth Drilled				
	ne and Date	- 1	0/11		1455	Borehole Diameter 2"				
	D with Lamp					Drilling Fluid Used none				
Calibratio	n Gas/Time/	Results	14).(Sample Device macrocore				
						Dimensions $2^{*} \times 10.5^{*}$				
А	В	С	D	E	F	G				
Sample	Sample ID		Sample	Blow	PID	194				
Time	& Туре		Core	Count	(ppm)	1 2 3 4 5 6 ⁷¹ 7 to 9				
	1	(ft bls)	Recovery			Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other				
			(#)			Consistency Color Modifier Size Characteristics Content Characteristics				
1410		0-4	38		0.6	0-10 SILT dry little and which to clay black soft no plasticity (dictor				
				Sh		10-24 SAMD wit little sitt wit dilateral to coordingrance were sort				
			1	2	0.0	med dense Color change p 13"				
				24-38 SILT some said inf-f black muist for med-coarse						
					0.0	non dertic dilatere				
1415		4-8	27		4.0	D-7 see				
					0.4	7-27 CLAY day revorted as plasticity / dilateray crumbly GUEY 1 4/564				
1.1				-		hard boken view/sich P27"				
1420		8-10.5	15		0-1	0-15 slot wit some sand to chang soft mothed black up 1 ~ 6"				
						int-coarse little sould - 19 publics, noit broken				
						i i i i i i i i i i i i i i i i i i i				
			6			10,5' EOB due to returned (racks)				

1.0

in the

Unconsolidated Boring Log

Einish Tim PID or FID	umber ne tion	Size	40.0001 AP MN		515 240	Boring Location Sketch Drilling Contractor SDE Driller & Helper Dan Hunter Drilling Method geoprobe Sampling Interval 4' Hammer Weight					
А	В	С	D	E	F	G					
ample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count	PID (ppm)	1 2 3 4 5 6 7 to 9 Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other Consistency Color Modifier Size Characteristics Content Characteristics					
1531		0-4	21			0-11/2 poinded concrete					
						142-51/2 SAND formed with wase to v. work must loose pour sort romand-so					
					27	5/2-9 state sitty sand timed liter work poinded not 2 3/2"					
			1 C.		19,5	9-21 SANIS f-med to coose - vi coore poinded/boken rock (11, 15, 18-20"					
				1		migt-dry fill material - when aloss (especially 19-21)					
						decoming instance (2 13" GLEY 1 3/1067 (9-11"					
1538		4-8	28			0-5 Slough					
1920	1				5.8	5-11 broken plass, rock wat					
					12.8	11-28 CLAN Study much reported little alt what and					
						med pustinity no dilateras solt-mid still to brike rock provide many					
1545		8-12	28			0-71/2 sur some vit & sand of wat v. soft no plasticity dilatoria					
					120 1	742-11 Chay shilling mothed remarked shilling many whom no elevision / dilate					
					632.6	11-20 Chay late fift black med plasticity no diluting moust med den					
						petrol odor true organics @19-20"					
						20-27 CLAY AND JONIN would revorked vit- med 1.the grander - med p					
					1036.6	mand-sular and dance vi mist " petol dor GLEY 2 4/1366					
				167016		27-28 Shottone					

- -

100

. Acres

Page λ_{of}

Unconsolidated Boring Log

Finish Tim	imber ne ion	DE00044 Ford TC/ St. Paul, KAH	AP MN 6/11 6/11	0.1	1645 1850	Boring Location Sketch Drilling Contractor SDE Driller & Helper Dan Hunter Drilling Method geoprobe Sampling Interval 4' Hammer Weight	1 10 10
A	В	С	D	E	F	G	
Sample Time	Sample ID & Type	Sample Interval (ft bis)	Sample Core Recovery	Blow Count	PID (ppm)	1 2 3 4 5 6 7 to 9 Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other Consistency Color Modifier Size Characteristics Content Characteristics	
1648		0-4	20			0-8 SAND/GRAVEL informate your port house day round-anyther	050
1010						Little sitt	
			1	1	3.8	8-13 CLAY AND SAND mothed revorted vit- & little med and itil - still	
						little silt no plasticity Alletenery	
			1		10.4	13-221/2 SANDIGRAVER Inten work pour but dry cound symber when with the	airin Ork
		1			10.1	22/2-26 SILT moith black little clay organics shittle sand with soft	
						ned plasticity as diletency	2
1654		4-8	44		2.3	0-6 522	
1		+				6-44 Chang stightly most day revorked slightly notted no-little relasticity	
			ar			no dilateray med stiff jetter sitty v.f.f. sono	
1700		8-12	31			0-3 see	
1.00		35			656.7	3-18 Chary little sitt bleck med plasticity no delateray moist med dense	
			-			petrol odur traci organici	1622
						18-19 rei sonditore	
				G	_	19-28 SAND AND CHAY not noted title 12 public broken rock little silt	
-				Sh .	100.1	Solt-v. Solt to plasticity deletering	
-					10071		
×						28-31 vit sond comes sonditions crumbles day-silightly maint	130
		1					

Unconsolidated Boring Log

ime & Type Interval Core Count (ppm) (ft bis) Recovery						Boring Location Sketch Drilling Contractor Stevens Drilling & Environmental, Inc. Drilling Method Drilling Method Drilling Method Sampling Interval Hammer Weight Hammer Weight Drop Height Total Depth Drilled Prilling Fluid Used Sample Device Dimensions 2" x 12"
	В					G
		Interval	Core Recovery		176.	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics
)756		0-4	24			O-6 SAND int-med little sitt, v. warse - med getter suba-suba your sort day look hi
					1.3	6-11 SAND V.FF Little silt viceorse egges broken rock to small public
						round-suba look slightly moist peor sort
				1	0.7	11-24 SAND f-med little clarse - in worse to granule - and public shightly maint-
						pour sort house-med dense subg-round
1802		4-8	28		0.9	0-20 SAND for worse (graduelly graded) some grunne, little smell peakly or silt
					0.2	20-28 SILT monthed little some clay some sond with worse with
			1		0,0	med picytic no dilatera med still
F080		8-12	38	- Pag	0.2	0-10 SAND F-v. warse to not-silt mostly med-coarse pour sort wet subprong med danse little growle to small-med peaks
		1			-	10-231/2 SILT to day low-no electicity of moist little with sond no dilating
					6.0	block organics
		1			0.0	2342-27 SLAT is might sett 1. He sord with to med trail med prosticity
						NO Dilutory GLEY 6/N
					0.0	27-38 CHAY mud still-still might northed low-applesticity no dilatenery

Page _ 1 of _ 1

Unconsolidated Boring Log

	umber ne tion by and Date	ASS- DE00044 Ford TC, St. Paul, 9/9/1 KAH	40.0001 AP MN	ଚ୍ଚାଞ		Boring Location Sketch Drilling Contractor Stevens Drilling & Environmental, Inc. Boring Location Sketch Driller & Helper Don Hunter Drilling Method Sampling Interval 14 Hammer Weight Total Depth Drilled 14 Borehole Diameter 24 24
\sim	ne and Date D with Lamp		411	1010	/	Drilling Fluid Used
Calibratio	n Gas/Time/	Results	100	.4		Sample Device mecocont Dimensions 2" x 12"
A	В	C	D	E	F	G
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count	PID (ppm)	1234567 to 9 °Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics
0923		0-4	27			0-29 SAMO
					0.0	0-17 with little coarse - small pebble for med pebble dry - shipsty mult
						pour sort loose round ongular or silt
					0.0	17-29 f-med northy med suplity moist little work - v. come
						to growner pour sort round-sus , med dense
0928		4-8	39		6.0	0-22 SAND 1007
						wet Q 15"
					-	40
					6.0	22-25 exagen SILT with some sond not - med no prasticity/dilateric soft 25-29 CLAY mothed is multithe soft little sand int-fine to med is looke
						Di-El unit rolle is maint soft interes with intering in me is cark
					0.0	29-39 SUT the tr clay little what some organics monit black
						no plasticity dilatory med still -soft
0934		8-12	30			D-31/2 slaugh 7
					0.0	342-11 see / well-med plasticity
					0.0	11-30 CHAY nottled med chilf F sond laminution @ 20"
						low plasticity no dilatency moist

12' EDB bedrock (hmetter?)

1

Unconsolidated Boring Log

Boring/Well ASB-170 Project Number DE000440.0001 Client Name Ford TCAP Site Location St. Paul, MN Date 9/7/11 Prepared by KAH Start Time and Date 9/7/11 Finish Time and Date 9/7/11 PID or FID with Lamp Size 100, 4						Boring Location Sketch Drilling Contractor Stevens Drilling & Environmental, Inc. Driller & Helper Drilling Method Sampling Interval Hammer Weight Total Depth Drilled 12.25 Borehole Diameter Drilling Fluid Used 2" > 12.25"	-
A	В	С	D	E	F	G	
Sample Time	Sample ID & Type	Sampie Interval (ft bls)	Sample Core Recovery	Blow Count	PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics	
1035		0-4	30			0-3 pounded concrete	
					1.4	3-8 Fill 8-17 SAND wif-f hittle-sum silt to med pools sort subjecting mont	
					0.8	1904-med still where change C 91/2" to Glock 17-30 CLAY slightly multit no plasticity dilatence still renorked 3	
						22-23/2 rand sign int- med little coose-grandle	
1040		4-8	37		1.6	0-37 sac.	
						wet (? 26"	
· · · · · · · · · · · · · · · · · · ·					1.4		the sone
						insist black	
1045		8-12	37			0-6 saa	
						6-20 SILT mait organics some said with mud still-still no plasticity dil ater	on,
					0.8	black to clay	1
					-	20-31 SILT some chy med-high plasticity diletent visplet-subb v. maint	-wet
					(,0	little unit rand remarked bullions 29"	17
			(4)			31-37 CLAY remarked used plasticity slight matthing still some sond/silt; "	nf-f
1055	1	12-12,2	5			EDB (ilmisal due to bedrack (imetine)	

Unconsolidated Boring Log

ł,

Boring/Well 136-174 Project Number DE000440.0001 Client Name Ford TCAP Site Location St. Paul, MN Date 1/1/4 Prepared by KAH Start Time and Date 1/1/4 Pil or FID with Lamp Size 100.4 Calibration Gas/Time/Results 100.4					-50	Boring Location Sketch Drilling Contractor Stevens Drilling & Environmental, Inc. Drilling Method Drilling Method Drilling Method Sampling Interval Hammer Weight Hammer Weight Drop Height Total Depth Drilled 12' Borehole Diameter Drilling Fluid Used Sample Device Dimensions 2" x 12'
A			D	Blow	PID	G
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Core Recovery	Count	(ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics
1201		0-4	32			0-10 Fill (broken glass, sand)
					0.8	10-19 CLAY mothed slightly med still - still mist some sond vit-f
						low-med plasticity no dilateray
	· · · · · · · · · · · · · · · · · · ·			19-26 SILT moist block little city vit sand med publicity up dilatency		
						i and stift
	-		12			26-30 CLAY SOC
1206		4-8	34			0-6 slough T
				S.		10-20 san wet Q 19" Q 16" 10 public orgina
				1 May	0.7	20-31 SAND med-wave little vit-sitt wet little vi warke round-subr
						lask poor sort
					0.5	24-25 /2 sandy SILT wet block wit-f little med soft
				4		31-34 SILT black most obganici some vit sond no pronticity / dilation
				-		soft med (tich
1211		8-12	34	ý."	1	0-7 your 7
					6.7	7-19 SILT see has moist - wet baken pock 19-2018
						19-32 cloyen surphans matted with-ned little coase-snow public pund-angular
	144				0.3	revarked was med denseldense pour sort
						32.34 bedrack

12' EDB bedrock (timestone)

BORLOG.XLS.xls 08/22/2011

8. F

Unconsolidated Boring Log

A B C D E F G Sample Sample ID Sample Sample Sample Blow PID Time & Type Interval (ft bls) Core (ft bls) Core (ft bls) Count (ppm) 1 2 3 4 5 6 7 to 9 Density/ Soill Grain Size Grain Secondary Moisture Remarks and Oth Consistency 1332 O-4i 24 O-2i/2 pounded concrete 1433 O-4i 24 O-2i/2 pound-sub- 1433 O-4i 24 SAND f-coarse mostly f-med Shiphtly muit and dence pound-sub- Image: Density/ Signed -sub- 5½-13 baken tack (and -ly pubbles) ayetar some CLAY subyth	ental, Inc.
Time & Type Interval (ft bis) Core Recovery (H) Count (ppm) 1 2 3 4 5 6 7 to 9 Density/ Soil Grain Size Grain Secondary Moisture Remarks and Oth Consistency 1332 0-4 24 0-21/L pownled conservete 1332 0-4 14.5 5 5 pownled conservete 1332 0-4 14.5 5 5 pownled conservete 1332 14.5 5 5 5 pownled conservete 1333 14.5 5 5 5 pownled conservete 14.5	
1332 0-4 24 0-21/2 poinded concrete 272-51/2 SAND f-coarse nostly f-ned Shiphtly muist med denke pro 4.5 round-sub. 51/2-13 broken rock (md-15 pubbies) ayeter some CLAY shightly hard shightly	ner
4.5 wind-svl. 51/2-13 broken rock (md-15 publies) ageter some CLAY slightly hard shyltly	
4.5 roind-svb. 51/2-13 broken vock (md-1g publies) ayeter some CLAY skightle hard skightly	1 Kart
51/2-13 broken rock (med-lg pubbles) ayeter some CLAY slightly hard slightly	
hard shylting	handline d
	moist no plasticity (dilatery
hard 219" but wet dence well sort roun	d
Wet Q 19" petri odor dilatent	
1339 4-8 19 0-21/2 store 7	
21/2-3/2 520/	
2120 31/2-16/2 CLAY dry no plasticity delatency mid dense	
Share O 16th	
16-19 SLUT Llack moist organics little-some out- & sound round	
med still no plasticity delateray to-little change	
1347 8-12 46 0-512 see	
575.7 51/2-401/2 CLAY and still med plasticity moist	
5/2-14 black trace sitt and questioning woon	
14-4012 slightly matted Stery 1 3/104 Black	

532.6 401/2-46 soc wet 401/2-421/2 sondy SILT seam (vit sold wet call we prasticity

12' EDB Ledner refused

BORLOG.XLS xls 08/22/2011

.

12

Unconsolidated Boring Log

	umber me tion	ASE DE0004 Ford TC. St. Paul, AAH KAH	AP , MN /11	1435		Boring Location Sketch Drilling Contractor Stevens Drilling & Environmental, Inc. Boring Location Sketch Driller & Helper Don Hunter Drilling Method Sampling Interval 41 Hammer Weight Image: Contractor 141 Drop Height Image: Contractor 121 Total Depth Drilled 121 121 Borehole Diameter 24 14
	D with Lamp n Gas/Time/	Size	0 0	100.4		Drilling Fluid Used Sample Device Dimensions 2* × 12'
A	В	С	D	E	F	G
Sample Time	Sample ID & Type	Sample Interval (ft bis)	Sample Core Recovery	Blow Count	PID (ppm)	1 2 3 4 5 6 7 to 9 Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other Consistency Color Modifier Size Characteristics Content Characteristics
1445		0-4	30		8. ₁₀	0-2 pounded concrete
					×	2-6 SAND fined little coarse tor v. coarse - Small people poor sort slightly marst
					1.0	pund-suba
					1.0	6-21 CLAY little silt with sand organiss day withed black @ 20"
					1	dy - shylity moist sand/grovel - we sond - med petite subr-subr-
					2.5	boun rock @ 10/2" FUL
	<u>.</u>				113	
		-	<u>àr</u>	0	-	21-30 sondy SILT/SILTY SAND round mid-conce FILL
			-	<u>S</u>		wet P25" broken rock P25"
1451		4-8	34		L	0-81/2 see SANDY SUIT black boken pices of gloss, organice FUL
		1.1	fi.		386.2	inf-med sand petrol odor v. moist-wet no plasticity slightly dilatent
						18/2-13 SILT block when nt-F and to chang no-m low plasticity to dilateray
1.470			2			moist med state
~					398.3	13-34 CEAY day, and stiff no-low plasticity in dilatera
						mottled Slightly moist WLEY 1 5/10GY GLEY - 25/10B
1458		212	44			
פלדו		6.10	174		9.74	0-6 Singh 7 6-91/2 sea GLEY 2 4/568 / black
						VASIF
					545.4	1912-38 SILT block little clary low-med plasticity in dilatency moist-
. e.		1				med stift organics petrol odor 6842 5/53 nottling 35-78, being @28" when
						38-44 broken bedrock
						12' EDB bedrack

1

Page ____of ____

BORLOG XLS.xls 08/22/2011

Unconsolidated Boring Log

Finish Tin	umber ne tion	DE00044 Ford TC/ St. Paul, AH KAH	AP MN		50 50	Boring Location Sketch Drilling Contractor Stevens Drilling & Environmental, Inc. Drilling Method Drilling Method Drilling Method Sampling Interval Hammer Weight Drop Height Total Depth Drilled 121' Borehole Diameter 2" Drilling Fluid Used Sample Device Dimensions 2" x 12'				
A	В	C	D	E	F	G				
Sample	Sample ID	Sample	Sample	Blow	PID					
Time	& Type	Interval	Core	Count	(ppm)	1 2 3 4 5 6 7 to 9				
		(ft bls)	Recovery			Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other Consistency Color Modifier Size Characteristics Content Characteristics				
1.		0-4	(6) 11	-		······				
1600		0.4	28			0-7 Fill				
					1.0	7-81/2 SILT some sond of-f little clay low plasticity as dilateray				
						med stiff slightly noist black				
						3/2-19 CLAY mottled and still-still ned plusticity misse				
						13-14th SAND seen int- wase pour sort subarsular day				
						below inthe revorted?				
						19-22/2 SILT some whit sond wat black sold-med stall m plasticity dilatest				
<u> </u>						2272-28 SAND from little Filt wet-med little work in wearse -med persis				
<u> </u>										
						moist pour sort broken much				
1606		4-8	35		1.1	0-24 CLAY mottled -> revorked dry no plaiticity/dilatency				
						Uslighting mailt				
						star 141/2-16/2 hard				
				G	1.0	24-35 SAND At-med to sill wet little water to viscourse - small patien				
						pour sart subr				
164		8-12	22			0-41/2 500				
Tou		0.1-	-		0.4					
					0.1	41/2-20 SILT little clay organice block wet med plasticity dilatent				
						20-22 bedrock				

BORLOG.XLS xls 08/22/2011

EDB 121 bedrick refusi (limition)

Page ____of __

Unconsolidated Boring Log

Boring/M	Vell	ASB-	175			Drilling Contractor SDE
Project N	√umber	DE0004	40.0001		*	Boring Location Sketch Driller & Helper Dan Hunter
Client Na	ame	Ford TC	AP			Drilling Method geoprobe
Site Loca	ation	St. Paul	, MN			Sampling Interval 4'
Date		9/8/	11			Hammer Weight
repared	i by	KAH				Drop Height
	e and Date	9/9	5/1)	07	742	Total Depth Drilled
Finish Ti	me and Date	6	18/11	0	040	Borehole Diameter 2"
Dor F	ID with Lamp		14			Drilling Fluid Used none
Calibratio	on Gas/Time/	Results		99.9		Sample Device macrocore
4				1.4.		Dimensions $2^{\prime\prime} \times 12^{\prime\prime}$
A	В	С	D	E	F	G
Sample	Sample ID	Sample	Sample	Blow	PID	
lime	& Type	Interval	Core	Count	(ppm)	1 2 3 4 5 6 7 to 9
		(ft bis)	Recovery			Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other
			(11) ~			Consistency Color Modifier Size Characteristics Content Characteristics
0753	6	0-4	33			0-2 randed concrete
10					5.3	2-13 SAND formed mustly med to coase -growne mund such well sof shifty must
						med dense broken could P 13"
			<u>a</u>			13-201/2 chay mud that - stift low-med platticity shiplth moust on dilutering
						tr sond/sult color ways P 17/2" -> black
					730,5	201/2-33 (SAND 1+11- + silt what would pieces @26" round-sub- petroi adu
						boken rock @ 27-29" Slightly norit-moit @ 29" well port Llock
		4-8	32			0-31/2 sec 7
					902.8	31/2-772 SILT organics black potros oder little day and plasticity moist
						ins dilatency some sond with to found substand med stift
					18.1	71/2-32 CLAM dry mosticl-still no plusticity/dilaterary
						CILEY I S/5G some sports hard suightly motified
0805		8-12	34			0-41/2 Slough 7
						41/2-6 see
					70.8	6-16/2 SILT bleck organic odor no plaiticity/dilaterary some vit sond
				a).		tr- little your slightly moist-moist @ 1012 med plasticity
						1612-25 SILT little-some day V. mint mothigh presticity little vil & sand
					7.0	mothed 1.the verser - med pebbles
						25-28 CUTY mothed visitile Iow-and presticity as silvetening sustily moust
						28-34 Ledrock

EDB 12' bedrack refusal

18

9

1

х.

8. 5

ţ

Unconsolidated Boring Log

<	Boring/Well ASB-176 Project Number DE000440.0001 Client Name Ford TCAP Site Location St. Paul, MN Date 0103/4 Prepared by KAH Start Time and Date 9/8/11 Finish Time and Date 9/8/11 PID or FID with Lamp Size 99.7				102		Boring Location Sketch Drilling Contractor SDE Drilling Contractor Dan Hunter Drilling Method geoprobe Sampling Interval 4' Hammer Weight
		1	1 0			F	G
	A Sample	B Sample ID	C Sample	D Sample	E	PID	0
¢.	Time	& Type	Interval (ft bls)	Core Recovery	Count	(ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics
	0930		0-4	16			0-21/2 SAND f-ned little worse round-svier mouth well sort med dence
						1.5	242-16 CLAY slightly moist no plasticity/dilotency med stall signally nottled @ 12-24" GUEY 14/104 boken ruck @ 5-6"
				*			212-3 vit soud/sitt som no plasticity/dilatering moist and stick-sall
							13/2-15 SILT little sond vit - med, clay maint 10 YR 3/2
	0948		4-8	24		1.6	0-24 CLAY noist but has been day mottled low plasticity no dilatency
				ļ			pounded rock Q 8" shale pieces (and petide size) throughout especially 20-24"
							131/2-151/2 SHET some said in anoist-net soft int-med onymber-suba
							black to coorse-grandle
	0954		8-12	38			0-51/2 CLAY Sac
	1.5					861.6	5%-27 SILT
							5/2-13 black and still some vit read little clay no plasticity dilatency organics
							tittle moist
a l					R		10-27 nonsist-wet to organics petrol adar to clay little of sond self
5					7		27-38 SAND AND SILT V. moist mixed #broken hedrick with peter adar
						840.5	remarked argonics wit- med - ware soud little in warse - small public
							black 10 YR 5/L to med public (broken bedrack to)
							36.38 bedrack 10 YR 5/6

6

EDB 12' bedrack refused

÷.

.

14.

Page _ l_of _ l

Same a

Unconsolidated Boring Log

Finish Tir	umber me tion	DE0004 Ford TC St. Paul, 9/2 KAH Size	AP MN 5/11 3/11		50 20	Boring Location Sketch Drilling Contractor SDE Driller & Helper Dan Hunter Drilling Method geoprobe Sampling Interval 4' Hammer Weight
A	В	С	D	E	F	G
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count	PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics
1055		0-4	32			0-6 FILL vit-conse sond to sitt little viscose-med people round-angular
					0.9	6-251/2 SAND slightly mist loss-med dence poor sort subr-sube
						6-14 med little conserv. worke to growle
					14-251/2 f-work little vi worke - granule to small pebbles	
						251/2-32 CLAY dry-stylethy wist no plasticity /dilatency
						GLEY 1 5/5GY med still cruthy hard pieces
1103		4-7	24			0-342 Sloup
11.92					0.9	342-101/2 CLAY Son
						1012-19 SAND F-med little worsh, to sitt i wase-snot peter
	1				12	your sort round-suber us moist med dense
				1		19-21 GRAVEL Little sond (nt-med) to silv
				84	1.4	mud-la public subr wit dince par sort
	1					21-26 CLAY V. still-hard slightly moret-dry no plusticity/dilutancy
						GLEY I 4/591 combin
						EOB 7' SHALE refused
				·		
			-			
		-				

÷.

14

1

н.

Unconsolidated Boring Log

Boring/Well Project Number Client Name Site Location Date Prepared by Start Time and Date Finish Time and Date FiDer FID with Lamp S Calibration Gas/Time/F		DE0004 Ford TC St. Paul 9/5/ KAH Size	AP , MN	92.7	1150	Boring Location Sketch Drilling Contractor SDE Driller & Helper Dan Hunter Drilling Method geoprobe Sampling Interval 4' Hammer Weight - Drop Height - Total Depth Drilled 4' Borehole Diameter 2" Drilling Fluid Used none Sample Device macrocore Dimensions 2 ^k × 4 ^j				
A	В	C	D	E	F	G				
		Sample Interval (ft bls)	Sample Core Recovery	Blow Count	PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics				
1207		0-4	39			Q-1 Slaugh				
						1-4 SAND V.t- ned noith ned little coase to a warm med pebble				
				pour sort y moist round - SUBP med dense						
						4-39 CLAY moist to day C 6/2" Jan- no plasticity medstich hard GLEY (4/59				
	-				0.0					
					- 0	GLET 1 7/1067 packet @ 37-38 inches				
	-	-			-					
	-					4' EDB SHALE refuel				
	-				-					
	-	-								
					_					
				s	_					
			-							
	-			1						

Unconsolidated Boring Log

Finish Tir	umber me tion	DE00044 Ford TC/ St. Paul, KAH	AP MN 18/14 18/14 18/14	ľ	340 मा 0	Boring Location Sketch Drilling Contractor SDE Driller & Helper Dan Hunter Drilling Method geoprobe Sampling Interval 4' Hammer Weight Drop Height Total Depth Drilled Boring Fluid Used none Sample Device macrocore Dimensions 2'' × 4'			
A	В	C	D	E	F	G			
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count	PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics			
1351		0-4	42		0.0	0-4 SAND fined - warse little i warse to grance - small publics			
				round-suba poor sort moist dense					
			4-42 CUM day no plasticity/dilating med staff - hard crackled						
			1.6			4-42 CLAY dy no plasticity/dilution med staff - hard crockled GLEY (4/10GY Weathered shale -> ? 0-6 mm shall			
		4-4.5							
						4.5' EDB bedrock refused (shale)			
		1							
		-	1						
						× *			
	-								
				2					

3

Unconsolidated Boring Log

Boring/Well Project Number Client Name Site Location Date Prepared by Start Time and Date Finish Time and Date PID FID with Lamp Calibration Gas/Time/F		DE00044 Ford TC, St. Paul, KAH	AP		15	Boring Location Sketch Drilling Contractor SDE Driller & Helper Dan Hunter Drilling Method geoprobe Sampling Interval 4' Hammer Weight				
A	В	C	D	E	F	G				
Sample	Sample ID	Sample	Sample	Blow	PID					
Time	& Type	Interval	Core	Count	(ppm)	1 2 3 4 5 6 7 to 9				
		(ft bis)	Recovery			Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other				
			(1) **			Consistency Color Modifier Size Characteristics Content Characteristics				
1427		0.4	37		0.0	0-4 SAND fried-warke little V. worse-growne for small-med peb				
						v. moist poor sort mond-sule muldersk multing mud				
					0.0	4-37 CLAY/weathered shale day as plasticity (diluteray crackled crack				
						MU still-hand GLEY 1 4/59				
					-					
L					-					
	-									
Ļ										
			_							
		1								
						8				

21.00

*

Unconsolidated Boring Log

Project Number DE000 Client Name Ford T Site Location St. Par Date 9/2 Prepared by KAHf, Start Time and Date 9/2			, MN / (f	61	08 S5	Boring Location Sketch Drilling Contractor SDE Driller & Helper Dan Hunter Drilling Method geoprobe Sampling Interval 4' Hammer Weight Drop Height Total Depth Drilled 11' Borehole Diameter 2" Drilling Fluid Used none Sample Device macrocore Dimensions 2" × 11'	
A	В	C	D	E	F	G	
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count	PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics	
1012		0-4	34			0-6/2 slough (pounded of phatt concrete)	
					0.7	1512-131/2 SAND + - vicoase little grance - inell pebble to med pebbles pour sont	
				(B)		tr-little rift v. moist mustly vicorse just-suba	
			×			131/2-20 CLAY dry v. stich no plasticity dilatency GLEY 1 5/10GY	
					40.1	slightly ustiled	
				1		20-25 SAND & round-subre well sort mout gray med dense	
				, and		20-221/2 sondy slut net black int-isorial subi-subr	
						25-34 SILT Glack moist organics broken glass low-ned plasticity	*
	0					little send vit-f to med to clay no dilutency	
1017		4-8	28			0-4 slough 7	
					28.6		
					-	12-23 CURY ned still medly plaiticity in dilorency moust	
					87.6	block -> mutted @ M2" organics little sitt of sond to F sond	
						15 petitic (217/2, 24" to small - med publics	12-20"
1025		8-11	45	23	102.6	60-18 SIET V. must-net black little vit of sond Loven give, organics med-high of	usticity.
1.000		-	1	. 3		11-13 sondy silt uff sond subr 15-18 remarked willing broken rock	
		-			5.3		ilateray
						mottled - reworked (Q=40")	
-	19-1			0		@40" \$Y 4/2	
	1. Sec. 1.					sitt of and longartion @ 32" 1016 4/6	(e
						441/2-45 bedrock isometone	
5 XLS.xls 11						441/2-45 bedrock isomstone Page_1_of_	

*:

18

BORLOG XLS.xls 08/31/2011

Unconsolidated Boring Log

Boring/Well ASB-182 Project Number DE000440.0001 Client Name Ford TCAP Site Location St. Paul, MN Date 9/9/11 Prepared by KAH Start Time and Date 9/9/11 Finish Time and Date 9/9/11 EDor FID with Lamp Size 100.1 Calibration Gas/Time/Results 100.1						Boring Location Sketch Drilling Contractor SDE Driller & Helper Dan Hunter Drilling Method geoprobe Sampling Interval 4' Harmer Weight
A	В	С	D	E	F	G
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count	PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics
1102		0-4	41		29.3	0-41 CLAY slightly mottled moist-slightly moist organics
						Whithe within sand salar (32")
		-				bleck 22-311/2" -> petrol odor GLEY 1'5/56 the
	1.00				7239	my stift-v. stift block
			-		1.1	54 5/3
1108		4-8	49			0-3 7
						3-49 500
					719.3	3-11 CLAY Shiphing method and shiphing must dry no prarticity delatering
						crumbly med still shop transition to 2
	1	-				11-20 SILT with citing low-med plasticity most and odar black and still
				(organics little v.f sonal
New					419.0	
-	1				1 110	med think playticity no alletency med still - still
1114		8-11.5	46			0-41/2 stough
ui i		U ILS	(19		75.2	41/2.46 Chay methed amonics @ 10" moint-sightly moist (23/2) odor
		1			10	not stiff - stiff (17") - " stiff/hard (33")
			-		91.8	10-17/10 remarked visit visione-med publics show silty method
		-			1	Wet

11.5' EOB refused bedruck (linestone).

Page _____ of ____

hard clay pièces ...

Unconsolidated Boring Log

Boring/Well ASB-123 Project Number DE000440.0001 Client Name Ford TCAP Site Location St. Paul, MN Date 1/9/11 Prepared by KAH Start Time and Date 9/9/11 Finish Time and Date 9/9/11 PID or FID with Lamp Size 100.1							Boring Location Sketch Drilling Contractor SDE Driller & Helper Dan Hunter Drilling Method geoprobe Sampling Interval 4' Hammer Weight
A	В	C	D		E	F	G
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count		PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics
1410		0-4	44			0.3	0-10 Fill SARND vit- ned Little work-growne to snow-med pelle
							little to the set day pour sort sub- any
							brown -> 10YR -> Liock
			<u>.</u>				
						0.0	10-44 CLAY moint/stiff -> dy/coming @N18/2"
·							36" boken westword shale GLEY 1 4/5G
						0.0	no plasticity/dilateray
							moist scon 32-33" parket of GLEY 2 7/10G
1418		4-7	45			0.0	C-45 see dry/crunchy med still-hard
							no plasticity/dilatency GLEY 1 4/10GY
					_		
				_		0.0	0-2 Shale
					_	-	2-41 weathered shale GLEY 1 5/10 GY
							41-45" Shale GLEY / 4/10 GY
				+			EOB 7' bedrack refused

х.

•

Unconsolidated Boring Log

Finish Tin	umber me tion	DE0004 Ford TC. St. Paul. KAH 9 9	AP , MN / ((1220 1310		Boring Location Sketch Drilling Contractor SDE Driller & Helper Dan Hunter Drilling Method geoprobe Sampling Interval 4' Hammer Weight - Drop Height - Drilling Fluid Used none Sample Device macrocore Dimensions 2" X 10'
A	В	С	D	E	F	G
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count	PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics
1227		0-4	37			0-2 slowl
			×.		0.0	Z-BSAND F- work little v. work to your smill pebble slightly most
						pour sort suba-suba
			•			8-11/2 CLAY with molow planticity little with sond to oud GLEY12,5/104
					0.0	11th-37 SUST black tr-little elety of sond the loss little-some & sond
						Jow-no planticity mainty no dilatency to red
						broken sock @ 184/2. 15"
1234		4-8	50			0.4 sec tradition to 2
					0.0	4-50 CLAY some - tr silt some with land - to sond
						block to dark nothed On 26" 13 people O26"
	- a				0.0	low - high plasticity maint to dilaterary med still
						brown forcen mothers (238' GLEY 1 6/5GY 5Y 4/4
						13 GLEY 1 5/1064
						40-41" FOLEY / 7/10GY, GLEY / 6/5 GY seen
1240		8-10	45			0-10 slough
1-1-				8	0.0	10-44 CLAY mothed mutical still moist how-no plasticity
						GLEY I STIDGY SY S/4 In dilatory
			1		0	satisfies de se
L		4				44-45 Uneston
						14-45 Lineston 10' EDB bedrock refusol

9

Ц.

Unconsolidated Boring Log

Boring/Well ASB-185 Project Number DE000440.0001 Client Name Ford TCAP Site Location St. Paul, MN Date 9/9/10 Prepared by KAH Start Time and Date 9/9/10 Finish Time and Date 9/9/10 PID or FID with Lamp Size (90.1))	Boring Location Sketch Drilling Contractor SDE Driller & Helper Dan Hunter Drilling Method geoprobe Sampling Interval 4' Hammer Weight
A	В	C	D		E	F	G
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count		PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics
1517		6-4	34				0-3 sland
						0.0	3-96/2 SAMD ittle sittician with it was to care med people
							poor sort slightly most round-subr
			8				Statistics s. H packet @ 7-81/2" lasse-med dense
							16/2-20 cld asphalt
						0.0	20-221/2 SAND maist f-med little worse-growne pour sort
							round-suba
							2272-34 CLAY vistift-hard little land vit-granule to small med performed performance provides shipletly monist
	<u> </u>						
1523		4-8	49			0.0	0-28/2 · CUAY mathed Vistill clishtly mouth - dry no prosticity/dilatercy
						0.0/	28/2-49 weathered there there WEY 1 4/10 Gy
				ii.		0.0/	16-231/2 remorted broken nex pieces worked into day
							7 54 5/4 bird

Page _____ of ____

104R 5/6

÷.

Unconsolidated Boring Log

Boring/Well ASB-186 Project Number DE000440.0001 Client Name Ford TCAP Site Location St. Paul, MN Date Image: Constraint of the second se						Boring Location Sketch Drilling Contractor SDE Driller & Helper Dan Hunter Drilling Method geoprobe Sampling Interval 4' Hammer Weight	
A	В	C	D	E	F	G	
Sample	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Błow Count	PID (ppm)	1 2 3 4 5 6 7 to 9 Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other Consistency Color Modifier Size Characteristics Content Characteristics	
1552		0-4	30			0-3 slouph	
5					0.0	3-8 SAND Frenced little coore a coarse - growne to small-med public, silt	
						pour surt slighting must rand-suba losse-med dense is people C=	7-8"
			×			8-30 CLAY matted low plasticity slightly musit	
					G 10	dee 1 miles	r Smell pebbles
						io yx 5/6 broken rock Q16" round-suba	
1600		4-8	46		0.0	0-31 sam slightly month - dry organice @ 21"	
						beginning remarked Q 22"	
					0.0	31-46 meathered shale GLEY (4/10GY	
						9° EDB sedrack refurci (shale)	
						F	
				*			

.

н.

Unconsolidated Boring Log

Project Number DE000440.0001 Client Name Ford TCAP Site Location St. Paul, MN Date 9/1/1/ Prepared by KAH ¹ Start Time and Date 9/1/1/ Finish Time and Date 9/1/1/ FID or FID with Lamp Size 100.1						Boring Location Sketch Driller & Helper Dan Hunter Drilling Method geoprobe Sampling Interval 4* Hammer Weight Image: Construction of the system Drop Height Image: Construction of the system Total Depth Drilled 10.5* Borehole Diameter 2" Drilling Fluid Used none Sample Device macrocore Dimensions 2" x 10.5*
A	В	С	D	E	F	G
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count	PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics
1711		0.4	30			U-3 Sloyt
					0.0	3-7 SILT some LUAY no plasticity slightly must little vit-med sond
						black organics med still
			<u>а</u>		0.0	7-30 SMAND set - med little worse granule, the small-med publics monist
						booken rack (161/2-181/2" 13" 20-22" 10" Sub-suba.
					1	121/2 - 16" - SILT some ind vit - f little med- worse black
				1	97	little-some clay
1721		4-8	43			0-3 slouge
	1		1-		0.0	3-12 SPAND/GRAVEL med worse some growne - med public to by publics
						pour sont subrangular moist the sittleday
						12-19 CLAY hard reworked slightly moist - dry to presticity/dilatency
	-	+			6.0	19-21/2 busted rock
	-	+				21/2 - 43 CLAY - weathered shale @~25"
			1			CLAY dry reusited no plasticity dilatary GLEY 1 5/547
1732		8-10.5	5 34	8		6-16 SET some sand v.t-f little met-v. warse WET no plasticity/dilatory
1176		0 1075	10	7	0.0	12-14 SAND with F-V. worse little arounded to small-med petitie
						Nond-suba your sort love-med dense Nond-suba your sort love-med dense No-46 weathered shole (sightly mont-day) EOB [V.5' bedrack refaired (shole) Page _ of _
6 XLS xls 11						EOB (U.S' bedruck refused (Shale) Page _ of _

1

Unconsolidated Boring Log

Boring/W	ell	ASB-				Drilling Contractor SDE
Project N	umber	DE0004				Boring Location Sketch Driller & Helper Dan Hunter
Client Na		Ford TC				Drilling Method geoprobe
Site Loca	tion	St. Paul,				FN 44/134/140 Sampling Interval 4'
Date		9-12-				
Prepared	-	-KAFT 10		()		Drop Height Total Depth Drilled
	e and Date	9-12-	1 90	<i>SV</i>		Total Depth Drilled S Borehole Diameter 2"
	ne and Date					Drilling Fluid Used none
	D with Lamp		11.			Sample Device macrocore
Campratic	on Gas/Time/	Results	99.3			Dimensions
А	В	С	D	E	F	G
Sample	Sample ID	Sample	Sample	Blow	PID X	
Time	& Type	Interval	Core	Count	(ppm)	1 2 3 4 5 6 7 to 9
-		(ft bls)	Recovery			Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other
			(ft) 2.5			Consistency Color Modifier Size Characteristics Content Characteristics
		0-4	3221			8" COMERFIE TRACE ONWEL
					G. L	0.7-3.5 SAMDY CLAY, MOIST FINE TO CARGE SAMD FRACTION 254R 2.5/
			1		07	BERNZ-S- & LAY W TRACE SAM MOIST, PURSTIC, SOME RELIC FLACIER TSLIKE HIG
			-			
			•		0.8	WAR3-4 SAME AS 0.7-3 WEAMFRED BUCK GLET 2 S
						Ч- Х
		4-8	48	4-6	1.3	Stop SAA. SOME THIN (-1" SAEDE CLAY CLAYEY SAMD SEAMS
5		14 09	1.69	-	1.4	\$5 AND MINOR IRON STAINING
ALC: N				0.8	1.9	
		6-12	WF	-	<u> </u>	4403
		10-54	2 A			after de year 1 think that accom spor nalst NOAR 2/2 100
						18-3-18/6 Kurker Noter / Langer / 12. 44 8/11 Kinks ruft DAY
						1 4 the Colored Char book. Auron war oborst Cier & CATOG
			-	66.13	10-	
					6.7	
				IO-R	6.3	6.7-9 (RUSHED ROCK/SAMD, LIMESTORE MAY 2-54 8/1, DRY
						9-10.1 SAND, FULF TO COARSE ON TOP GRADING TO FULF W/ DEPTH, MOST
						TRACE IDUN STAMING
				1.		10.1-11.3 ORGANIC CLAY, PEAL ODOR, NOIST, NON DENSE GLEY 28/106
						IV. THIS ON AND COMPANY THE OWNER DAY - EV CILI
		_				11.3-11.6 CRUSHED RUCK/GRAVEL, LINESYONE, DRY, 2,54 8/1
						11.6-12 FING - UMEDIUM SAND, MOIST 10YR 2/2
		12-15	2	12-14	0.2	R-BB LAND, AEDIUM-ENE W/ TRACE CLAY AND SOME GRAVEL, LIGHTI 14.7 7.5 YR 4/1 IN 708 2.7 PT, BOTTOM
			5			NY.7 7 Charly hours and a second
						LIS TICY/I INTOT LITT BOTTOM
	6-2		LEMO/			14.7-15 FINE SAD, UGATUT MUIST, SUCAR LIKE SY 8/1
		945)	TLLP	140		PLULER SAIDIT WAS BLOKEN & ST. FEEL SHO FORE Page of
.XLS.xls 1	Y-6	-(17)				Protect SATING WIS BOKEN SI FEED SHO FOR Page of

Unconsolidated Boring Log

Boring/W	pring/Well ASB- 189					Drilling Contractor SDE
Project N		DE00044				Boring Location Sketch Driller & Helper Dan Hunter
Client Na		Ford TC	AP			Drilling Method geoprobe
Site Loca	te Location St. Paul, MN					E KN 44-134-14c Sampling Interval 4'
Date		9-12.	and the second se			Hammer Weight
repared	l by	KAH n				Drop Height
	e and Date	1600				Total Depth Drilled 15
	me and Date	-				Borehole Diameter 2"
	D with Lamp	Size				Drilling Fluid Used none
	on Gas/Time/		99.3			Sample Device macrocore
						Dimensions
					31	
А	В	C	D	E	F,	G
ample	Sample ID	Sample	Sample	Blow	PID	
Time	& Type	Interval	Core	Count	(pprh)	1 2 3 4 5 6 7 to 9
		(ft bls)	Recovery			Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other
			(ft)			Consistency Color Modifier Size Characteristics Content Characteristics
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0-4	2.5	0-7	0.6	cds
		10.4			11/.2	6" CONCRETE
		104				
				2-4		
			-, •			CLAY, W GRAVEL, HARD, LOW PLASTICITY, LOUS OF STRUTIDAL FAVORE & RIFEC OF METRI AT ~ 2 FT. LARGER SO THIS IS LIKGER ALL
			×	2-4	6.7	CLAY, W GRAVEL, HARD, LOW PLASTICITY, LOUS OF STRUTTLAL FLATT & RIEGE OF METHI AT ~ 2 FT, LARGER SO THIS IS LIKGEN FILL GLOY 1 5/SG W/ SOME DALK BAON MOTILIES WHATHERED UM
		4-8	3.0	2-4 4-6	6.7 0.5	CLAY, W GRAVEL, HARD, LOW PLASTICTY, LOUS OF STRUCTURAL FARETER & RIEGE OF METHI AT ~ 2 FT, UNRERED SO THIS IS LIKEUS ALL GLOY 1 5/SG W/ SOME DARK BAON MOTILIES WEATHERED UM 4-6.5 SAA, BECOMEND HORDER AND MORE CLAUGHER W/ DEDTH
			×	2-4	6.7 0.5	CLAM, W GRAVEL, HARD, LOW PLASTICITY, LOUS OF STRUCTURAL FARET & RIEGE OF ANETH AT ~2 FT, LARGER SO THIS IS LIKED ALL GUPY 1 5/SG W/ SOME DARK BAD MOTILIES WAATHORED UM 4-6.5 S.A.A. BECOMENCE HORDER AND MORE CLARUELY W/ DEDTH GOG-6.8 SAMPSTONE ADCKS/GRAVEL, DLY
			×	2-4 4-6	6.7 0.5	CLAY, W GRAVEL, HARD, LOW PLASTICTY, LOUS OF STRUCTURAL FARETER & RIEGE OF METHI AT ~ 2 FT, UNRERED SO THIS IS LIKEUS ALL GLOY 1 5/SG W/ SOME DARK BAON MOTILIES WEATHERED UM 4-6.5 SAA, BECOMEND HORDER AND MORE CLAUGHER W/ DEDTH
			×	2-4 4-6	6.7 0.5	CLAY, W GRAVEL, HARD, LOW PLASTICTY, LOUS OF STRUCTURAL FARETE & RIEGE OF METHI AT ~2 FT, LARGER SO THIS IS LIKEUS ALL GLOY 1 5/SG W/ SOME DARK BLOW MOTILIES, WEATHERED UM 4-6.5 SAA, BECOMENC HARDER AND MORE CLAUELLY W/ DEDTH GOS-6.8 SAMPSTONE ROCKS/GRAVEL, DLY 6.8-8 SHARD GUD ORGANIC CLAY, DAY, LOIS OF ORGANIS/ROOLLETS
		4-8	3.0	2-4 4-6 6-8	6.7 0.5 0.8	CLAY, W BRANEL, HARD, LOW PLASTICTY, LOUS OF STRUCTURAL FARTER & RIEGE OF ANETH AT ~2 FT, UNRERSON SO THIS IS LIKED ALL GLOY 1 5/SG W/ SOME DARK BLOW MOTILIES, WEATHERED UM 4-6.5 SAA, BECOMENC HORDER AND MORE CLAUELY W/ DEPTH GOB-6.8 SAMPSTONE ADUSS/GRAVEL, DRY G.8-8 SHARD ONON ORGANIC CLAY, DRY, LOTS OF ORGANIS/ROOLLETS A.5 WALE SAMP, FINE TO COARSE
			×	2-4 4-6 6-8	6.7 6.5 0.8 6.5	CLAY, W GALAVEL, HARD, LOW PLASTICITY, LOUS OF STRUCTURAL FARET & RIEGE OF METAL AT ~2 FT, LARGER SO THIS IS LIKED ALL GUGY 1 5/56 W/ SOME DALK BLOM MOTILIES WEATHERED UM 4-6.5 SAA, BECOMENC HARDER AND TOLE CLAUELY W/ DEDTH GOG-6.8 SAMPSTONE ROCKS/GRAVEL, DLY 6.8-8 SHARD OUD ORGANIC CLAY, DLY, LOTS OF ORGANIS/ROOLLETS A.S. WALE SAD, FINE TO COARSE 8-818 SAA
		4-8	3.0	2-4 4-6 6-8	6.7 6.5 0.8 6. 5	CLAY, W BAAUFL, HARD, LOW PLASTICTY, LOUS OF STRUCTURAL FARTER & RIEGE OF METHI AT ~2 FT, UNRERED SO THIS IS LIKEUS AILL GLOY 1 5/SG W/ SOME DALK BLOW MOTILIES, WEATHERED UM 4-6.5 S.A.A. BECOMENC HARDER AND MORE CLAUELY W/ DEDTH GOB-6.8 SAMPSTONE NOUSS/GRAVEL, DRY 6.8-8 SHARD OLD ORGANIC CLAY, DRY, LOTS OF ORGANIS/ROOLETS A.G. WALE SAMP, PARE TO COARSE 8-8186 SAM
		4-8	3.0	2-4 4-6 6-8	6.7 6.5 0.8 6.5	CLAY, W GRAVEL, HARD, LOW PLASTICTY, LOUS OF STRUCTURAL FARTER & RIEGE OF ANETH AT ~2 FT, UNRERED SO THIS IS LIKED ALL GUCY 1 5/SG W/ SOME DARK BLOW MOTILIES WHATHERED UM 4-6.5 SAA, BECOMENG HARDER AND MORE CLAUELY W/ DEPTH GOG-6.8 SAMPSTONE ADULS/GRAVEL, DRY 6.8-8 SHARD ONDE ORGANIC CLAY, DRY, LOTS OF ORGANIS/ROOLLETS A.G. WHILE SAMP, FINE TO COARSE 8-818 SAA BREEDERIG 9.6-11 SAMP, FUE TO COARSE, TRAKE GRAVEL, NOIST SYR 3/2
		4-8 8-10	3.0	2-4 4-6 6-8 8-16 16-11	6.7 6.5 0.8 6.5 0-5	CLAY, W GRAVEL, HARD, LOW PLASTICTY, LOUS OF STRUCTURAL ENER & RIEGE OF ANETH AT ~2 FT, LARGERS SO THIS IS LIKED ALL GUCY 1 5/SG W/ SOME DARK BLOW MOTULES WHATHERED UM 4-6.5 SAA BECOMENC HARDER AND MORE CLAUELY W/ DEPTH GOS-6.8 SAMPSTONE ADUSS/GRAVEL, DLY 6.8-8 SHARD ONCOMIC CLAY, DLY, LOTS OF ORGANIS/ROOLLETS A.G. WHIE SAMP, MAE TO COARSE 8-818 SAA BRENERIC 9.6-11 SAMP, FUE TO COARSE, TRAKE GRAVEL, MOIST SYR 3/2 11-12 CLAYER SAMP, BUCK TO ACOIVM, MOIST SYR 8/1 12-12.6 FUE SAMP, W COME GRAVEL, SAMP 1078, 7/3 CANVEL IS LIMEDAME
		4-8 8-10	3.0	2-4 4-6 6-8 8-16 16-11	6.7 6.5 0.8 6.5 0-5	CLAY, W GRAVEL, HARD, LOW PLASTICTY, LOUS OF STRUCTURAL ENER & RIEGE OF ANETH AT ~2 FT, LARGERS SO THIS IS LIKED ALL GUCY 1 5/SG W/ SOME DARK BLOW MOTULES WHATHERED UM 4-6.5 SAA BECOMENC HARDER AND MORE CLAUELY W/ DEPTH GOS-6.8 SAMPSTONE ADUSS/GRAVEL, DLY 6.8-8 SHARD ONCOMIC CLAY, DLY, LOTS OF ORGANIS/ROOLLETS A.G. WHIE SAMP, MAE TO COARSE 8-818 SAA BRENERIC 9.6-11 SAMP, FUE TO COARSE, TRAKE GRAVEL, MOIST SYR 3/2 11-12 CLAYER SAMP, BUCK TO ACOIVM, MOIST SYR 8/1 12-12.6 FUE SAMP, W COME GRAVEL, SAMP 1078, 7/3 CANVEL IS LIMEDAME
		4-8 8-10	3.0	2-4 4-6 6-8 8-16 16-11	6.7 6.5 0.8 6.5 0-5	CLAY, W BRAUEL, HARD, LOW PLASTICTY, LOUS OF STRUCTURAL FARTER & RIEGE OF ANETH AT ~ 2 FT, UNRERED SO THIS IS LIKED ALL GLOY 1 5/SG W/ SOME DARK BLOW MOTILIES WHATHERED UM 4-6.5 SAA BECOMENC HORDER AND MORE CLAUELY W/ DEDTH GOB-6.8 SAMPSTONE ADUSS/GRAVEL, DRY G.8-8 SHARD ONE ORGANIC CLAY, DRY, LOTS OF ORGANIS/ROOLETS A.S. WALE SAMP, FINE TO COARSE 8-818 SAA SUEDEBLO 9.6-11 SAMP, FUNE TO COARSE, TRACE GLAUEL, MOIST SYR 3/2 11-72 CLAYES SAMP, FINE TO ACOIVM, MOIST SYR 8/1 12-72.6 FUNE SAMP, WIFMEN, SY 8/1 LIGHTLY MONST, SUGAR)
		4-8 8-10	3.0	2-4 4-6 6-8 8-16 16-11	6.7 6.5 0.8 6.5 0-5	CLAY, W GRAVEL, HARD, LOW PLASTICTY, LOUS OF STRUCTURAL ENER & RIEGE OF ANETH AT ~2 FT, LARGERS SO THIS IS LIKED ALL GUCY 1 5/SG W/ SOME DARK BLOW MOTULES WHATHERED UM 4-6.5 SAA BECOMENC HARDER AND MORE CLAUELY W/ DEPTH GOS-6.8 SAMPSTONE ADUSS/GRAVEL, DLY 6.8-8 SHARD ONCOMIC CLAY, DLY, LOTS OF ORGANIS/ROOLLETS A.G. WHIE SAMP, MAE TO COARSE 8-818 SAA BRENERIC 9.6-11 SAMP, FUE TO COARSE, TRAKE GRAVEL, MOIST SYR 3/2 11-12 CLAYER SAMP, BUCK TO ACOIVM, MOIST SYR 8/1 12-12.6 FUE SAMP, W COME GRAVEL, SAMP 1078, 7/3 CANVEL IS LIMEDAME
		4-8 8-10	3.0	2-4 4-6 6-8 8-16 16-11	6.7 6.5 0.8 6.5 0-5	CLAY, W GRAVEL, HARD, LOW PLASTICTY, LOTS OF STRUCTURAL FLOOR & RIEGE OF METHI AT ~2 FT, URRAUSS SO THIS IS LIRGER ALL GUPY 1 5/SG W/ SOME DAAK BLOM MOTTLING WHATHERED UM 4-6.5 SAA, BECOMEND HARDER AND THE CLAUELY W/ DEPTH GOS-6.8 SAMPSTONE ADDER AND THE CLAUELY W/ DEPTH G.8-8 SHARDS BOOM ORGANIC CLAY, DAY, LOTS OF ORGANIS/ROOLLETS A.G WHIE SAMP, FME TO COARSE 8-818 SAA 828561816 9.6-11 SAMP FME TO COARSE, TRAKE GLAVEL, MOIST SYR 3/2 11-D CLAYER SAMP, BULF TO AGOINM, MOIST SYR 8/1 12-D.G FWE SAMP, WIFTERM SY 8/1 LIGHTLY MOIST, SUGAR 13.8 - 15 FME SAMP, WIFTERM, SAMP STONE NOCKAT 14.5, BANDED UM4FES 1-2

EMPTI BAGS REAMING 0.7

G-2 1046 21 CANS / TRUP 2 EARS 4-6 1045 5-10 1050

BORLOG XLS.xls 08/31/2011

Page ____ of .

1

χ.

Unconsolidated Boring Log

Boring/Well $ASB-190$ Project NumberDE000440.0001Client NameFord TCAPSite LocationSt. Paul, MNDate $9-12-11$ Prepared byKAHT NoStart Time and Date1050Finish Time and DatePID or FID with Lamp SizeCalibration Gas/Time/Results94.3						Boring Location Sketch Drilling Contractor SDE Driller & Helper Dan Hunter Drilling Method geoprobe Sampling Interval 4' Hammer Weight Drop Height Total Depth Drilled 15 ' Drilling Fluid Used none Sample Device macrocore					
A	В	C	D	E	F	G					
ample	Sample ID	Sample	Sample	Blow	PID 5	1 2 3 4 5 6 7 to 9					
ime	& Туре	Interval (ft bls)	Core Recovery	Count	(ppm)	Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other					
			(ft)			Consistency Color Modifier Size Characteristics Content Characteristics					
		0-4	3-1	6.3	0.5	8" CONCRETE					
_		0-9	201	6-7		D.7-1.0 SAMD, MARKE TO COALST, MUST, 104R 4/3					
				<u>4-4</u>	0,0	C. 1-1.0 SIMP MANE TO COALSE AOUT 107% 973					
						1-4 CLAY (Sween SEATLIGEED UMESTINE) DRY, TRACE SAND GEEYZ 6/10	056				
			9			Some MOTTERG L/ DARK BROWN CLAT, LOOKS CHIEF EAL					
		4-8	4.0	4-6	0.7	4-9.5 CLAY W/ SAMO (FINE TO COMASE) AND COMUTE, SOME SMALL ROUNDED					
		2		6-8	0.4	NOCKS MOIST LOTS OF MUTTLING BLOWN (SYR 4/2) TO BUKEN (GLEY 2 2.5	5/10				
						TO GLEYZ 6/10BG. PLUS MNOLIAUN EVALUMG.	- 1 AV-				
			-								
			3.6	7.5-8 SAM, MEDIUM, MOIST, 10R3/2, TRACE REMOTED LOCK)							
		8-10	4.8	8-16		5-10.5 CLAY W/ LIMESTONE CAPUEL (WEATHERED LIMESTANE)					
				10-17	0.3	GLEY 2 6/10B6 w/ samt you moticling					
						10.5- BLE CLAY w/ TRACE SAND AND SOME CAAVEL LOTS OF MOTTURE					
						GLEY 2 GRIOBE + GLEY 2 2.5 /10BC + 7.5 YR 5/6, MOIST					
						11.5-12 PRIDENER ONEFAIL CLAPY, GLEYZZS/1086, LIGHTLY MUST, SOME					
						MOTTLING, MILT FLANES					
		12-15	3.0	12-14		12-3 CLAYFY SAME W/ LOCKS AND ELAVEL, EINE TO COARSE, NOIST					
			1	14-15	0.4	7.54R (3/2					
						13-15 FIRESTO, SY 8/1 SUME MINOR FORM FICTION W/ DALKER					

F EMPTH BASS READIN G.7

G-2 (115 6-10 80% 1125 BORLOG XLS XIS 08/31/2011

TUP/EGM

1

Unconsolidated Boring Log

Boring/W	/oli	.45B.	- /91			Drilling Contractor SDE
Project N		DE0004				Boring Location Sketch Driller & Helper Dan Hunter
Client Na		Ford TC				Drilling Method geoprobe
Site Loca		St. Paul.				En 14/134/140 Sampling Interval 4'
Date		9-17-				Hammer Weight
Prepared	l by	KAH R				Drop Height
•	e and Date	1120				Total Depth Drilled 15
	me and Date	1.0				Borehole Diameter 2"
	D with Lamp	Size				Drilling Fluid Used none
	on Gas/Time/					Sample Device macrocore
						Dimensions
A	В	I C	D	E	F	G
Sample	Sample ID	Sample	Sample	Blow	PID 3	
Time	& Type	Interval	Core	Count	(ppm)	1 2 3 4 5 6 7 to 9
		(ft bis)	Recovery			Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other
		Ň Í	(ft)			Consistency Color Modifier Size Characteristics Content Characteristics
		0-4	2.5	0-	6.3	8" CON CAET
			1=×	2-		a.7-1 Sto w/ GRAFEL, AFAF TO COMSE, SUBBASE FOR OUCHHE
					·	1-4 CLAY W/ LIMESTONE GLAVEL, (WEATHEAED CIMESTONE PARTITIEY)
		-			-	+149 northing w/ balle blow, some minus I new staining Day
		4-8	2.0	4-1	Grato	4-6 SAA, 0A7
		4-6	2_0	6-		6-8 SAND, MEDIUM TO CORESE, W/ GENEL, MUIST, IUYR 4/3
		8-n	35	8-		8-8-3 SA4
		BIL	5.	10		8.3-9 SAND, FINE TU MEDIVM, DAT, TRACE COALSE FAMD, 104R 7/1
	-	-		10		9-117 (I be marken very w/ TRAIG SAND MUTTIGD (U.UR
		-				9-11.7 (LAY, MONTREP YOUR W/ TRACE SAMD, MUTTLED COLOR CLEYZ 6/1066 - CLEY Z 4/SMPR = 104K 6/8, ~0331
	+					11.7- R ORGANIC CLAY, GLEY Z Z.S/10B6, LIGHTRY MOIST, MULA
			-			FLAKES
		DUE	1.0	10 -	6 2 2	12-13.5 SAA
		12-15	1.0	12	<u> 0</u>	
					_	
L			-			my DARKER BANDS LIGHTLY MUST
				*		> PIECE OF AFAL, LIKE REBAL ACROSS SHOE, MAY HALF LIMITED
					-	RECORDER, BUT YOULD NOUT BEEN ~ 1 FT INTO MATINE SAND
	C - D		1	Gen (* EMPTY BASS NEASING 0.7
	0-2	(19		FMO/TC	0	L Club in the inclusion of
	4-6	115	5	110	# (GAO	
			•			

BORLOG XLS.xls 08/31/2011

۰.

÷.

Unconsolidated Boring Log

Finish Ti PID or F	Number ame ation		40.0001 AP , MN L 11 G			Boring Location Sketch Drilling Contractor SDE Image: Drilling Location Sketch Drilling Method geoprobe Image: Drilling Method geoprobe Sampling Interval 4* Hammer Weight Drop Height Drop Height Image: Drop Height Total Depth Drilled Image: Drop Height Drilling Fluid Used none Sample Device macrocore Dimensions Dimensions
A	В	C	D	E	F	G
Sample Samp	Sample ID & Type	Sample Interval (ft bls)	ple Sample val Core	Blow Count	PID (ppm)	1 2 3 4 5 6 7 to 9 Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other Consistency Color W/DModifier Size Characteristics Content Characteristics
		3-4	20	0-2	0.0	GRAFLLY SAMO, LOUNDED GLAINS, ELD MOIST IN TOP 6' I OYR, 5/2
				2-4	0.0	(LAYEN SAND LENS FROM 3 TO 3.5 PM. (HUNK OF WOOD (ROOT?) A 3.9 B
		4-8	3.0	4-6	0.9	SAA, LICATICH MOIST, LOCKS ARE AMIN, NO ONE SINGLE TYPE
			1.2	6.8	0.0	
		8-12	2 4.0	8-10	00	SAA, URAY MARD
				1072	0.0	
						EQ.B. 12 PT BCS. STUPPTO BECHOSE GRAVELLY SAND MAST
						BECOMMENTER VERY MARD AND WE DIDN'T WANT TO
						GET LINER JAMMED IN SAMPLER
	_					

~ NEW BACS, NO "SANDLICH" MATHICK THUN "PHEEZER"

6-2 4-6 1235 BORLOG.XLS.xIs 140 6-10 08/31/2011

230

LEAD/TELPLEAD

Page ____of ____

Unconsolidated Boring Log

earlier 15 year

Finish Ti PID or Fl	lumber Ime ation	Size	40.0001 AP , MN			Boring Location Sketch Drilling Contractor SDE FN (53) Drilling Method geoprobe Sampling Interval 4' Hammer Weight Drop Height Total Depth Drilled 2'' Drilling Fluid Used none Sample Device macrocore Dimensions Dimensions					
A	В	C	D	E	F	G					
Sample	Sample ID & Type	Sample Interval (ft bis)	Sample Core Recovery (ft)	Blow Count	PID (ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics					
		0-2	1.0			8" CONCINETE					
				1-2	0.1	0.7 - 2.0 perce SAMOY (LAY, MOIST, BLOW, FINE TO COARSE SAD					
						FILT REFUSAL AT 2 PT, WIN CONCRETE IN END OF SHOE					
			·			- TRIED TO ADVANCE DOWN HYDROVACHOLE, REDUSAL AT 3 ST					
						CONCRETE IN SILVE ARAM					
						- TRIED TO CORE THROUGH OBSTRUCTION IN OPIGNAL HOLF USINT STAR BIT, PUSHED IT RION 2 TO 3 FUBGS BUT DIDNY GETR					
						- CONED 3 RO HOLE W CONCRETE TRIKA TO GEOPRIBE BUT HIT					
						REFUSAL AT 3 FT					
						COLLECTED SAMPLE HAM 1-2 PT B65					

a Blon SAOY CUPI, Mast

3

NOTE: FIRST HOLE REFUSAL AT ~ 2 FT ; 6" ONCREMENT CLEVE FILL, HIT SECOND CONCRETE LANGE AT ~2 FT B65

G.I ON FID

BORLOG XLS xls 08/31/2011 SECOND HOLE WANT DOWN HERROVAL HOLE, GOT TO TO THE FILL CONCRETE AGAIN LIKHY BIG Page of ______ CHUNES LATTICE THAN SECOND BAD DUE TO DIFFELTET DEPTHS

Unconsolidated Boring Log

Algebrain Top TCAP Description Size content Size Dia Mini Size D	Boring/V			1974 (0	14		Device Leasting Clickton	Drilling Contractor Driller & Helper	SDE Dan Hunter							
Site Location Site Location Standborn Standbo	-						Boring Location Sketch									
Sole Controlling Image: Control The Sole Sole Sole Sole Sole Sole Sole Sol							s		<u> </u>							
Prepared by CMT PG Start Time and Date Time and Date CAT PD Start Time and Date CAT PD Start Time and Date CAT PD Start Time Ango Star Calibration Gas/Time/Results A1.3 Time & Sample ID Sample Sample Sample Blow PD 1 2 3 4 5 6 7 to 9 Sample Sample ID Sample Sample Blow PD 1 2 3 4 5 6 7 to 9 Sample Sample ID Sample Sample Blow PD 1 2 3 4 5 6 7 to 9 Sample Sample ID Sample Sample Sample Blow PD 1 2 3 4 5 6 7 to 9 Sample Sample ID Sample Sample Blow PD 1 2 3 4 5 6 7 to 9 Sample Sample ID Sample Sample Blow PD 1 2 3 4 5 6 7 to 9 Sample Sample ID Sample Sample Blow PD 1 2 3 4 5 6 7 to 9 Sample Sample ID Sample Sample Sample Blow PD 1 2 3 4 5 6 7 to 9 Sample Sample ID Sample Sample Sample Sample Sample Sample Sample Sample Sample ID Sample Sa		ation					the En 154		4							
Summer and Date Description Description <thdescription< th=""></thdescription<>							W FN NI		4							
Start Time and Date Date		-		0			6		15							
$\begin{array}{c c c c c c c c c c c c c c c c c c c $																
Calibration Gas/Time/Results A1.3 Sample Device Dimensions macrocore A B C D E F G Sample Sample ID Sample Bow Sample Bow PD 1 2 3 4 5 6 7 to 9 Sample Sample ID Sample Bow Core Count Construction Modifier Sample Grain Secondary Moisture Remarks and Other Construction Core Count Construction Construction Construction Characteristics Content Characteristics Construction Core Core Construction Characteristics Content Characteristics Construction Core Core Construction Construction Construction Characteristics Content Characteristics Construction Core Core Core Core Construction Construction Characteristics Content Characteristics Content Characteristics Construction Core Core Core Core Core Core Core C																
$\begin{array}{c c c c c c c c c c c c c c c c c c c $								-								
ABCDEFGSample	Calibrati	on Gas/Time/	Results	- 12.5												
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	<u> </u>	-														
The stype interval Care Count (pm) 1 2 3 4 5 6 709 The stype interval Care Count (pm) 1 2 3 4 5 6 709 Density Soil Care Grain Size Grain Size Grain Size Characteristics Content Characteristics 2 - 4 3 6 - 2 0.4 6" ASPART/BASE 2 - 4 0.6 0.7 0.4 6" ASPART/SASE 2 - 4 - 5 0.4 6" 0.0 4.5 0.0 6.6 0.7 0.0 6.6 0.0 0.0 6.6 0.0 0.0 6.6 0.0 0.0			-	-				G								
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$							1 2 3	4 5	6 7 to 9							
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	Time	& Type			Count	(ppm)										
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$				· ·				•								
$\frac{1}{1} \frac{1}{1} \frac{1}$			0-1.		6-2	01.										
$\frac{1}{1} \frac{1}{1} \frac{1}$		-	0-4	15				AYR STE Som	6 Augusta POCK (LIVERS							
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$					24	0.0		011 0/6 100								
$\frac{1}{1} = \frac{1}{1} = \frac{1}$				747												
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$			-													
$\frac{4+8}{6-9} = \frac{4}{6-9} = \frac{6}{6-9} = $																
$\frac{6-q}{5-S} = \frac{6-q}{5-S} = $			4-8	4	4-6	0:0	4-5 PARTUALLY WRATHERED SHALE GLEYZ 5/10 BG SOME CLAY SOME VEST CHUNKS W/ PLANAR ZEATORES									
S.S-7 SAME AS U-5 7-8 (LAT W/ SOME SAMD FOR TO MEDION 10°R 3/2 MOTION W/ NAKKA BLOWN, MOST. 8-12 9 10-2 10-2 10-12 <tr< td=""><td></td><td></td><td></td><td>(</td><td>6-9</td><td>0.0</td></tr<>				(6-9	0.0										
$\begin{array}{c c c c c c c c c c c c c c c c c c c $									GREYZ 2.5/ 10 BG , PWF SAM							
$\begin{array}{c c c c c c c c c c c c c c c c c c c $																
$\frac{8-12}{10-2} \frac{4}{3} \frac{8-16}{10-2} 0.3 \frac{8-12}{2} \frac{344}{544} \frac{5116447}{916566} \frac{916566}{6004} \frac{9142}{10-2} \frac{917}{2} \frac{10-12}{10-2} \frac{3.1}{2-12.5} \frac{710}{10-12} \frac{910}{10-12} \frac{10-12}{12-12.5} \frac{910}{544} \frac{10-12}{12-12.5} \frac{910}{544} \frac{10-12}{12-12.5} \frac{10-12}{5} \frac{10-12}{12-12} \frac{10-12}{12-12$									m 1041 3/1 morriso m/							
$\frac{10-723.1}{12-12} = \frac{10-723.1}{12-12} = 10-72$							DALKER BLOWN, Mas	7.	A							
$\frac{ z- _{2}}{ z- _{2}} = \frac{ z- _{2}}{ z-$			8-12	4			8-12 Sta, sliamp	IFSEE Open SM	the riece of Bitumicous At-							
$\frac{1}{11} = \frac{1}{12} $		_	1. 60				TRANSMITHE TU PAN	IKEL BRANN 1								
LIMESTONE MOCE MI BET MOIST 13-13.5 (LM W/ SAMD/CANUEL, 104R 3/4, MOIST 13-13.5 (LM W/ SAMD/CANUEL, 104R 3/4, MOIST 13-13.5 (LM W/ SAMDS, LOGKS C/K E (MCRATE 13.5-14.2 Pock SMADS, RED SAMDSTONE, 10 K 6/4, DET 14.2-15 SAMDY CLAY W/ GENEL, ENDED GAMEL, MOIST, 104R 5/8 11 12 13-15 (WHITE V CHAINE V CHAINE			12-15	3	-		D S-12 DAM HE CO	M M ILON TO T	6 CLAN AND CICH 7 6 10RC							
IB-13.5 CLM W/ SAND/CHNUFL, 104R 3/4, MUIST IB-13.5 CLM W/ SAND/CHNUFL, 104R 5/8 IB-12 VOC IB-12 VOC IB-14 VOC IB					- 13-15	0.1			1) CHIT MARINE (2001 2 0 / 5170							
SXLS.XIS 10-12 VOC 11 12-15 SARDY CLAY -/ GENEL, END ED GANEL, MOIST, 104R 5/8 V CUMINE			_						3/4 1057							
$\begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} $				1	<u> </u>	2										
EXLS.xis 10-12 Voc 11 13-15 CHAINE Voc Voc 11 13-15 CHAINE Voc Voc 10-12 Voc 10-12		v	515			7	•	503, 100KSC	THE CONTRACT							
11 13-15 CUPIDE		N	5000			(15.3-14.L HOCK 5WARDS	HED SANDSTOPE	OKO/4, VFI							
11 13-15 Courine	G.XLS.xls	10-12	POLA	-		1	VILL-15 DAMOY CLAPY	- CEANEL, ROWAD	ED GANEL, MOIST , 167K J/D							
	11	13-15	CAN	-INF			×.		- bge							
		2	1520		74											

Unconsolidated Boring Log

Finish Ti PID or FI Calibratio	lumber ame ation I by ne and Date me and Date ID with Lamp on Gas/Time/	Size Results	40.0001 AP , MN 2-11			Boring Location Sketch Drilling Contractor SDE Drilling Method geoprobe Sampling Interval 4' Hammer Weight Drop Height Total Depth Drilled 10' Boring Fluid Used none Sample Device macrocore Dirilling Gontractor G						
A	B	C	D	E	F	6						
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery (ft)	Blow Count	(ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics						
		0-4	3.5	6-2	0.6	0-1 CLMEY GOD, W GRAVEL, MUST, 104R 5/6, ADOUAL GUNEC						
				2-4	0.1	1-3 GANDY CHANGELY (LAY MOIST, MIX OF GAMEL TYPES, LOTS OF LIME STANG						
						CLEY 1 2.5/564						
			<u>14</u>	-		3-85 SAMA GRAMIC (LAY, MOIST, NO CRAVEL, GLEY 2 2-5/10B 3.5-4 (LAY, MUIST, GLEY 2 5/10BG W/ JAN MOTTONG AND SOME SAME NOOTS/GREAMICS						
		1										
		4-8	4	4-6	0.0	4-72 SAA LOTSUE COLOR MOTTLING, LIKE FILL SOR						
		<u></u>			3.4	7.2-7.18 GRIVELL SAD, DRY CLEY 2 2.5/106, SLIGHT PETNOLEUM ODOR						
	-			6.0	17.9	7.5 8 CLAYEY SAMP, DINE TO COARSE, w/ CRAYEL AND BOCKS INTO PRISED ED						
				-		LAMGER OF 104R Z/L AND GLEY 2 2.5/SPB, DRY						
	-	8-10		80	0.5							
		8-14	2.6	0 10		8.1 - 10 GANGLEY SAND W/ - RACE CCAY, GLEY 2 3/5 PB LOTS OF						
	-	-				A-GULAE CLAUGE, LOUKS LINCE BROKE- UP POCK, BUT GRAUFE IS DIPE						
						TYPES						
			-									
	-			IN PT REPUSHE, LO ROCK IN SMOE SO IT IS UNCLEAR WHAT CAUSED								
				* -		NETOSEL						

6-8 8-10 1405 BORLOG.XLS.xis 08/31/2011

VCC SUGE RCNA 1555 COMPE

Page of

Unconsolidated Boring Log

Boring/W	ell	AS6 - 196				Drilling Contractor Stevens Drilling & Environmental, Inc.							
Project N	umber				Boring Location Sketch Driller & Helper Drog Hunter								
Client Na	me	Ford TC	AP			Drilling Method							
ite Loca	ition	St. Paul	, MN			Sampling Interval							
ate		11/4/	11			Hammer Weight							
	repared by KAH					Drop Height							
itart Tim	e and Date		11/4/11	04	432	Total Depth Drilled							
	me and Date		114/11	Ű	940	Borehole Diameter							
	D with Lamp					Drilling Fluid Used							
Calibratio	on Gas/Time/	Results	100.0	16m	0755	Sample Device www.weck							
				1.4		Dimensions 21 × 11							
A	В	C	D	E	F	G							
ample	Sample ID	Sample	Sample	Blow	PID								
ime	& Type	Interval	Core	Count	(ppm)	1 2 3 4 5 6 7 to 9							
		(ft bis)	Recovery			Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other							
			(1) "			Consistency Color Modifier Size Characteristics Content Characteristics							
655		0-1	14			HA - Return in to po mo. Will pouce of warding							
104	8	1-4	24		0.1	5-10 SAND vot-mail some silt little course - grance to swell-1, public							
						Vlouis in subar-subr 215 × 3/2							
						10-16 spino A-med with most bittle gravite-small public vitare							
						shifty most 254 6/4							
						16-Fi bokn NCK							
						171-24 hil divers in agenice - fill							
712		4-8	48		0.1	0-11 STAND Slough from 0-10 above							
						11-13 SILVID SULL FOR 10-16 CLOPE							
h.					0.1	13-26 remarked CLAY FRAT SAND worked shipkty moist low plasticing to deletering							
						med state-stiff sem time-trade GUEY 1 5/1064							
			_			210-43 SAMD I - WARL nothing mediconte little a worker of concil slightly work							
						sub- mub- lace to sit glass bosin sub-ture (2 32 31-41 - 7Fill							
						48-46 CLAY remarked we low prestructing slightly roust med still							
						GLEY 1 6/5G mother to granies sub-							
N25		8-12	48		0.1	0-8/2 5% 6-10 from 14 interval							
					_	\$1/2-31 SANDY Silt little clay vit-med mottled moist ion prosticity no dilat							
						10 42 3/4							

Unconsolidated Boring Log

- S

Boring/Well	ASS - 196	Site Location	
Project Number	1	Date	
Client Name	-	Prepared by	

A	B	C	D	E	F	G
Sample	Sample ID	Sample	Sample	Blow	PID	6
lime .	& Туре	Interval (ft bls)	Core Recovery	Count	(ppm)	1 2 3 4 5 6 7 to 9 Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other Consistency Color Modifier Size Characteristics Content Characteristics
				-		St-35 hoter oct
					01	35-43 SAND frond to sitt little grounde to small-and peach
		1.5				louise moist sub-sub-
_	24.1	1				43.48 CLAY remorked no-low praticity month no direction stiff
00						ither t sout to med GLEY 1 4/1044
0732		12-15	36	3	0.2	0-20 se 0-10 (wa 1-4'
					46.1	20-24 sa 43 46 (non 4-2'
		-	- 11			24-305 Stand pended nock
			1 3	2 C		
						36.5-32 porded rick
_					1.0	32-36 SAND must some + point point sole inin
						N goule-small public
_		•				
					-	IS' EOB
-					×	
					= (4+1	
	(e	20	1			

020	27.52	+28	117
VOC	32.371	14	43

46

Unconsolidated Boring Log

Finish Ti PID or F	lumber ame ation	DE00044 Ford TC/ St. Paul, IVO- KAH	AP MN 4/11 1/11		1600 1600	Boring Location Sketch Drilling Contractor SDE Drilling Method geoprobe Sampling Interval 4' Hammer Weight - Drop Height - Total Depth Drilled Borehole Diameter Drilling Fluid Used none Sample Device macrocore Dimensions 2'' > 4'						
A	В	С	D	E	F	G						
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count	PID (ppm)	1 2 3 4 5 6 7 to 9 Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other Consistency Color Modifier Size Characteristics Content Characteristics						
1017		0-1.5	18			0-18 HA						
1023		1.5-4	20		0.1	O-13 SAND &- warse mostly need little in come-grounde to small-ly public						
15th						v live any suber-subrementer						
						13-16 ponded scholtone 254 7/4						
						16-20 CUAY reversed cruely slightly wilting a plasticity/dilatory						
						und inff GLCY 1 4/10Gy						
1028		4-8	46			O. W/2 SlocyL						
					0.1	5/2-24 CLAM saw (weathing shell) GLEY 1 4/5GY Norganis						
						24-33 SILT some sand little clay vitamed subersubri black to organis						
						to-in- plasticity remodes no dilateray day weathering,						
		-				worse crumbly						
	1				0.1	33-46 SAND F-VILLORIC mostly med-corrise the grounder - med public						
						dry = moist QY1 look suber nord						
1037		8-12	44			0-7 see bolun yluit to in						
					0-i	7-31 CUAY reworked mothed most low plasticity in dilution						
						med stiff - stiff nut coloration from 11-19"						
						offer 20" more like meathered that						
					0.1	31-34 Bringeres blacked linestoice (week constantion)						

Unconsolidated Boring Log

ASB-197 Boring/Well Site Location Project Number Date Client Name Prepared by Α В С D E F G Sample Sample ID Sample Sample Blow PID Time & Type Interval Core Count (ppm) 1 -2 3' 4 5 6 7 to 9 (ft bls) Recovery Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other (10 "1 Consistency Color -Modifier Size Characteristics Content Characteristics 34-36 gray foril route SAND/BOKE DUK f- work mostly work 36-44 losic moist subi-sult 1045 36 12-15 0-12 SAND int-work menu to to lit C I little vi work broken rock look dry round - suir 12-36 0.1 reworked metted UAY med stiff no plasticity /dilatening erpories M must colorotions @ 24.5" mixed w/ sord with for Small-pred relles 24. J-30 black andy sitt no prasticity diletony inf course little vi couse suice - round 70-32.5 Sendy Sitt V++ no plasticity dilaten 104E 7/3 to clay 15' EOB

060 27.37 67 Noc 32.490 19 116 41 Geo 32,438 42

BORLOG.XLS xls 08/05/2011

Page 2 of 2

Unconsolidated Boring Log

Boring/Well Ass -198 Project Number DE000440.0001 Client Name Ford TCAP Site Location St. Paul, MN Date IM 4/11 Prepared by KAH Start Time and Date IM 4/11 Finish Time and Date IM 4/11 Pilb or FID with Lamp Size IG2 D pino Calibration Gas/Time/Results IG2 D pino						Boring Location Sketch Drilling Contractor SDE Drilling Method geoprobe Sampling Interval 4' Hammer Weight
A	В	l c	D	I E	F	, G
Sample	Sample ID	Sample	Sample	Blow	PID	ředel na se
	& Type	Interval (ft bis)	Core Recovery	Count	(ppm)	1234567 to 9Density/SoilGrain SizeGrainSecondaryMoistureRemarks and OtherConsistencyColorModifierSizeCharacteristicsContentCharacteristics
1147		0-0.5				НА
1155		0.5-4			0.1	0-23 SANDY SILT inf-med little corrie to a wage - med public
						no restinty deleting dry soft nound-suber to prionice is 18 444
1200		4-8	43			2-7 see
					0.5	7-73 SANDY SUT int - for little and to cocine an work moist to grance and pull
					-	It ilon, priorice busining more med wet @ 35" sodet-med thill
-		1			0.9	10 plasticity / d. lating black @21" 2.54 3/1 y to 21"
1213		8-12	39		1	C-9 j22
160		1				1-12 SAND/ august recike transition to
		1			1	Pric Stand Plant and a stand of
	1			1	0.4	12-31 rens-ked CLAY mattled might - still it maning no plasticity / dilatenas
						little for coarde sand to V. Coarde-sould rebbin subr-subar - angular slightly most -
	1			1	8	23-27" indy sitt with met monthing fine by clay no plasticity feleting and it. li it. li
	18 J.	1		12.	0.3	31-39 SANDY SILT little clay no plasticity / diktory still bod Vio 12 5/4
		A			1	LICCK Slightly marth blow restricting infined and sub
					1	little worse-gronules Sub-ong.
1224		12-15	38		0.6	D-21 sea
		3			0.1	21-32 SILTY SAND VIL- med some coorde-granule to small public
		-				slightly mist med need round-organizer 10 4/ 4/6

32-39 SAND F-v. wards, mostly ned round-subar love tr-little uport-stande Slightly moust 1048 S/4 Page_1 of 1

in the

Page _ j_of _ ___

BORLOG.XLS.xls 08/31/2011

Unconsolidated Boring Log

Client Na Site Loca Date Prepared Start Tim Finish Tir	Ct Number DE000440.0001 t Name Ford TCAP .ocation St. Paul, MN ared by II/4/II Time and Date II/4/II n Time and Date II/4/III n Time and Date II/4/III n Time and Date III/4/III n Time and Date <td< th=""><th>Boring Location Sketch Drilling Contractor SDE Driller & Helper Dan Hunter Drilling Method geoprobe Sampling Interval 4' Hammer Weight </th></td<>						Boring Location Sketch Drilling Contractor SDE Driller & Helper Dan Hunter Drilling Method geoprobe Sampling Interval 4' Hammer Weight
A	В	C	D	[Е		F	G
Sample Time	Sample ID	Sample Interval	Sample Core Recovery	Blow	Pi		1 2 3 4 5 6 7 to 9 Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other Consistency Color Modifier Size Characteristics Content <
1335		0-4	37		(0.2	0-21 SAMAY SILT bluck into sliphily maint which have med-coarse
							punded wik p 10° black
							21-27 SILTY SAMD F-work mustly fined suft suba-sub- slightly must 10 YR 3
					(0.1	27-37 JAND, f-grance mostly work - v. work to small public route
							louse dry-slightly most it silt
1342		4.7	18			÷	0-6-12 522
		-			ć	3.1	61/2-14 SINTY SAND Not - Loose, musiting warder, wet/moist 1-suba
							lusse
					-		14-18 CLAY low plasticity no dilatory moist
							some unt-to sond lattle med to silt gott mottled
			<u> </u>				7' Bedrock retwood
				1.			
			1				

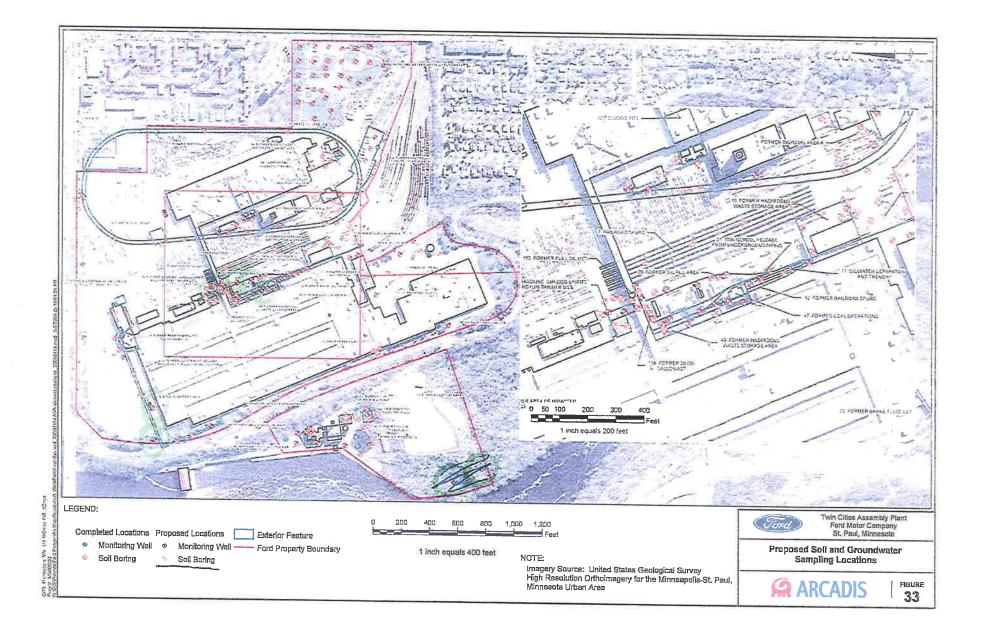
Unconsolidated Boring Log

Finish Tin PID or FII Calibratio	umber ne by e and Date ne and Date D with Lamp n Gas/Time/	DE0004 Ford TC St. Paul KAH Size Results	ap , MN 4/1, 14/μ μ4/μ μ4/μ 100	.e ga-	1440		Boring Location Sketch Drilling Contractor SDE Drilling Method geoprobe Sampling Interval 4" Hammer Weight							
A	B	C	D	E		F	G							
Sample Time	Sample ID & Type	Sample Interval (ft bls)	Sample Core Recovery	Blow Count		Dי ppm)	1 2 3 4 5 6 7 to 9 Density/ Soil Grain Size Grain Secondary Moisture Remarks and Other Qonsistency Color Modifier Size Characteristics Content Characteristics							
1442		0-4	25			0.1	0-15 SAMD for viscose mostly med-coarse little granule to small public							
						100	mouth mouth viloiti							
						0,0	-25 CLAY some sand moust water med still low plasticity in diet							
							to solt built pund-subr							
	<u> </u>						it groute - med petter 2,5 4 5/3							
1450		4-8	48			0:0	C-b slongh							
		_					6-300 Sae viseft v. with becoming AND SAND							
			1				grey/ white discoveration @ 20-21"							
						0.9	30-47 SAND red - ~ coase with coase roma-into trace-little sitt of wet							
							lavir-med dense							
						_	43-47 GLONT AND SAND of - cross mostly friend invisit ind stiff							
							to litt med plating no dilatory							
							8' Bedruck refused Linestone							

Appendix B

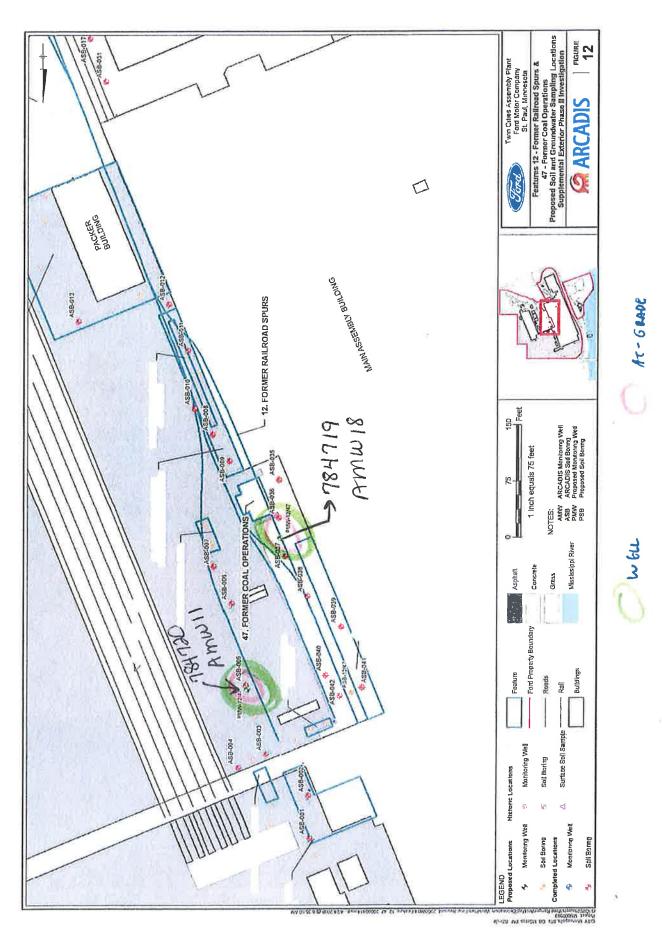
Borehole Sealing Records and MDH Well Logs

ircade	Ford	d	-14	a de la competencia de la comp	the second					
LLL OR BORING LOC	ATION				DEPARTMENT OF HEALTH RING SEALING RECORD Minnesota Well and Boring Sealing No. Minnesota Unique Well No.					
County Name		WELL			A Statutes, Chapter 1031 Minnesota Unique Well No. or W-series No. (Leave black for (Leave black for (Leav					
Ramsey Township Name Townshi	in No. Bange N	D. Section No. F								
St. Paul 28				W NE						
GPS Latitude LOCATION: Longitude		minutes			Depth Before Sealing 12ft, Original Depth 12ft.					
Numerical Street Address or Fi					AQUIFER(S) STATIC WATER LEVEL					
966 Mississip					WELL/BORING Weter-Supply Well Monit, Well					
Show exact location of well or in section grid with "X."	boring	Sketch map location, sh lines, roads	o of well owing pr	or boring operty	B Env. Bore Hole Other temp. 8 ft, K below above land surface					
N	n	intes, roads	, and ou	liaings.	CASING TYPE(S)					
X				,	Steel Plastic Dile Other					
w	E Jee	e attac	hed	L	WELLHEAD COMPLETION					
	/2 Mile	е анас м ар.			Outside: Well House At Grade Inside: Basement Offset					
					Pitless Adgeter/Unit Buried Well Pit Buried					
S 1 Mile					Weit other					
PROPERTY OWNER'S NAME/										
Ford Motor Com Property owner's mailing address i	pany				CASING(S) Diameter Depth Set in oversize hole? Annular space initially grouted?					
966 Mississipp	i River	Blvd	dicated at	Pove	in. from to ft, Yes No Yes No Unknown					
St. Paul, MN	55115				In. from toft, Yes No Yes No Unknown					
					in. fromtoft.					
WELL OWNER'S NAME/COMP. Ford Motor Com	ANY NAME				SCREEN/OPEN HOLE					
Well owner's mailing address if diffe	erent than property	owner's address in	dicated at	oove	Screen fromtoft, Open Hole fromtoft,					
					OBSTRUCTIONS					
					Rods/Drop Pipe Check Valve(s) Debris Fill No Obstruction					
			r	_	Type of Obstructions (Describe)					
GEOLOGICAL MATERIAL	COLOR	HARDNESS OR FORMATION	FROM	то	Obstructions removed? Ves No Describe					
If not known, indicate estimate			boring.	1	Type					
asphalt	black	hard	0	6"	Removed Not Present Other					
sand/clay	dk brow	n	6"	6'	METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE:					
sand gravel	brown		6'	10'	No Annular Space Exists Annular Space Grouted with Tremie Pipe Casing Perforation/Removal					
clay	grey		10'	12'						
					in, from to ft. Perforated Removed					
					Type of Perforator					
					Other					
					GROUTING MATERIAL(S) (One bag of cement = 94 lbs., one bag of bentonite = 50 lbs.)					
					Grouting Material bentonite from <u>0</u> to <u>12</u> ff. yards <u>1</u> bags					
					from to ft yards bags					
					OTHER WELLS AND BORINGS					
REMARKS, SOURCE OF DATA	, DIFFICULTIES	IN SEALING			Other unsealed and unused well or boring on property? Yes No How many?					
*eight test bor to collect wate	ings wer	re compl	etec	1	LICENSED OR REGISTERED CONTRACTOR CERTIFICATION					
grouted up imme	diatelv	after s	ampl	ing	This well or boring was sealed in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.					
			-P-	8	Stevens Drilling & Environmental Services, Inc. 2255					
					Licensee Business Name License or Registration No.					
					2 Th 556 9/23/11					
					Certified Representative Signature Certified Rep. No. Date					
IMPORTANT-FILE WITH PRO		2000	16		Dan Hunter					
PAPERS-WELL OWNER COP		2896	40		Name of Person Sealing Well or Boring					
HE-01434-12 IC# 140-04	23		1		9/09R					



WELL OR BORING LOCATIC	N			MIN	NESOTA	DEPARTMENT OF HEALTH			MINNESOTA AND BO	UNIQUE WELL ORING NO.
County Name			~			D BORING RECORD			784720	
Ramsey					Minnesot	a Statutes, Chapter 103/			COMPLETED	
	ship No. Range 8N 23			Fraction	NE	WELL/BORING DEPTH (completed) 9 1/2	ft.		: 13, 20	011
GPS LOCATION: Latitude	degrees	- k	les	seconds	<u>'/</u>	DRILLING METHOD	Driver		Dug	
	degrees			seconds		Cable Tool	Driver		Jeti	
966 Mississippi					1	DRILLING FLUID	V	VELL HYDRO	FRACTURED?	Ves 😿 No
Show exact location of well/boring	in section grid with	aul :	Sketch map	of well/boring	location.		F	rom	tt. To	ft
w X	AM _{E T} see at	W 11 tache		Showing prop puildings, and	direction.	USE Domestic Noncommunity PWS Community PWS Elevator CASING MATERIAL	Irrigat	on. Bore Hole ion	Remea	y/Commercial
	½ Mile					Steel	Threa		Welded	
S1 Mile						2 in, to ft,	lbs	s,/ft,		81 in. to 91
PROPERTY OWNER'S NAME/CC	MPANY NAME					in_ to ft				in. tof
Ford Motor Compa						in. to ft SCREEN	lbs	OPEN HO	LE	in. to
Property owner's mailing address 966 Mississippi	if different than well River B1	location a	iddress indicate	d above.		Make Johnson		- From		Tof
St. Paul, MN 5	5116					Type PVC		Diam. Length		
						Set between 42 ft. and	91	ft. FITTIN		ead
						STATIC WATER LEVEL				grade
WELL OWNER'S NAME/COMPAN						PUMPING LEVEL (below land surface		surface Date	e measured	9/16/11
Ford Motor Compa			5			ft. after	<i>.</i> ,	hrs. r	oumping	<u>3 g.p.n</u>
Well/boring owner's mailing addre		roperty ow	vner's address i	ndicated abov	/e,	WELLHEAD COMPLETION				
						Pitless/adapter manufacturer Casing Protection			Model 12 in. abo	ove grade
						At-grade (Environmental Well and GROUTING INFORMATION	Boring ONL	Y)		
						Well proving Grout materials bent. From	Benton	2 Concre 3ft.	ete Other 1/3	X
GEOLOGICAL MATERIALS	COLOI	a	HARDNESS OF MATERIAL	FROM	то	From	То			
hish has					-	NEAREST KNOWN SOURCE OF CC				
black top				0	1	Well disinfected upon completion?			lirection	typ
gravel	yello	V		1	3	PUMP				
silty sand	gray			3	91					
						Manufacturer's name Model Number				
						Length of drop pipe				
						Type: Submersible L.S. Turbin				
						ABANDONED WELLS		CONTRACTOR IN		
				1		Does property have any not in use an VARIANCE	nd not sealed	d well(s)?	Yes g No	
						Was a variance granted from the MD		ell? Yes	VO TN#_	
						WELL CONTRACTOR CERTIFICATIOn This well was drilled under my superv The information contained in this report	ON vision and in	accordance	with Minnesota	Rules, Chapter 4725.
	a second sheet, if r	eeded.				The information contained in this repo	ort is true to	the best of m	y knowledge.	
REMARKS, ELEVATION, SOURC	E OF DATA, etc.					Stevens Drilling	2 & En	V. Suc	Inc	2255
						Licensee Business Name	, <u>u</u> <u>m</u>		Lic. or Reg. 1	
						Certified Representative Signature	n	Cer	rtified Rep. No.	9/26/11 Date
IMPORTANT - FILE W WELL OV	ITH PROPERT	ry pap	ERS -	7847	20	Name of Driller	Johns	on		

IC 140-0020



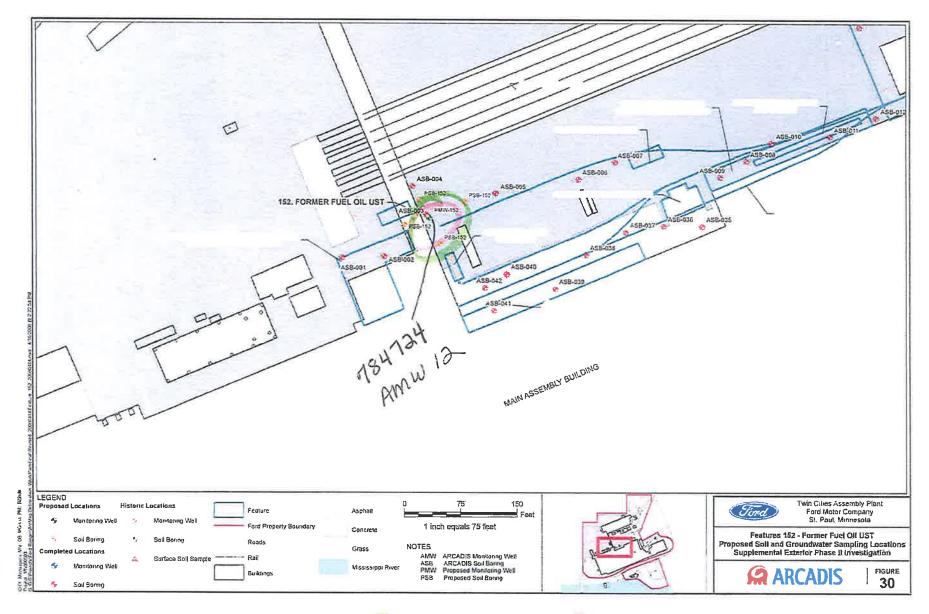
.

ē.

WELL OR BORING LOC	ATION		7	MINN	NESOTA	DEPARTMENT OF HEALTH	MINNESOTA AND BO	UNIQUE WELL RING NO.
County Name WEL						BORING RECORD a Statutes, Chapter 103/	7847	724
Township Name	Township No.	Range No.	Section No. Fr	raction		WELL/BORING DEPTH (completed) DATE	WORK COMPLETED	
St. Paul	28N	23W	17 N	E SW N	E 4	11 ft.	Sept 13,	2011
GPS	degrees		1	ëconds		DRILLING METHOD		
LUCATION:	degrees	mir	nutes si	econds		Cable Tool Driven	Dug	
966 Mississip	pi River	Blvd				DRILLING FLUID WELL	HYDROFRACTURED?	Yes 🗶 No
Show exact location of well/t		rid with "X."	Sketch map	of well/boring	location.	From	11. To_	ft.
			roads, b	howing prope uildings, and o	irty lines, direction.	USE Domestic X Monitoring	Heating	/Cooling
		AMW 12	ached map			Noncommunity PWS Environ. Bo Community PWS Irrigation Elevator Dewatering	Remedi	/Commercial al HOLE DIAM
			active map			Steel Threaded	Welded Specifications	
S						0 (81 in. to 11 tt.
1 Mile								in. to
PROPERTY OWNER'S NAM		ME						
Ford Motor Co	mpany					in. to ft,lbs./ft,	PEN HOLE	in. toft.
Property owner's mailing ad			n address indicated	above.		SCREEN		
966 Mississip	-	BLvd				Make Johnson Fro	omtt. 1 Diam, 2"	o
St. Paul, MN	55116					Slot/Gauze 10	Length 51	
						Set between 6 ft. and 11 ft.		iread
						STATIC WATER LEVEL		rade
						6 8 11 IL Below Above land surface	ce Date measured	9/16/11
WELL OWNER'S NAME/CO						PUMPING LEVEL (below land surface)		5
Ford Motor Co	-					ft. after	hrs. pumping	5 g.p.m.
Well/boring owner's mailing	address if different	t than property	owner's address in	idicated above	e.	WELLHEAD COMPLETION Pitless/adapter manufacturer	Model	
						Casing Protection	12 in. abov	ve grade
						At-grade (Environmental Well and Boring ONLY)		
						GROUTING INFORMATION Well grouted Grout materials Net cement Bentonite		x
						bent. From 2 To 4	ft	Yds. 🕺 Bags
		COLOR	HARDNESS OF	FROM	то	From To	ft	Yds. 🗍 Bags
GEOLOGICAL MATER	HIALS	COLOH	MATERIAL	THOM	10	FromTo	ft	Yds Bags
					-	NEAREST KNOWN SOURCE OF CONTAMINATION		
blacktop			1.12.14	0	1	feet	direction	type
						Well disinfected upon completion? 🗌 Yes 🙀 No		
gravel	уе	110w		1	3	PUMP		
						Not installed Date installed		
silty sand	gr	ay		3	11	Manufacturer's name		
						Model Number H	PVolts	
						Length of drop pipe		
						Type: Submersible L.S. Turbine Reciprocat		
				_		ABANDONED WELLS	- X	
						Does property have any not in use and not sealed well VARIANCE	(s)? 🗌 Yes 🙀 No	
						Was a variance granted from the MDH for this well?	Yes 🙀 No TN#	
		ant if and a				WELL CONTRACTOR CERTIFICATION This well was drilled under my supervision and in acco The information contained in this report is true to the b	ordance with Minnesota F lest of my knowledge.	lules, Chapter 4725,
REMARKS, ELEVATION, S	Use a second sh OURCE OF DATA			-, l				
						Stevens Drilling & Env.	Svc. Inc.	2255
						Licensee Business Name	Lic. or Reg. N	ю.
						1 miles	556	9/26/11
						Sertified Representative Signature	Certified Rep. No.	Date
IMPORTANT - FIL	E WITH PRO	PERTY PA	APERS 7	847	21	Randy Johnson		
WEL	L OWNER CO	UPT		047	L 7	Name of Driller		

Fort

Ł



£

1

÷.

÷

¥.

Χ.

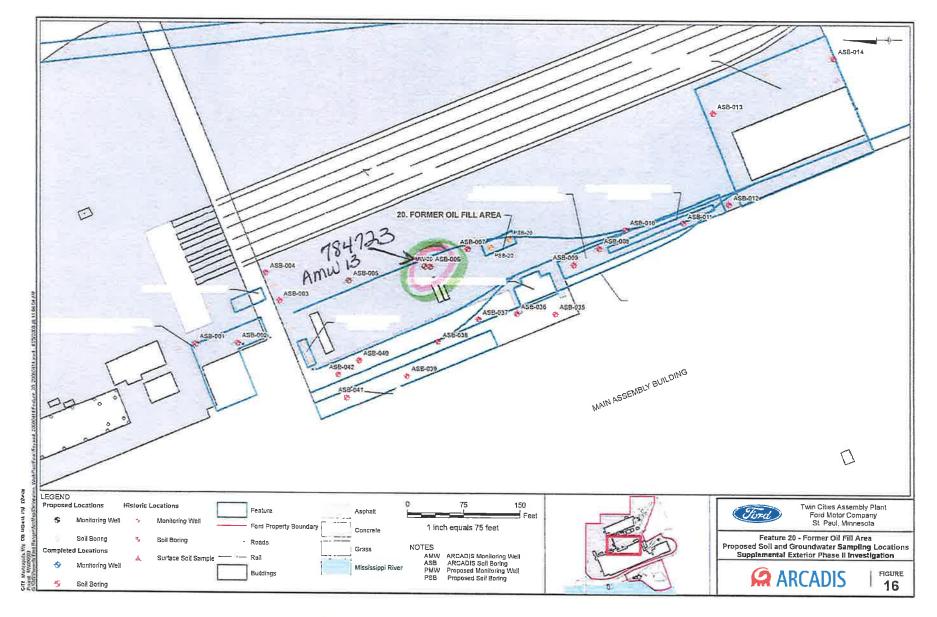
¥.

🥏 พรน

AT -GRADE

IWELL OF BURING LOCATION						DEPARTMENT OF HEALTH			INNESOTA UNIQUE WELL AND BORING NO.	
County Name WELL ANI						BORING RECORD a Statutes, Chapter 103/			784	723
Ramsey					minnesot	WELL/BORING DEPTH (completed)	IDA			
Township Name St. Paul	Township No.	Range No.		action E, NW //	T			Sept 1		1
GPS				econds		DRILLING METHOD		Sept I	+, 201	LL
	degree	es mi	nutes se	conds		Cable Tool	Driven Rotary		Dug	
House Number, Street Name 966 Mississi	ppi Rivo	er Blvd		Fire Numbe	ər	DRILLING FLUID	WEL	L HYDROFRA	CTURED?	Yes 🕱 No
Show exact location of well/b		St Paul grid with "X."	Sketch man o	of well/boring	g location.	taur ipur tida	From		ft, To_	
N			roads, bu	howing prop uildings, and	direction.	USE Domestic	X Monitorin	g	Heating	/Cooling
						Noncommunity PWS	Environ. E	Bore Hole	Industry	//Commercial
		AMW 13				Community PWS	Dewaterin	חמ		
w	ET	see att	ached map			CASING MATERIAL		Ves X	No	HOLE DIAM.
			dened map			Steel	Threaded	Welc	led	1.
	½ Mile					Plastic	<u> </u>			-
Li i i						CASING Diameter Weig	ght	Specification	s	
						2 in_ to ft	lbs./ft.			81 in to 12
PROPERTY OWNER'S NAM		AME			_	in. to ft	lbs./ft.			in, to
Ford Motor Co						in. to ft				in. to
		than well locatio	n address indicated	above.		SCREEN	0	OPEN HOLE		
Property owner's mailing add		er Blvd				MakeJohnson		rom	ft7	То
St. Paul, MN	55116					Type PVC Slot/Gauze 10	1	_ Diam2	51	
						Slot/Gauze	12 ft.	Length FITTINGS_		read
						STATIC WATER LEVEL			d from gr	
						61 11. 🕱 Below 🗌 A	bove land surf			0/16/11
WELL OWNER'S NAME/COM	MPANY NAME					PUMPING LEVEL (below land surface)				
Ford Motor Co	ompany					ft, after		hrs, pump	ing	<u>3 g.p</u>
Well/boring owner's mailing a	address if differe	nt than property	owner's address in	dicated abov	ve.	WELLHEAD COMPLETION				
						Pitless/adapter manufacturer Casing Protection		N	lodel	ve grade
						X At-grade (Environmental Well and B				io grado
							0	0		
						Well materials Neat comment Grout materials Neat coment	Bentonite	Concrete	Other	x
				-		Dent. From	<u></u> то) ft	1	🔄 🗌 Yds 🛛 📩 Bag
GEOLOGICAL MATER		COLOR	HARDNESS OF	FROM	то	From	To	ft		Yds. Bag
		COLON	MATERIAL	1 Hom		From	То	ft		Yds Bag
						NEAREST KNOWN SOURCE OF COM				
black top				0	1				ion	
5 4 3 4						Well disinfected upon completion?	Yes 🗽 No			
fill gravel	9 6	110w		1	3	PUMP				
						Not installed Date installed				
silty sand	gr	ay		3	12	Manufacturer's name				
						Model Number				
						Length of drop pipe		_ft, Capacity		9.6
						Type: Submersible L.S. Turbine	Reciproc	ating 🗌 Jet	—	
						ABANDONED WELLS				
						Does property have any not in use and	I not sealed we	ell(s)? 🗌 Ye	s 😰 No	
						VARIANCE				
						Was a variance granted from the MDH		Yes 📰	No TN#	
						WELL CONTRACTOR CERTIFICATIO	N sion and in acc	ordance with	Minnesota R	Rules, Chapter 4725.
	Use a second s	sheet, if needed.				This well was drilled under my supervise The information contained in this report	t is true to the	best of my kn	owledge.	
REMARKS, ELEVATION, SC										
						Stevens Drilling	& Env.			2255
						Licensee Business Name	~		or Reg. N	10.
						h A	11	/		100.000
						1. 11	V	55		/26/11
						Certified Representative Signature		Certified	I Rep. No.	Date
						Randy J	ohnson			
IMPORTANT - FILE	E WITH PRO		PERS 7	847	23	Name of Driller				
VVELL	- OWNER C					Name of Driller				

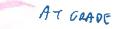
IC 140-0020



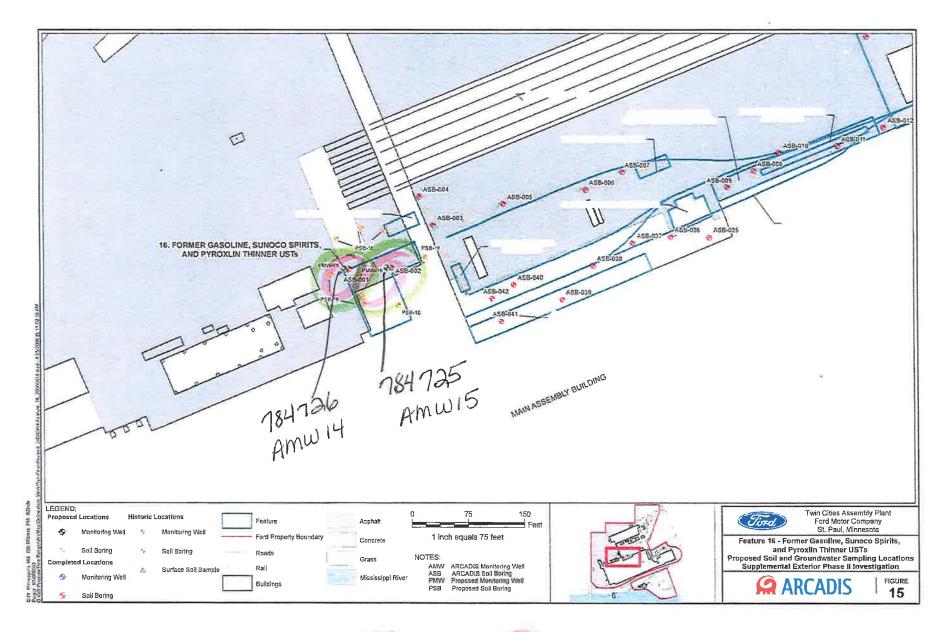
🖉 WELL 🧷

÷.

£.



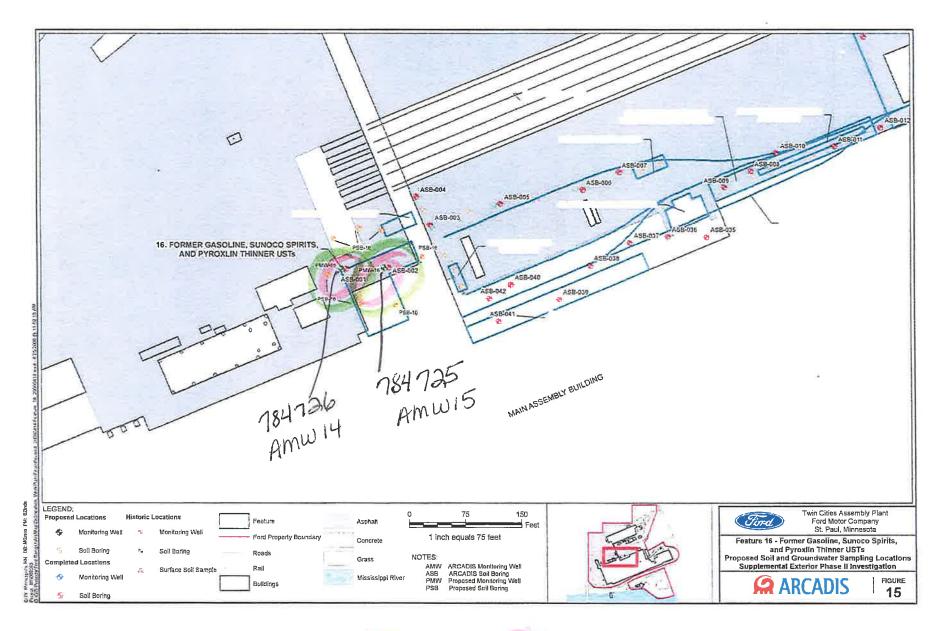
T.				રાષાદર, 		Ford		and a second second		
WELL OR BORING LOC			WEL		DEPARTMENT OF HEALTH		MINNESOTA AND BO	UNIQUE WELL		
Rumsey				Ν	linnesot	a Statutes, Chapter 103/		104	120	
Township Name	Township No.	Range No.	Section No. Fra	action		WELL/BORING DEPTH (completed)	DATE			
St. Paul	28N	23W	17 NI	E SW N	E %	12	ft,	Sept. XX'	2011	
GPS LOCATION: Latitude _	degrees	min	utes se	econds	_	DRILLING METHOD				
Longitude	degrees			econds	Cable Tool	Driven Rotary	Dug			
House Number, Street Name 966 Mississi	, City, and Zip Co	r Blvd	tion or	Fire Number	DRILLING FLUID WELL HYDROFRACTURED? Yes X No					
	12.0	22	MN 55110	6						
Show exact location of well/b	oring in section g	rid with "X."	MN 55114 Sketch map o Sł roads, bu	A well/boring howing prope iildings, and	From It. To It. USE Domestic Monitoring Heating/Cooling Noncommunity PWS Environ, Bore Hole Industry/Commercial					
X		AMW 14				Community PWS	 Irrigation Dewatering 			
w	E T ½ Mile	see att	ached ma	р		CASING MATERIAL	Drive Shoe?	Ves 🕱 No	HOLE DIAM.	
S						CASING Diameter We 2 in, to 7 ft.	5	Specifications	81 in to 1.2_ft.	
1 Mile						in, to ft			in. toft.	
PROPERTY OWNER'S NAM		ME				in. to ft			in, toft.	
Ford Motor Co		on un liter th	addroca indiant - t	shours	_	II. IO III SCREEN	01	PEN HOLE	- 1	
Property owner's mailing add			address indicated	above.		Make Johnson	Fr	om ft.	To ft.	
966 Mississi St. Paul, MN		L DIAG				Type PVC		Diam. 2"		
St. raui, ruy	72110					Slot/Gauze	10	Length 5		
						Set between 7 ft. and	<u>12</u> ft.	FITTINGS_thre		
							A 1	Measured from	and the second se	
WELL OWNER'S NAME/CO	MPANY NAME					6' 6''ft Below Above land surface Date measured 9/16/11 PUMPING LEVEL (below land surface)				
Ford Motor Co								hrs. pumping	4 g.p.m.	
Well/boring owner's mailing a		t than property	owner's address inc	dicated abov	e,	WELLHEAD COMPLETION		_ina. pumping		
						Pitless/adapter manufacturer		Model		
						Casing Protection	Boring ONLY)	12 in. abo	ive grade	
						GROUTING INFORMATION				
						Well grouted Grout materials Center Near Cement bent. From	Bentonite ³ 3_To_5	Concrete Other 1	/2 x Vds, X Bags	
GEOLOGICAL MATEF	IIALS	COLOR	HARDNESS OF MATERIAL	FROM	то			ft ft		
blacktop				0	ĩ	NEAREST KNOWN SOURCE OF CO		direction	type	
gravel	уе	11ow		1	3	Well disinfected upon completion?				
				2	10	X Not installed Date installed	_			
silty sand	gr	ay		3	12	Manufacturer's name				
						Model Number	·H	IP Volts		
						Length of drop pipe				
						Type: Submersible L.S. Turbing	e 🗌 Reciproca	ting		
						ABANDONED WELLS	d not seeled well			
						Does property have any not in use an VARIANCE				
						Was a variance granted from the MDH WELL CONTRACTOR CERTIFICATIO	ON			
	Use a second sh	eet, if needed				This well was drilled under my superv The information contained in this repo		rdance with Minnesota F est of my knowledge.	Rules, Chapter 4725.	
REMARKS, ELEVATION, SO									24 - 24 - 24	
						Stevens Drilling	& Env.S		2255	
						Licensee Business Name	-	Lic. or Reg. N	10.	
						h n	_	-	0/26/11	
						Contilled December 2		556 Certified Ben. No.	9/26/11 Date	
	4					Certified Representative Signature		Certified Rep. No.	Date	
IMPORTANT - FILI	E WITH PRO	PERTY PA	PERS 7	847	26		Johnson	1		
IC 140-0020	2 OWNER CO			0-11	20	Name of Driller			HE-01205-12 (Rev. 12/08)	



WELL AT-GRADE

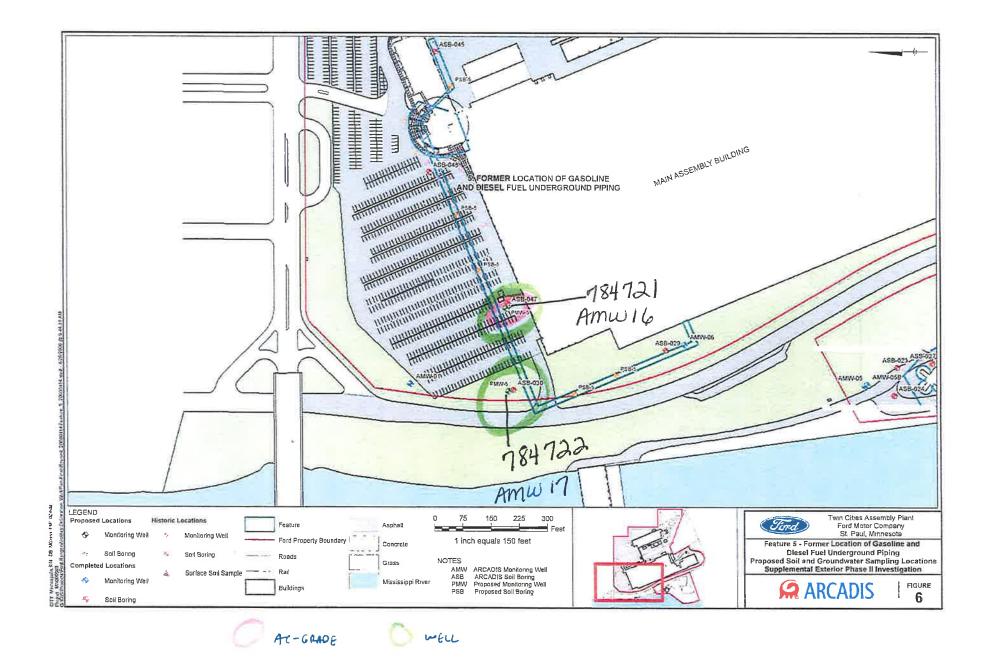
¥

						DEPARTMENT OF HEALTH	MINNESOTA AND BO	MINNESOTA UNIQUE WELL AND BORING NO.		
County Name WELL ANI					D BORING RECORD	784	725			
Kansey						a Statutes, Chapter 103/				
Township Name	Township No.	Range No.	Section No. Fr	action		WELL/BORING DEPTH (completed)	DA	TE WORK COMPLETED		
St. Paul	28N	23W	17 🛛	VE SWAL	NE ½	13	ft,	Sept. 14, 2	2011	
GPS LOCATION: Latitude	degrees	s mir	iutes se	econds		DRILLING METHOD	Dive	Dug		
Longitude	degrees			econds	_	Cable Tool	Driven Rotary	Jett		
House Number, Street Name 966 Mississip	e, City, and Zip Co	de of Well Loca	tion or	Fire Numbe	r		harm	LL HYDROFRACTURED?	Ver VI No	
	SI	t. Paul	55116			DRILLING FLUID	WE			
Show exact location of well/b	ooring in section g	rid with "X."	Sketch map of Sketch map of Sketch map	of well/boring howing prope uildings, and	location erty lines,	and with resp	Froi			
N			roads, bu	uildings, and	direction.	USE Domestic	K Monitori			
	AM	W 15				Noncommunity PWS Community PWS	Environ		y/Commercial lial	
X					Elevator	Dewater				
w	ET SO	ee atta	ched map			CASING MATERIAL	Drive Shoe?	Yes 🗶 No	HOLE DIAM.	
+	+					Steel	X Threade	d 🗌 Welded		
	½ Mile					K Plastic			-	
						CASING Diameter Wei	ight	Specifications		
1 Mile						2 in. to ft	lbs./fi	Li	81 in. to 13	
	15/001/DA11/	LAP.				in. to ft	lbs./fi		in. to	
PROPERTY OWNER'S NAM		NVIE				in. to ft,	lbs,/f	L	in. to	
Ford Motor Co						SCREEN		OPEN HOLE		
Property owner's mailing add			address indicated	above.		Make Johnson		From ft.	То	
966 Mississip		C BIAG				Туре РУС		Diam2"		
St. Paul, MN	22110					Slot/Gauze10		Length 51		
						Set between 8 ft, and	13	t. FITTINGS	hread	
						STATIC WATER LEVEL		Measured from	grade	
								face Date measured	9/16/11	
WELL OWNER'S NAME/CO						PUMPING LEVEL (below land surface)				
Ford Motor Co				Real Article		- NO/1004		hrs. pumping	<u>4 g.p.r</u>	
Well/boring owner's mailing a	address if differen	it than property	owner's address in	Idicated abov	/e.	WELLHEAD COMPLETION Pitless/adapter manufacturer		Model		
	×					Casing Protection		12 in. abo	ove grade	
	19. L					At-grade (Environmental Well and I GROUTING INFORMATION				
						GROUTING INFORMATION Well-ground Comment No Grout materials Neat cement Dent. From	.0 4	2	x	
						Grout materials Neat cement	Bentonite	ft.		
				1			To To			
GEOLOGICAL MATER	RIALS	COLOR	HARDNESS OF MATERIAL	FROM	то			ft		
				-		NEAREST KNOWN SOURCE OF CO				
blacktop				0	1					
DIACKLOP				U	-	Well disinfected upon completion?		direction		
~*****•]		llow		1	4	PUMP	Yes A No			
gravel	ye	TTOM		1	4					
offer and		0.00		4	13					
silty sand	BT	ay		-4	15	Manufacturer's name				
						Model Number				
		_		_		Length of drop pipe				
			2			Type: Submersible L.S. Turbin	e 🗌 Recipro	cating Jet		
				-	-	ABANDONED WELLS				
						Does property have any not in use an	d not sealed w	vell(s)?		
				-		VARIANCE				
						Was a variance granted from the MDH	H for this well?	Yes 🙀 No TN#_		
						WELL CONTRACTOR CERTIFICATIO	ON	cordance with Minnoseta	Bules Chapter 4795	
			S			This well was drilled under my superv The information contained in this repo	ort is true to the	e best of my knowledge.	noies, onapter 4723.	
REMARKS, ELEVATION, SO	Use a second sh			-	I					
						Stevens Drilling	& Env	. Syc. Inc.	2255	
					1	Usensee Business Name	- M ALLAN	Lic. or Reg.		
					(11 /		1 -		
						I'm Th		356	9/16/11	
						Certified Representative Signature		Certified Rep. No.	Date	
IMPORTANT - FIL		PERTY PA	PERS 7	847	25	Randy J	ohnson			
WEL	LOWNER C	OPY	1	041	E.J	Name of Driller				
IC 140-0020									HE-01205-12 (Rev. 12/0	



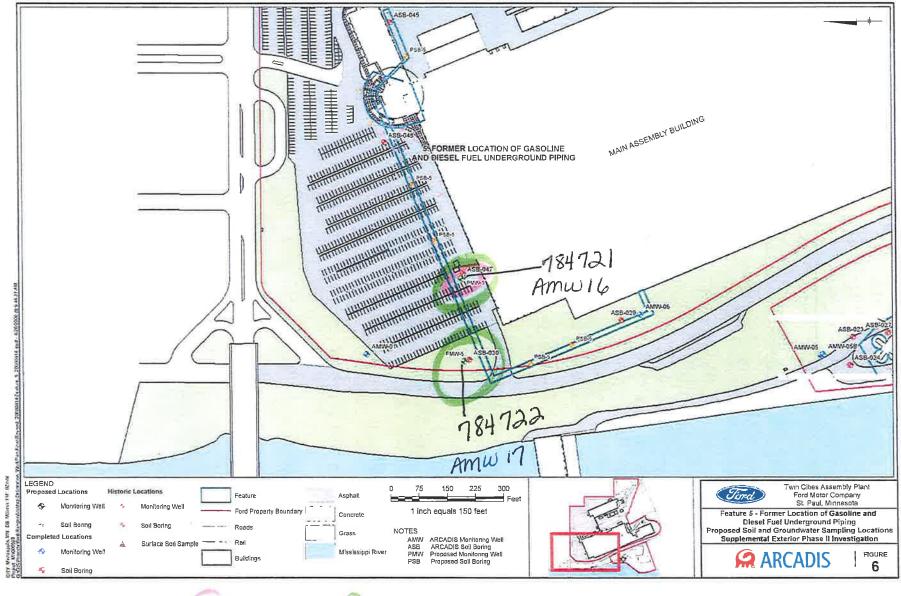
WELL AT-GRADE

			ĩ	MIN		DEPARTMENT OF HEALTH MINNESOTA UNIQUE WELL AND BORING NO.				
County Name WELL AND						D BORING RECORD 784721				
						ta Statütes, Chapter 103/				
Township Name	Township No.	Range No.	Section No. Fr	raction		WELL/BORING DEPTH (completed) DATE WORK COMPLETED				
St. Paul	28N	2 3 W	17 S		NW _{1/4}	8 ⁿ Sept 14, 2011				
GPS LOCATION: Latitude	degrees	mir	nutes se	econds		Cable Tool Driven Dug				
Longitude House Number, Street Name				econds r Fire Numbe		Cable Tool Driven Dug Auger Rotary Jetted				
966 Mississip	pi River	Blvd,				DRILLING FLUID WELL HYDROFRACTURED? Yes X No				
Show exact location of well/b		rid with "X."	55116 Sketch map of	of well/boring	g location.	Fromft. Tof				
N			Si roads, bu	howing prop uildings, and	erty lines, direction	USE Domestic Monitoring Heating/Cooling				
		AMW 16				Noncommunity PWS				
X	+	o ottoo	hed map			Community PWS Irrigation Remedial				
w	ET DC	e allal	neu map			CASING MATERIAL Drive Shoe? Yes X No HOLE DIAM.				
						Steel				
	½ Mile					CASING				
						Diameter Weight Specifications				
1 Mile						2in, to 3lbs://ft81 in. to 8				
PROPERTY OWNER'S NAM	E/COMPANY NA	ME				in, to ft,lbs//ft, in, to				
KANXHARA For	d Motor	Company	r			in. to ft,lbs./ft, in. to in. to				
Property owner's mailing add			address indicated	l above.		SCREEN				
966 Mississip	-	Blvd				Make Johnson From II. To III. To IIII. To IIIII. To IIII. To IIIII. To IIIII. To IIIIIIIII. To IIIIIIIIII				
St. Paul, MN	55116					Slot/Gauze 10 Length 5'				
						Set betweenft, andft. FITTINGSthread				
						STATIC WATER LEVEL Measured from grade				
WELL OWNER'S NAME/COI	MPANY NAME					3 It. Below Above land surface Date measured 9/16/11 PUMPING LEVEL (below land surface)				
Ford Motor Con						ft. after hrs. pumping 5g.p.i				
Well/boring owner's mailing a		than property	owner's address in	dicated abov	/e,	WELLHEAD COMPLETION				
						Pitless/adapter manufacturer Model Casing Protection 12 in. above grade				
						Casing Protection 12 in: above grade At-grade (Environmental Well and Boring ONLY)				
						GROUTING INFORMATION				
						Well projuted Grout materials bent. From 1 To 2 ft 1/2 Yds. Bags				
				1						
GEOLOGICAL MATER	IALS	COLOR	HARDNESS OF MATERIAL	FROM	то	FromToft_ Yds. Bags FromToft_ Yds. Bags				
		_				FromTottYds. Bags				
blacktop				0	1	Carlo State				
				-		feet direction typ				
gravel	у	ellow		1	3	PUMP				
						X Not installed Date installed				
silty sand	g	ray		3	8	Manufacturer's name				
						Model Number HP Volts				
						Length of drop pipeft, Capacityg.p.r				
						Type: Submersible L.S. Turbine Reciprocating Jet				
						ABANDONED WELLS				
						Does property have any not in use and not sealed well(s)? 🗌 Yes 🙀 No				
						VARIANCE				
						Was a variance granted from the MDH for this well? Yes Y No TN#				
						This well was drilled under my supervision and in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.				
	Use a second sh					I ne information contained in this report is true to the best of my knowledge.				
REMARKS, ELEVATION, SO	URCE OF DATA,	etc.			-	Stevens Drillkig & Env. Svc. Inc. 2255				
						Licensee Business Name Lice or Reg. No.				
					1	$D \rightarrow $				
						556 9/26/11				
						Certified Representative Signature Certified Rep. No. Date				
	_					Randy Johnson				
IMPORTANT - FILE	WITH PRO	PERTY PAI	PERS 7	847	21	Name of Driller				
IC 140-0020	UNITER OL			_		Name of Driller HE-01205-12 (Rov. 12/0				



WELL OR BORING LOCATI			-	MIN	INESOTA	DEPARTMENT OF HEALTH MINNESOTA UNIQUE WELL AND BORING NO.
County Name Ramsey				WEL	L ANI	D BORING RECORD a Statūtės, Chapter 103/ 784722
	vnship No.	Range No.		Fraction		WELL/BORING DEPTH (completed) DATE WORK COMPLETED
	28N	23W	17	SE NE		11 t. Sept. 14, 2011
GPS LOCATION: Latitude Longitude	degrees	mir	nutes	seconds seconds		DRILLING METHOD
House Number, Street Name, Cil 966 Mississippi	ly, and Zip Cod	e of Well Loca Blvd	ation	or Fire Numbe	er	DRILLING FLUID WELL HYDROFRACTURED? Yes X No
Show exact location of well/borin	St.	Paul 5	Sketch map	of well/boring	location.	Fromft. Toft.
N X	AM	W_17	roads, i	Showing prop buildings, and	erty lines, direction,	USE Domestic X Monitoring Heating/Cooling Noncommunity PWS Environ. Bore Hole Industry/Commercial Community PWS Irrigation Remedial Elevator Dewatering CASING MATERIAL Drive Shoe? Yes X No HOLE DIAM.
						Steel Threaded Welded CASING Weight Specifications
1 Mile	-					in, to 6ft 10s./ft 812 in. to 11ft.
PROPERTY OWNER'S NAME/C	OMPANY NAM	1E				in. to ft lbs./ft in. to ft.
Ford Motor Comp						in, to ftlbs./ft in, toft.
Property owner's mailing address		n well location	address indicate	ed above		SCREENOPEN HOLE
966 Mississippi		Blvd				MakeODDDSOD Fromft. Toft. Type PVC Diam2 ¹¹
St Paul; MN 55	5116					Slot/Gauze 10 Length 5'
						Set between 6 ft and 11 ft, FITTINGS thread
1					- N.	STATIC WATER LEVEL Measured from grade
WELL OWNER'S NAME/COMPA	NY NAME					PUMPING LEVEL (below land surface)
Ford Motor Comp	any					ft, afterhrs. pumping4g.p.m.
Well/boring owner's mailing addre	ess if different	than property	owner's address i	indicated abov	/e.	WELLHEAD COMPLETION Pitless/adapter manufacturer Model
						Casing Protection 6" x 6' x 6' x above grade
						At-grade (Environmental Well and Boring ONLY) GROUTING INFORMATION Well provide Grout materials
						bent. From <u>2</u> To <u>X 4</u> ft. <u>1</u> Vds. A Bags
GEOLOGICAL MATERIALS	s c	COLOR	HARDNESS OF	FROM	то	FromToft 🗌 Yds. 🗌 Bags
			MATERIAL	_		FromToft Yds. Bags
top got1	1.1.	a la		0	2	NEAREST KNOWN SOURCE OF CONTAMINATION
top soil	DLà	ick		0	- 4	directiontype
silty sand	gra	ay		2	11	PUMP Not installed Date installed
						Manufacturer's name
						Model Number HP Volts
						Length of drop pipeft. Capacityg.p.m.
						Type: Submersible L.S. Turbine Reciprocating Jet
						Does property have any not in use and not sealed well(s)? Yes No VARIANCE
						Was a variance granted from the MDH for this well? Yes No TN#
						WELL CONTRACTOR CERTIFICATION
Use	a second she	et, if needed				This well was drilled under my supervision and in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.
REMARKS, ELEVATION, SOUR						Stevens Drilling & Env. Svc. Inc. 2255
					C	Stevens Drilling & Env. Svc. Inc. 2255
						So the second
						Certified Representative Signature Certified Rep. No. Date
IMPORTANT - FILE W WELL O	/ITH PROF	PERTY PA	PERS 7	7847	22	Randy Johnson
TILLE O						Name of Officer

.....



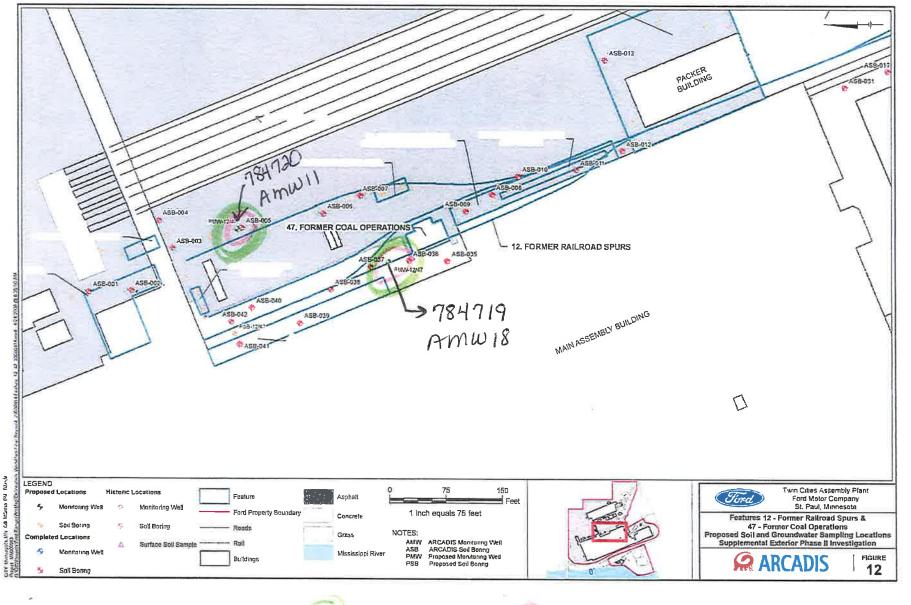
0

AC-GRADE

¥.

well

Name WELL AND BORING RECORD Minneada Biabutes, Chapter 1037 784719 Name data Statutes, Chapter 1037 Name data Statutes, Chapter 1037 St. Paul 28N 23W 17 St. St. Name Matter Monther St. Paul 28N 23W 17 St. St. Name Matter Monther Marce reference Name Control St. St. Name Difference Marce reference Name Control St. St. Name Difference Marce reference Record Difference Difference Marce Record Difference Record Difference Marce Record Difference Record Difference Marce ANW 18 See attached map Marce Difference Name Marce Name ANW 18 See attached map Name Difference Name Marce Name ANW 18 See attached map Name Difference Name Marce Name ANW 18 See attached map Name Difference Marce Name ANW 18 See attached map Name Difference Marce Name ANW 18 See attached map Name	Arcadis/Ford WELL OF BORING LOCATION MINNESOTA			DEPARTMENT OF HEALTH		MINNES	OTA UNIQUE WELL D BORING NO.			
Ramecy Image: Nameson Statutes, Display 103 I										
St. Paul 28 23 17 SE SH, NE 14 14 Sept. 15, 2011 OCHUDE associal associal associal associal associal associal associal associal associal Box	Ramsey					Minnesot	a Statutes, Chapter 103/		10	4110
Bit Status convert prove										
CHECKICS ALLOSS AND A		28N	23W	17 S	SE SW	NE ½		ft,	Sept. 1	5, 2011
Answer (See All Section 2) Answer (See All Section 2) Answer (Section 2) A	OCATION: Latitude							Driver	n 🗆	Dug
966 Missississippi River Bird, Sty Paul Data Statistics addition of wellow product of wellow product and wellow addition of wellow product of wellow product addition. Inclusion (Inclusion product addition of wellow product addition of wellow product addition of wellow product addition of wellow product addition. Wellow product addition addition. Inclusion (Inclusion product addition addition. Product addition addition. Inclusion (Inclusion addition addition. Prod Moto Company Prod Moto Company Inclusion (Inclusion addition addition. Prod Moto Company Inclusion (Inclusion addition additi							Auger \	Rotar		
Image: Second of the State Second of				St. Paul			DRILLING FLUID	V	WELL HYDROFRACTURE	D? Yes 🛃 No
ANN 18 see attached map attached atta	how exact location of well/borin	g in section grid	d with "X."	Skelch map	b Well/borin	g location.		F	Fromft.	То
with the second map see attached map	N	_		roads, b	uildings, and	direction.	USE Domestic	K Monit	oring 🗌 Hea	ating/Cooling
with the second map see attached map we with the second map with the second map we with the second map we with the second map with the second map we with the second map we with the second map with the second map we with the second map we with the second map with the second map we with the second map we with the second map with the second map we with the second map we with the second map Second map we with the second map we with the second map With the second map we with the second map we with the second map Second map we with the second map we with the second map With the second map we with the second map we with the second map Port Motor Company we with the second map we with the second map With the second map we with the second map we with the second map With the second map we with the second map we with the second map Second map we with the second map we with the second map With the second map we with the second map we with the second map Second map we with the second map we with the second map <td></td> <td>. AM</td> <td>W 18</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		. AM	W 18							
See artrached map August 1										nedial
Barrel Andrew Andrew Ander Anders Anders Anders Anders Anders Ander	w	ET SE	ee atta	iched map						HOLE DIAM.
Approximate Image: State of the state of		% Mile						and a second sec	ded 🗌 Welded	
110c 2 n to 9.1/2% bash in to 144 ADDERTY WARKED SUMPCONTRAIN MAKE in to 16 in to 16 in to 16 Pord Motor Company in to 16 in to 16 in to 16 Statistissippi River Blvd Schere in to 16 in to 16 Statistissippi River Blvd Schere In to 16 in to 16 Statistissippi River Blvd Schere In to 16 in to 16 Statistissippi River Blvd Schere In to 16 In to 16 Statistissippi River Blvd Schere In to 16 In to 16 Statistissippi River Blvd Schere In to 16 In to 16 Statistissippi River Blvd Schere In to 16 In to 16 Statistissippi River Blvd Schere In to 16 In to 16 Statistissippi River Blvd Schere In to 16 In to 16 Statistissippi River Blvd Schere In to 16 In to 16 Statistissippi River Blvd Schere In to 16 In to 16 Statistissippi River Blvd Schere In to 16 In to 16 Statistissippi River Blvd Schere In to 16 In to 17 Statistissippi River Blvd Schere In to 16 In to 16 Schere In		-					CASING			*
BOPERTY DWILETS NAMECOORDARY NAME n. to b. d. n. to Pord Motor Company n. to n. to n. to n. to 966 MLississippi River Blvd St. Paul, NN 55116 St. Paul, NN 55116 St. Paul, NN 55116 EL CONCERTS NAMECOMPANY NAME PPC Dame, 2H Ford Motor Company No to n. to Down, 2H Bitto Matter Livit, NN 55116 St. Paul, NN 55116 Mass Johnson Dame, 2H EL CONCERTS NAMECOMPANY NAME Prof. Motor Company Mass Johnson Mass Johnson Bitto Matter Livit, Importance Prof. Motor Company Mass Johnson Mass Johnson Bitto Matter Livit, Importance Prof. Motor Company Mass Johnson Mass Johnson Bitto Matter Livit, Importance Prof. Motor Company Mass Johnson Mass Johnson Bitto Matter Livit, Importance Prof. Motor Company Mass Johnson Mass Johnson Bitto Mass Johnson Prof. Motor Company Mass Johnson Mass Johnson	S	2 ±						-		01
Decidence Decid	·	-1								
SCREEN			1E							
Mate JOhlaco Firem P. To Mate Johlaco Firem Firem Strict Variation Johlaco Firem Mate Mate Strict Variation Johlaco Firem Mate Mate Mate Strict Variation Mate Johlaco Mate Mate Mate Mate Strict Variation Mate Johlaco Mate Mate Mate Mate Johlaco Johlaco Johlaco Johlaco Johlaco Mate <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>IDs</td> <td>OPEN HOLE</td> <td> III, TO</td>		-						IDs	OPEN HOLE	III, TO
St. Paul, MN 55116 The pyce Deam, 2th Wpe Pyce Deam, 2th St. Paul, MN 55116 The deam of the second state state state of				address indicated	above.			1	From	It. To
Biol/Gause 10 Light			DIVU							
STATE UVER LEVEL IN TO BOOW and surface IN TO WELLEVEL (See wind surface) STATE VARUE IN Advoce tand surface) Wellevel Control Internet Plan property corrects address intecated above. INTER LEVEL IN TO UNCERTENT IN THE PROPERTY PAPERS STATE VARUE IN THE PROP								1	ALC: 1000000000000000000000000000000000000	
LL WARDENS MARE/COMPANY NAME Ford Motor Company Bitboring owner's mailing address if different than property owner's address indicated above. WELLHEAD COMPLETION Bitboring owner's mailing address if different than property owner's address indicated above. WELLHEAD COMPLETION Bitboring owner's mailing address if different than property owner's address indicated above. WELLHEAD COMPLETION Bitboring owner's mailing address if different than property owner's address indicated above. WELLHEAD COMPLETION Bitboring owner's mailing address if different than property owner's address indicated above. WELLHEAD COMPLETION Could AL MATERIAL COUCH MARDENESS OF FROM MARKES CEEMENT O NEAREST KNOWN SOURCE OF CONTAINANTON Name address of protein the address of protein the address of protein the address of protein the address of the addre								+2	Chil	
ELL CARLEPS MARECOMPARY NAME PLMEPING LEVEL (back und surface) Ford Motor Company It attem Iver. purping 4 9.0 Interview It attem Iver. purping 4 9.0 Interview It attem Iver. purping 4 9.0 Interview It attem It att							11 IL X Below A	bove land s		
eliboring owner's mailing address if different than property events's address indicated above. WELLHEAD COMPLETION Model yput eliboring owner's mailing address if different than property events's address indicated above. WELLHEAD COMPLETION Model model Celological Mattenials COLOR MARDNESS OF FROM TO Model To Model OBJORDANIA MATERIAL COLOR MARDNESS OF FROM TO										21 201 22
CEOLOGICAL MATERIALS COLOR HARDNESS OF MATERIAL FROM TO Form To Form To Form To To <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>_</td> <td>hrs. pumping</td> <td>4g.p</td>								_	hrs. pumping	4 g.p
Geological Materials Color MARDINESS OF MATERIAL FROM TO Point	'ell/boring owner's mailing addre	ess if different t	than property	owner's address in	dicated abo	ve,			Model	
GROUTING INCREAMENTION GEOLOGICAL MATERIALS COLOR MARDNESS OF MATERIAL FROM TO From To Image: Contract Control Control Control Image: Control Control Control Image: Control Control Control Image: Control Control Control Control Control Image: Control Control Image: Control Control Control Control Image: Control Control Control Control Image: Control Control Control Control Image: Control Control Control Control Control Control Image: Control Control Control Control Control Control Control Control Image: Control							Casing Protection		12 in.	above grade
GEOLOGICAL MATERIALS COLOR MARDNESS OF MATERIAL FROM TO From To								oring ONLY	0	
GEOLOGICAL MATERIALS COLOR HARDNESS OF MATERIAL FROM TO From To I							Well grouted cement No	¥0		x
GEOLOGICAL MATERIALS COLOR HARDNESS OF MATERIAL FROM TO FROM TO FROM TO FROM To It It <th></th> <th></th> <th></th> <th></th> <th>1</th> <th></th> <th>hont</th> <th>5 To</th> <th>7 ft. 1</th> <th>Yds. 🎽 Bao</th>					1		hont	5 To	7 ft. 1	Yds. 🎽 Bao
MATERIAL From To It Yds Bag blacktop & cement 0 1 NEAREST KNOWN SOURCE OF CONTAMINATION Identified direction In gravel yellow 1 4 Well disinfected upon completion? Yes No stilty sand gray 4 14½ Model Number HP Volis words Lurge's name Model Number HP Volis Volis Volis under Under Synthesite L.S. Turbine Reciprocating Jule ABANOONED WELLS Dees property have any not in use and not sealed well(s)? Yes No NV Use a second sheet, if needed. The word was diffed from the MDH for this well? Yes No EMARKS, ELEVATION, SOURCE OF DATA, etc. Stevens Drilling & Env. Svc. Inc. 2255 Use a second sheet, if needed. Stevens Drilling & Env. Svc. Inc. 2255 IMPORTANT - FILE WITH PROPERTY PAPERS 7.8.4.719 Randy Johnson				HARDNESS OF	EROM	то				
placktop & cement 0 1			JOLON	MATERIAL	FROM		From	То	ft	Yds. Bag
Joint State	lackton & com	ont			0	1	NEAREST KNOWN SOURCE OF COM	TAMINATIO	ON	
gravel yellow 1 4 Billty sand gray 4 14½ Not installed Date installed Manufacturer's name Model Number HP Volts Length of drop pipe ft. Capacity gray Type: Submersible LS. Turbine Reciprocating June ABANDONED WELLS Des property have any not in use and not sealed well(s)? Yes No WELL CONTRACTOR CERTIFICATION This well was drilled under my supervision and in accordance with Minnesota Rules, Chapter 4725. LEMARKS, ELEVATION, SOURCE OF DATA, etc. Stevens Drilling & Env. Svc. Inc. 2255 Licensee Business Name Lic. or Reg. No. Stevens Drilling & Env. Svc. Inc. 2255 Licensee Business Name Lic. or Reg. No. Date IMPORTANT - FILE WITH PROPERTY PAPERS 7.8.4.7.1.9	JIACKCOP & Celli	EIIL			0	T				t
Bilty sand gray 4 14½ Not installed	gravel	vel	low		1	4		Yes	No	
stilty sand gray 4 142 Manufacturer's name										
Model Number HP Volts Length of drop pipe ft. Capacity gr Type: Submersible L.S. Turbine Reciprocating Jet	silty sand	gra	y		4	141	** ·			
Length of drop pipe ft. Capacity 9.5 Type: Submersible L.S. Turbine Reciprocating Jet ABANDONED WELLS Does property have any not in use and not sealed well(s)? Yes No VARIANCE Was a variance granted from the MDH for this well? Yes No Use a second sheet, if needed. WELL CONTRACTOR CERTIFICATION This well was drilled under my supervision and in accordance with Minnesota Flules, Chapter 4725. The information contained in this report is true to the best of my knowledge. EMARKS, ELEVATION, SOURCE OF DATA, etc. Stevens Drilling & Env. Svc. Inc. 2255 Licensee Business Name Lie. or Reg. No. Discuss Name Lie. or Reg. No. Date Stevens Drilling & Env. Svc. Inc. 2255 Licensee Business Name Lie. or Reg. No. Date Standy Johnson										
Type: Submersible L.S. Turbine Reciprocating Jet ABANDONED WELLS Does property have any not in use and not sealed well(s)? Yes No VARIANCE Was a variance granted from the MDH for this well? Yes No Use a second sheet, if needed. Well CONTRACTOR CERTIFICATION This well was drilled under my supervision and in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge. EMARKS, ELEVATION, SOURCE OF DATA, etc. Stevens Drilling & Env. Svc. Inc. 2255 Licensee Business Name Lic. or Reg. No. Certified Rep. No. Date MPORTANT - FILE WITH PROPERTY PAPERS 7.8.4.71.9										
ABANDONED WELLS Does property have any not in use and not sealed well(s)? Yes No VARIANCE Was a variance granted from the MDH for this well? Yes No Use a second sheet, if needed. EMARKS, ELEVATION, SOURCE OF DATA, etc. Stevens Drilling & Env. Svc. Inc. 2255 Lic or Reg. No. Certified Representative Signature 556 9/26/11 Certified Representative Signature Certified Rep. No. Date IMPORTANT - FILE WITH PROPERTY PAPERS 78/719 Randy Johnson							division-			
VARIANCE Was a variance granted from the MDH for this well? Yes No TN#			_			-				
Was a variance granted from the MDH for this well? Yes No TN# Well CONTRACTOR CERTIFICATION Well contracting under my supervision and in accordance with Minnesota Rules, Chapter 4725. Use a second sheet, if needed. Well was drilled under my supervision and in accordance with Minnesota Rules, Chapter 4725. EMARKS, ELEVATION, SOURCE OF DATA, etc. Stevens Drilling & Env. Svc. Inc. 2255 Licensee Business Name Lic. or Reg. No. Certified Representative Signature Stevens Drilling & Env. Svc. Inc. MPORTANT - FILE WITH PROPERTY PAPERS 78/1719							Does property have any not in use and	not sealed	well(s)? 🗌 Yes 🙀 N	lo
WELL CONTRACTOR CERTIFICATION Use a second sheet, if needed. EMARKS, ELEVATION, SOURCE OF DATA, etc. Stevens Drilling & Env. Svc. Inc. 2255 Licensee Business Name Lic. or Reg. No. Date IMPORTANT - FILE WITH PROPERTY PAPERS 78/1719							VARIANCE			
Use a second sheet, if needed. This well was drilled under my supervision and in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge. EMARKS, ELEVATION, SOURCE OF DATA, etc. Stevens Drilling & Env. Svc. Inc. 2255 Licensee Business Name Lic. or Reg. No. Identified Representative Signature 556 9/26/11 Certified Rep. No. Date IMPORTANT - FILE WITH PROPERTY PAPERS 78/719									1? 🗌 Yes 🙀 No TN	#
Use a second sheet, if needed. EMARKS, ELEVATION, SOURCE OF DATA, etc. EMARKS, ELEVATION, SOURCE OF DATA, etc. Stevens Drilling & Env. Svc. Inc. 2255 Licensee Business Name Lic. or Reg. No. Certified Representative Signature 556 9/26/11 Certified Rep. No. Date IMPORTANT - FILE WITH PROPERTY PAPERS 7 8 / 7 1 9									accordance with Minneso	ta Rules, Chapter 4725.
Stevens Drilling & Env. Svc. Inc. 2255 Licensee Business Name Lic. or Reg. No. Licensee Business Name 556 9/26/11 Certified Representative Signature Certified Rep. No. Date IMPORTANT - FILE WITH PROPERTY PAPERS 78/719 Randy Johnson						1	The information contained in this report	t is true to t	the best of my knowledge	
Licensee Business Name Lic. or Reg. No. Licensee Business Name 556 9/26/11 Certified Representative Signature Certified Rep. No. Date IMPORTANT - FILE WITH PROPERTY PAPERS 78/719 Randy Johnson	EMARKS, ELEVATION, SOURC	CE OF DATA, e	itc.				Champer During and	12	Case To	2255
IMPORTANT - FILE WITH PROPERTY PAPERS 78/719 Randy Johnson							Licensee Business Name	Env.	Lic. or Re	g. No.
IMPORTANT - FILE WITH PROPERTY PAPERS 78/719 Randy Johnson Date							0			
IMPORTANT - FILE WITH PROPERTY PAPERS 78/719 Randy Johnson		10					Ih m	-	556	9/26/11
	~ ×	1					Certified Representative Signature			
	- I (- 11								
	IMPORTANT - FILE W	TH PROP	ERTY PA	PERS 7	847	19		Ison		
140-0020 HE-01205-12 (Rev. 12										HE-01205-12 (Rev. 12



- w 64

AT - GRADE

÷.

ARCADIS

Appendix C

Groundwater Sampling Logs

Project Ford TCAP Site Location St Paul, M	N	Proje	ect No.	DE000440	Page	1 of 1	
Site/Well No. Amu-	11	Repli	icate No.	DUP-002	Code	No.	
Weather Sunny	201	Sam	pling Time:	Begin <u>14</u> 4	5 End	1515 ST 1	455-
Evacuation Data				ield Paramet	ers		•
Measuring Point	TOC		(Color		shightly gree	1 blach-
MP Elevation (ft)			(Odor		petrol odor	-
Land Surface Elevation (ft)			/	Appearance		hrbid	-
Sounded Well Depth (ft bm	p) 9 .59		F	oH (s.u.)	6.9	3	_
Depth to Water (ft bmp)	5.79		(Conductivity (mS/cm)	0.859	-	
Water-Level Elevation (ft)				(µmhos/cm	1		-
Water Column in Well (ft)	3.80		-	Turbidity (NTU)	Mar 233	-
Casing Diameter/Type	1.15		-	Cemperature (°C) 12.8	8	_
Gallons in Well	0.608		I	Dissolved Oxy	gen (mg/L) _	11.13	_
Gallons Pumped/Bailed Prior to Sampling	3×	5× 3.04		ORP (mV)	-7-7		2
Sample Pump Intake			:	Sampling Meth	nod <u>YSI 5</u>	56	-
Setting (ft bmp)			- F	Remarks			-
Purge Time	begin 1436	end 1442					_
Pumping Rate (gpm)							-
Evacuation Method							
Constituents Sampled		Container Desc	ription	Nur	mber	Preservative	
VOC		40 ml viel		3	×	HU	-
PAH	¥	1 L apper		2		None	
Diss. RERA Metal		500 ml		1		this.	
Geo		40 al viel		2		1+4	
DRO		1-L arber	/	2		HCI	
Sampling Personnel	ND/TN	床 てエ				a.	
Well Casing							
Gal./Ft. 1-¼" = 0.06 1-½" = 0.09	2" = 0.1 2-½" = (
bmp below measuring point °C Degrees Celsius ft feet gpm Gallons per minute mg/L Miligrams per liter	ml mS/cm msl N/A NR NM	mililiter Milisiemens per ca mean sea-level Not Applicable Not Recorded Not Measured	entimeter	NTU PVC s.u. umhos/cm VOC	Nephelometric Polyvinyl chlorid Standard units Micromhos per Volatile Organic	le centimeter	

1

water ouriping i	_09							
Project Ford TCAP		Project No.	DE000	440	Page	1	of	1
Site Location St Paul, M	N				Date	<u></u>		
Site/Well No. Amw-n		Replicate No.			Code I	No.		
Weather Story	10/502	Sampling Time:	Begin	1620	End	1628	51	1625
Evacuation Data			Field Para	meters				
Measuring Point	TOC		Color					
MP Elevation (ft)			Odor		petrol			
Land Surface Elevation (ft)			Appearanc	e .				
Sounded Well Depth (ft br	1 <u>p) (1.44</u>		pH (s.u.)	3	6.70			
Depth to Water (ft bmp)	6.45		Conductivit (mS/cn		0.9	89		
Water-Level Elevation (ft)	<u>.</u>		(µmhos	s/cm)				
Water Column in Well (ft)	4,99		Turbidity (N	NTU)	支撑	782		
Casing Diameter/Type			Temperatu	ire (°C)	14.3	0.		
Gallons in Well	0.7984		Dissolved	Oxygen (r	ng/L)	12 12	,25	
Gallons Pumped/Bailed	$\exists x S_X$		ORP (mV)		-86			
Prior to Sampling	2,3952 3.9	71	Sampling N	Method	YSI 55	6		
Sample Pump Intake Setting (ft bmp)			Remarks					
Purge Time	begin 1613 end 1	618		shien	in Sail	bucker		
Pumping Rate (gpm)								
Evacuation Method		<u>)</u>	. _					
Constituents Sampled	Container	Description		Number		Preservative	ð.,	
NOL	4/0 m	L vid		3		1401		
PAH	<u> </u>	conber		2		none		
Diss. RCRA Met	1 500	m		_1		14003		
GRO	40 .	n vid		2		1+4		
DRO	LL	arber	_	2		1ter		
Sampling Personnel								
Well Casing Gal./Ft. 1-¼" = 0.06 1-½" = 0.09	2" = 0.16 3" =	= 0.37 4" = (2" = 0.50 6" = 1						
bmp below measuring point °C Degrees Celsius ft feet gpm Gallons per minute mg/L Miligrams per liter		able led	NTU PVC s.u. umhos/ VOC	Poly Stan cm Micro	vinyl chloride dard units omhos per c			

Project Ford TCAP	Project No.	DE000440	Page <u>1</u> of <u>1</u>	
Site Location St Paul, MN			Date 10/31/11	
Site/Well No. Amw-13	Replicate No.		Code No.	
Weather <u>Surry</u> Sos	Sampling Time	Begin <u>1405</u>	End 1420 ST	1415
Evacuation Data		Field Parameters		
Measuring Point TOC		Color	bown	
MP Elevation (ft)		Odor _	~	
Land Surface Elevation (ft)		Appearance	turbid	
Sounded Well Depth (ft bmp)	11.97	pH (s.u.)	7.21	
Depth to Water (ft bmp)	6.80	Conductivity (mS/cm)	1.11 🖉 🦂	
Water-Level Elevation (ft)		(µmhos/cm)		
Water Column in Well (ft)	5.17	Turbidity (NTU)	*** 600+	
Casing Diameter/Type		Temperature (°C)	11.64	
Gallons in Well	0.8272	Dissolved Oxygen (n	ng/L) 14.30	
Gallons Pumped/Bailed		ORP (mV)	-32	
Prior to Sampling	4.136	Sampling Method	YSI 556	
Sample Pump Intake Setting (ft bmp)			May	
Purge Time begi	n 1359 end 1404			
Pumping Rate (gpm)				
Constituents Sampled	Container Description	Number	Preservative	
Pau	L owner	2	None	
Diss RCRA metal	500 mL		HNOS	
DRO	1 Loober	2	Hei	
Gho	Stand your vie	<u>иј 3</u>	Hu	
Sampling Personnel			1	
Well Casing Volu Gal./Ft. 1-¼" = 0.06 1-½" = 0.09	mes 2" = 0.16 3" = 0.37 4" = 1 2-½" = 0.26 3-½" = 0.50 6" =		and the second s	
bmpbelow measuring point°CDegrees CelsiusftfeetgpmGallons per minutemg/LMiligrams per liter	mlmililitermS/cmMilisiemens per centimetermslmean sea-levelN/ANot ApplicableNRNot RecordedNMNot Measured	PVC Polyv s.u. Stand umhos/cm Micro	elometric Turbidity Units inyl chloride lard units mhos per centimeter ile Organic Compounds	

Project Ford TCAP Site Location St Paul, MN		Project No.	DE000440	Page Date	1 1117/u	_of _1	
Site/Well No. Amw~14		Replicate No.					
Weather Sung SD		Sampling Time:	Begin (1		1525		1500
Treatiler							
Evacuation Data		F	ield Paramet	ters			
Measuring Point	C	0	olor	black			
MP Elevation (ft)		c	dor	petro 1			_
Land Surface Elevation (ft)		A	ppearance	hel.ci			
Sounded Well Depth (ft bmp)	12.00	р	H (s.u.)	7.58			
Depth to Water (ft bmp)	6.72	C	onductivity (mS/cm)	150	nsla		
Water-Level Elevation (ft)			(µmhos/cm	n)	1		
Water Column in Well (ft)	5,28	Т	urbidity (NTU) 495	800+		
Casing Diameter/Type		т	emperature (°C) IS.1	7		_
Gallons in Well	0.8448	C	issolved Oxy	gen (mg/L)	3.27		
Gallons Pumped/Bailed Prior to Sampling	3x 5x 1.534 4.22	C C	RP (mV)	-138			
		s	ampling Meth	nod KSF58	6		
Sample Pump Intake Setting (ft bmp)		F	emarks				
Purge Time beg	gin <u>1128</u> end <u>11</u>	34					
Pumping Rate (gpm)			2 				
Evacuation Method			9 				
Constituents Sampled	Container	Description	Nur	mber	Preservative		1
VOC	yo me	vi ed		3	Her		
PAH				2	Mone		
Disc RCRA Metals	500 1	IL.			HNOS		
GRO	+-6-	40 out vie	U .	2	1+4		
Deo		aber		r	iter		
Sampling Personnel	ND/TNK	5					
Well Casing Vol							
Gal./Ft. 1-½" = 0.06 1-½" = 0.09		= 0.37 4" = 0. " = 0.50 6" = 1.					
bmp below measuring point °C Degrees Celsius ft feet gpm Gallons per minute mg/L Miligrams per liter	ml mililiter mS/cm Milisiemens msl mean sea-l N/A Not Applica NR Not Record NM Not Measur	ible ed	NTU PVC s.u. umhos/cm VOC	Nephelometric T Polyvinyl chloride Standard units Micromhos per c Volatile Organic	entimeter		

Project Ford TCAP	Project No. DE	E000440	Page 1 of 1
Site Location St Paul, MN			
Site/Well No. Arm -15	Replicate No.		Code No.
Weather Sunay 50,	Sampling Time: Be	gin 1945	End 1603 ST 1600
Evacuation Data	Field F	Parameters	
Measuring Point TOC	Color		gray/black_
MP Elevation (ft)	Odor	-	petrol
Land Surface Elevation (ft)	Appea	rance	turbid
Sounded Well Depth (ft bmp) 13.05	pH (s.u	u.) —	7.05
Depth to Water (ft bmp) しっつい	Condu	ictivity iS/cm)	1.27
Water-Level Elevation (ft)	(µr	mhos/cm)	
Water Column in Well (ft)	Turbid	ity (NTU)	ANN 337
Casing Diameter/Type	Tempe	erature (°C)	11.87
Gallons in Well 1.016	Dissol	ved Oxygen (m	g/L) 13.32
Gallons Pumped/Bailed 3x 5x	ORP (mV)	-123
Prior to Sampling <u>3.048</u> 5.0	8 Sampl	ing Method	1512556
Sample Pump Intake Setting (ft bmp)	Remai		by moved to Annu-14
Purge Time begin 1448 end	H2		P 1530
Pumping Rate (gpm)		bails day	29217
Evacuation Method			<u>.</u>
Constituents Sampled Container	Description	Number	Preservative
	·	_	
	vidj	2	Hu
<u></u>			
Diss RCRA Mutals 500 .		2	HNO;
	L viels	2	
DRU IL	stuber		
Sampling Personnel ND/TNK			
	= 0.37 4" = 0.65 2" = 0.50 6" = 1.47		
bmpbelow measuring pointmlmililiter°CDegrees CelsiusmS/cmMilisiemenftfeetmslmean sea-gpmGallons per minuteN/ANot Applicamg/LMiligrams per literNRNot RecordNMNot Measure	level s.u able um ded VC	/C Polyvir J. Standa Thos/cm Micron	lometric Turbidity Units nyl chloride ard units nhos per centimeter e Organic Compounds

-

Project Ford TCAP		Project No.	DE000440	Page Date	1	_of _1	
Site Location St Paul, MI Site/Well No. Arms- II		Replicate No.		Date Code	1107/11 No		
	10/501	Sampling Time:	Begin 109		1108	ST	1100
Weather Sunny		Sampling Time.					
Evacuation Data		Fi	ield Paramete	ers			
Measuring Point	тос	c	olor	bleck			
MP Elevation (ft)		0	dor	petrol			
Land Surface Elevation (ft)		A	ppearance	-turb.d			
Sounded Well Depth (ft bm	e) נטאיטן (מ	pl	H (s.u.)	7,59			
Depth to Water (ft bmp)	5.60	C	onductivity (mS/cm)	0.338			
Water-Level Elevation (ft)	N		(µmhos/cm)			5
Water Column in Well (ft)	5,06	T	urbidity (NTU)	19th	800+		:
Casing Diameter/Type		T	emperature (°	C) 15.1	2		
Gallons in Well	0.8096	D	issolved Oxyg	gen (mg/L) <u>B</u>	.91	104	
Gallons Pumped/Bailed	$7\times$ Sx		RP (mV)	-122			
Prior to Sampling	2.428.8 4.04	<u>+8</u>	ampling Meth	od YSI 5	56		
Sample Pump Intake Setting (ft bmp)		R	emarks				
Purge Time	begin 1045 end 10	52					
Pumping Rate (gpm)			3	φ			
Evacuation Method							
Constituents Sampled	Container	Description	Nun	nber	Preservative		
10CI	40 m	viol	3		Her		
PANT	1-L 01	her	Z	·	None		
Dissolved Lead	500 ~		!		HN07		
640	Yo-ml	Nel	2	·	HU		
DRU	1-L 0	she	2	/	HU		
Sampling Personnel	MERENAK KAH						
Well Casing \ Gal./Ft. 1-1/4" = 0.06		= 0.37 4" = 0.6	35				
1-1/2" = 0.00		2'' = 0.50 $6'' = 1.4$					
bmp below measuring point °C Degrees Celsius ft feet gpm Gallons per minute mg/L Miligrams per liter	ml mililiter mS/cm Milisiemen msl mean sea- N/A Not Applic NR Not Record NM Not Measu	level able ded	NTU PVC s.u. umhos/cm VOC	Nephelometric T Polyvinyl chlorid Standard units Micromhos per o Volatile Organic	e centimeter		

-

Project Ford TCAP	Project No.	DE000440	Page 1of 1
Site Location St Paul, MN			
Site/Well No. And -17	Replicate No.		Code No.
Weather Sung SUS	Sampling Time:	Begin 1202	End 1223 ST 1220
Evacuation Data	F	ield Parameters	
Measuring Point TOC	C	olor -	brun
MP Elevation (ft)	C)dor	slightly petrol
Land Surface Elevation (ft)	A	ppearance	turbid
Sounded Well Depth (ft bmp) 1.8	ղ p	H (s.u.)	7.16
Depth to Water (ft bmp) 5.8	5 C	conductivity (mS/cm)	1.08
Water-Level Elevation (ft)		(µmhos/cm)	
Water Column in Well (ft)	т т	urbidity (NTU)	AM 43 6 458
Casing Diameter/Type	Т	emperature (°C)	11.99
Gallons in Well	464 D)issolved Oxygen (n	ng/L) 6-05
Gallons Pumped/Bailed)RP (mV)	-101
Prior to Sampling	3.23	Sampling Method	YSI 556
Sample Pump Intake Setting (ft bmp)	5	Remarks baile	d day recovers relatively gracking
Purge Time begin #25			1. Tationy Brill
Pumping Rate (gpm)			
Evacuation Method		•	
Constituents Sampled	Container Description	Number	Preservative
VOCS	40 NL VIOL	3	Hu
PAH	I-L andoer		None
Diss. Lead	500 ml	2	HN0,
(gRo	40 ml vial	2	Her
Pho	1-L amber	2	1401
Sampling PersonnelND/TN	* K#		
Well Casing Volumes Gal./Ft. 1-¼" = 0.06 2" = 0.1 1-½" = 0.09 2-½" =			
bmpbelow measuring pointml°CDegrees CelsiusmS/cmftfeetmslgpmGallons per minuteN/Amg/LMiligrams per literNRNM	mililiter Milisiemens per centimeter mean sea-level Not Applicable Not Recorded Not Measured	PVC Polyv s.u. Stand umhos/cm Micro	elometric Turbidity Units rinyl chloride dard units omhos per centimeter ile Organic Compounds

24

*

Project Ford TCAP		Project No.	DE000440	Page _1 of _1
Site Location St Paul, MN				Date 53111
Site/Well No. Anno-18		Replicate No.		Code No.
Weather Swony SDS		Sampling Time:	Begin 137	DEND 1340 ST 1335
Evacuation Data		F	Field Paramete	rs
Measuring Point TOC	;	(Color	brown
MP Elevation (ft)			Odor	Slight
Land Surface Elevation (ft)		<u> </u>	Appearance	turbid
Sounded Well Depth (ft bmp)	14.48	F	oH (s.u.)	6.89
Depth to Water (ft bmp)	10.24	(Conductivity (mS/cm)	0.597
Water-Level Elevation (ft)			(µmhos/cm)	
Water Column in Well (ft)	4.24	-	Furbidity (NTU)	MM 800 +
Casing Diameter/Type			remperature (°C	c) i2.13
Gallons in Well	0.6784	[Dissolved Oxyg	en (mg/L) 14.90
Gallons Pumped/Bailed Prior to Sampling	3x 5x 2.035 3.312		ORP (mV)	
-			Sampling Metho	dYSI 556
Sample Pump Intake Setting (ft bmp)			Remarks	12 1
Purge Time begi	n 1320 end 13	25		3
Pumping Rate (gpm)				
Evacuation Method				
Constituents Sampled	Container	Description	Num	ber Preservative
VOC	40 m	ที่ป	3	<u>Ha</u>
PA4		anter	2	None
Diss. RCRA metali	Sto M	6		Hroz
GRO	40 mi	Jim	.2	Aci
DRU	1-L a	when	<u> </u>	Her
Sampling Personnel	NEALLINES KIF			1
Well Casing Volu			05	
Gal./Ft. $1 - \frac{1}{4"} = 0.06$ $1 - \frac{1}{2"} = 0.09$		= 0.37 4" = 0 " = 0.50 6" = 1		
bmpbelow measuring point°CDegrees CelsiusftfeetgpmGallons per minutemg/LMiligrams per liter	ml mililiter mS/cm Milisiemens msl mean sea-l N/A Not Applica NR Not Record NM Not Measu	ible led	PVC s.u. umhos/cm	Nephelometric Turbidity Units Polyvinyl chloride Standard units Micromhos per centimeter Volatile Organic Compounds