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September 18, 2013

Mark Koplitz
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Edward Olson
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

RE: Seward Commons Phase 3 Redevelopment – 2200-2218 Snelling Avenue, Minneapolis, Minnesota (the Property). VIC Site ID: VP28371 and PB Site ID: PB3661/4155

Dear Mark and Ed

Enclosed please find one (1) hard copy and (1) CD of the Response Action Plan/Construction Contingency Plan (RAP/CCP) prepared for the Seward Commons Phase 3 Redevelopment Project. The RAP/CCP outlines the remediation action to be completed during the redevelopment of the site. Redevelopment proposed for the Phase 3 site includes multi-story apartments with underground parking beneath.

This RAP/CCP is being submitted in anticipation of local grant funding rounds and approval of the RAP/CCP by late October is requested.

Sincerely,

WENCK ASSOCIATES, INC.

Aaron Benker
Principal

Enclosures: (2)

Cc: Brian Miller, Redesign

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1.0 Purpose and Scope

This Voluntary Response Action Plan and Construction Contingency Plan (RAP/CCP) was prepared for Seward Commons, LLC (Seward) for the proposed Seward Commons Phase 3 Redevelopment project addressed as 2200-2218 Snelling Avenue, Minneapolis, Hennepin County, Minnesota (the Property).

The proposed response actions are described in detail in **Section 4.0** to ensure proper monitoring, handling, management and disposal of impacted soils displaced during development and provide conditions suitable for the proposed redevelopment. All response actions will be conducted in accordance with appropriate Site Safety Plans prepared by each Contractor.

This RAP/CCP is submitted to the Minnesota Pollution Control Agency (MPCA) Voluntary Investigation and Cleanup (VIC) and Petroleum Brownfield (PB) Programs for review and approval. This RAP/CCP proposes cleanup of contaminated soils at the Property. The cleanup will remove all contaminated soils to concentration below the Residential Soil Reference values (SRVs) or MPCA Tier I Soil Leachate Values (SLVs).

The Phase III Development envisions construction of a multi-unit residential apartment complex on the Property with underground parking. A conceptual set of building plans for the proposed development are provided in **Appendix A**. The proposed building has a footprint of approximately 26,225 square feet on the 46,621 square foot Property. The remaining area will be used for sidewalks, patios, green space and landscaping.

2.0 Site Description

2.1 SITE LOCATION

The Property is commonly referred to as the "Phase 3 Redevelopment Project" which is part of the larger Seward Commons Redevelopment Project, formerly known as Bystrom Brothers, referred throughout this report as the "Seward Commons Site" or the "Bystrom Site". The Property consists of approximately 46,621 square feet (1.01 acre) of land currently owned by Seward. The Property is located in the NW ¼ of the NW ¼ of Section 36, Township 29 North, Range 24 West.

Figure 1 illustrates the location of the Property. Figure 2 is a current aerial photograph showing the layout of the Property, and Figure 3 is a plan showing existing layout with all historical soil, groundwater and vapor sampling completed at the Property.

2.2 CURRENT SITE USE

Four single story industrial buildings that previously housed a machining company are currently in use by interim tenants who will be relocated to accommodate the redevelopment. Current tenants at the Property include:

- 2200 – Just Right Machining
- 2206 – Fun City Dogs
- 2214 – Capitol Distribution
- 2216 – Benadir Imports
- 2216 – Sojourner Farms

The Property is bounded to the south by the Seward Commons Phase 2 Redevelopment Project known as the Snelling Avenue Apartments project, to the west by Hiawatha Light Rail Line, to east by Snelling Avenue and to the north by a building identified as the 300 Mill Shop on **Figure 3**, which is a warehouse owned by Seward and leased as dry good warehouse, and to the north by 22nd Street.

2.3 SITE PHYSICAL SETTING

2.3.1 Topography

The elevation of the Property is approximately 840 feet National Geodetic Vertical Datum (NGVD). The topography of the Property is relatively flat. Surface water runoff is anticipated to flow into city storm water drains located in adjacent streets.

2.3.2 Geology

The Hennepin County Geologic Atlas, which summarizes available information on the geology and hydrogeology of the area of interest, as well as recently completed site investigation data was used to

assess geology at the Property. According to the Atlas, surficial deposits in the vicinity of the Property consist primarily of Middle Terrace deposits comprised of sand, gravelly sand, and loamy sand; overlain by thin deposits of silt, loam, or organic sediment. Artificial fill soils are also common in areas of heavy development. Fill soils have been identified at the Property to depths between 2 to 10 feet below grade.

Bedrock in the vicinity of the Property is the Platteville and Glenwood Formation. Bedrock is estimated to be less than 35-40 feet below ground surface; however, drilling at the Property encountered bedrock at 28 to 30 feet bgs.

2.3.3 Hydrogeology

According to the Atlas, the depth to regional groundwater in the area of the Property is approximately 25 feet and flows to the east. Groundwater monitoring at the Property has identified local groundwater flow direction to be in a westerly direction and groundwater has been identified at 25 feet below grade.

3.0 Previous Investigations

This RAP/CCP was prepared using the following environmental reports (collectively referred to as the "Environmental Reports") prepared for the Property. All of the Environmental Reports were previously submitted for review to the Minnesota Pollution Control Agency (MPCA) Voluntary Investigation and Cleanup (VIC) program and Petroleum Brownfields (PB) Program.

3.1 PHASE II INVESTIGATION, BYSTROM BROTHERS, 2200 SNELLING AVENUE, MINNEAPOLIS, MN, PREPARED BY VIEAU ASSOCIATES, INC. FOR BYSTROM BROTHERS INC. AND DATED MARCH 22, 2006 (VIEAU PHASE TWO ESA)

The Vieau Phase Two ESA consisted of the text and figures of that report. The appendices, including the soil probe logs, were not included.

On March 6 and 7, 2006 soil probes were drilled at 13 locations (P-1 through P-13) on the Bystrom Site. Boring P-8, P-9, P-10 and P-13 were completed on the Property, the remaining borings were completed elsewhere on the Bystrom Site. The soil probe locations designated P-1 through P-13 are shown on **Figure 3**. The Vieau Phase Two ESA noted that shallow petroleum constituents were present at the Property and a low levels of trichloroethene (TCE) was detected in shallow soil borings conducted elsewhere at the Bystrom Site, but not on the Property. Various metals were noted as detected in the some of the soil samples at levels that appeared to be above naturally occurring levels.

Groundwater samples were collected from P-8, P-9, P-10 and P-13 completed on the Property. Petroleum (primarily benzene and toluene) and non-petroleum (primarily TCE and related compounds) were reported, in the groundwater sample collected on the Property and in samples collected across the Bystrom Site.

A cover letter attached to the Vieau Phase Two ESA noted that Vieau reported findings of the Vieau Phase Two ESA as evidence of a release to soil and groundwater at the Bystrom Site to the MPCA. The cover letter stated that additional investigation will likely be required.

3.2 PHASE ONE ENVIRONMENTAL SITE ASSESSMENT FOR BYSTROM BROTHERS, 2200 SNELLING AVENUE, MINNEAPOLIS, MINNESOTA 55404, DATED DECEMBER 11, 2006 (2006 ESA)

The 2006 ESA identified the following recognized environmental conditions for the Bystrom Site that are directly related to the Property:

- The leaking aboveground storage tank (LAST) database indicated that a release from ASTs was reported for the Bystrom Site on March 20, 2006. Review of MPCA files indicated that the LAST release pertained to the overall soil and groundwater contamination identified during the Vieau Phase Two ESA. The LAST incident was discovered during completion of the Vieau Phase Two ESA at the Bystrom Site which identified petroleum and solvent impacts in soil and groundwater.

- Significant oil staining and pooling exists on the concrete floors in the 100 Main Shop and the 600 CNC Shop which is caused by oil spillage and leaking near metal turning machines and near oil storage tanks. Generally the concrete floors are coated with oils in each of the above listed buildings.

- In general, chemicals currently used at the Property include cutting oils, rust proofing oils, lube oils, coolants and Stoddard solvents. Within buildings utilized for manufacturing purposes significant oil and other chemical spillage was observed covering the concrete floors in the 100 Main Shop and the 600 CNC Shop. Bystrom had no knowledge of past chemical usage such as tetrachloroethylene as a degreaser. While the Property did not currently use TCE, the presence of TCE had been detected at the Property in both soil and groundwater.

- Review of Sanborn maps indicate that portions of the Property and the Bystrom Site adjacent to the south of the Property have been used as a Barrel Manufacturing Company "cooperage", a feed mill elevator, a printing facility, a machine shop, and possibly for tar storage, all of which may have included the storage and use of environmental contaminants, such as wood treatment chemicals, solvents and petroleum products. Up to approximately five storage tanks may have existed on the Bystrom Site based on the Sanborn map review.

- The site located adjacent to the 700 E-Tech Building (2304 Snelling) across Snelling Avenue to the east and addressed as 2309 Snelling Avenue, Minneapolis, Minnesota is listed on the Minnesota List of Sites (MN LS) and Voluntary Investigation and Cleanup (VIC) Database. Review of the EDR provided data indicates that the site was enrolled in the MN VIC program on November 16, 2004. It appears that investigation consisted of a Phase One ESA that identified the site as historically being used by the Dalton Gear Company in 1951, Numeric Machining from 1967 to 1990 and Garlock Roofing from 1986 to 1990. No data regarding the nature of environmental issues was provided. 2309 Snelling Avenue represents a recognized environmental condition for the Bystrom Site based on the adjacent location.

The 2006 ESA identified the following historical environmental conditions related to the Property:

- A MN SPILL incident was reported at the Property by an anonymous source on March 23, 1989. The source of the release was reported to be disposal/abandonment and/or dumping. The product type spilled was not provided in the EDR Report nor was there any description of remedial actions taken. The MN SPILL's incident for the Property was issued closure by the MPCA on January 1, 1996.

The recognized environmental conditions and historical environmental conditions were investigated in the subsequent environmental investigation documents listed below:

3.3 LIMITED PHASE TWO ENVIRONMENTAL SITE ASSESSMENT, BYSTROM BROTHERS, 2200 SNELLING AVENUE, MINNEAPOLIS, MINNESOTA 55404, DATED DECEMBER 11, 2006 (2006 PHASE TWO)

Specific soil sampling at the Property during the 2006 Phase Two ESA included soil borings B-12 through B-19 and B-35 through B-37 which are shown on **Figure 3**. Shallow soil sampling included analysis of SVOCs, VOCs, DRO, and RCRA metals.

Soil analytical results identified the presence of VOCs and DRO in top 0-6 feet of soil in borings B-13, B-17, B-18, B-35 and B-37. TCE was detected above the Tier I SLV at boring B-35 (0-4'). Mercury and arsenic were detected above the Tier I SRV in B-17 and B-37. Low-level SVOCs were detected in B-35 and B-37. **Table 1** attached provides the analytical results for soil samples collected 12 through B-19 and B-35 through B-37.

Specific groundwater sampling at the Property during the 2006 Phase Two ESA included borings B-13, B-16, B-19, and B-37 which are shown on **Figure 3**. Sampling included groundwater analysis of SVOCs, VOCs, GRO, DRO, and RCRA metals. While few VOCs were detected in ground water samples analyzed at the Property, the concentrations of TCE exceed the Minnesota Department of Health (MDH) Health Risk Limit (HRL) of 5 parts per billion (ppb) in B-16, B-19 and B-37. Groundwater sampling during the 2006 Phase 2 is summarized on **Table 2**. Metals such as barium are at concentrations below the MDH's HRLs and are not anticipated to be of concern. While the impacted ground water is not considered a resource aquifer which would be utilized as a drinking water source and therefore would not require active remediation, the impacted groundwater at the Property would not receive a No Further Action Determination until remediation of the soils on the Property is completed during redevelopment of the Property.

3.4 SUB-SURFACE SOIL GAS ASSESSMENT, BYSTROM BROTHERS, 2200 SNELLING AVENUE, MINNEAPOLIS, MINNESOTA 55404, DATED DECEMBER 11, 2006 (SOIL GAS ASSESSMENT)

To assess sub-surface soil gas in response to soil and groundwater impacts identified in the 2006 Phase Two, ten soil gas probes were completed inside and outside the on-site buildings to obtain subsurface soil gas samples for analysis by an independent laboratory for VOCs EPA Method TO-15. Soil gas samples SG-4 and SG-5 were completed on the Property on the interior of the building.

Soil gas contaminants were detected in each of the ten soil gas probes completed at the Bystrom Site including SG-4 and SG-5. Benzene, chloroform, cis-1,2-DCE, trans-1,2-DCE, ethylbenzene, PCE, TCE, 1,2,4-TMB and 1,3,5-TMB exceed the ISVs in various probe locations as outlined on **Table 3.** TCE, a chlorinated solvent which has also been detected at the Bystrom Site in soil and groundwater, is the highest concentration soil gas contaminant detected at the Bystrom Site. The area of SG-4 and SG-5 has groundwater TCE impacts and low-level TCE soil impacts.

The soil gas contaminants detected at the Property appears to be consistent with the TCE groundwater contaminants and the contaminated upper soils at the Property.

3.5 GROUNDWATER MONITORING WELL SAMPLING, BYSTROM BROTHERS, 2200 SNELLING AVENUE, MINNEAPOLIS, MINNESOTA 55404, DATED JANUARY 3, 2007 (GROUNDWATER MONITORING REPORT)

A groundwater monitoring well network was installed at the Bystrom site to monitoring groundwater elevations, groundwater flow direction and contaminant plume stability. Monitoring well MW-2 was installed on the Property, Monitoring well MW-1 was installed south of the Property and MW-3 was installed north of 22nd Street and MW-4 was installed on the eastern portion of the Bystrom Site.

Groundwater monitoring identified groundwater elevations in the vicinity of the Property at more than 25 feet below grade and groundwater flow direction was measured to be in a northwest direction.

Trichloroethene (TCE) and cis-1,2-dichloroethene (cis-1,2-DCE) were detected in groundwater samples analyzed from the four groundwater monitoring wells and the concentrations of TCE exceed the MDH HRL. Dissolved Resource Conservation and Recovery Act (RCRA) metals concentrations are at concentrations below the MDH's HRL and are not anticipated to be of concern. DRO impacts in the groundwater were detected at or below the Health Based Value (HBV) of 200 ppb during the groundwater monitoring and based on the low-level concentrations, DRO is not expected to be a contaminant of concern for the Bystrom Site. Groundwater monitoring well analytical results is summarized on **Table 4**.

Impacted shallow ground water is not considered a resource aquifer which would be utilized as a drinking water source as municipal services are available in the area. Based on the relatively stable groundwater monitoring results and the relatively low-level concentrations of impacts at the Bystrom Site, further groundwater monitoring was not recommended. While the TCE impacts exceed the HRL, the fact that the groundwater is not utilized as a resource aquifer, the TCE impacts do not appear to require remediation or further assessment at this time.

Based upon the findings of the Groundwater Monitoring Report, the following conclusions for the Bystrom Site:

- Based on the relatively stable groundwater monitoring results and the relatively low-level concentrations of impacts at the Bystrom Site, further groundwater monitoring does not appear to be necessary. Furthermore, while the TCE impacts exceed the MCL, the fact that the impacted groundwater is not utilized as a resource aquifer, the TCE impacts do not appear to require remediation or further assessment at this time.

Request from the MPCA Voluntary Investigation and Cleanup (VIC) Program a No Action Determination for groundwater impacts at the Bystrom Site. A deed notice restricting groundwater use will be required for the Bystrom Site by the MPCA as part of the No Action determination. The MPCA determined that a No Action Determination could not be provided until the Property undergoes soil remediation as part of the redevelopment. A deed notice restricting the groundwater use was recorded for the Property and the Bystrom Site.

- Request from the MPCA Petroleum Brownfields Program (PBP) a non-tank closure determination for the Bystrom Site for identified petroleum impacts. The PBP issued closure to the Bystrom Site.

3.6 LETTER TO MR. SCOTT TANKENOFF WITH 2200 MINNEHAHA, LLC FROM MR. MARK KOPLITZ WITH THE MPCA RE: PETROLEUM RELEASE SITE FILE CLOSURE SITE ID PB 3661, DATED FEBRUARY 1, 2007 (LEAK SITE 3661 CLOSURE LETTER)

The Leak Site 3661 Closure Letter was issued to 2200 Minnehaha, LLC to indicate that the MPCA Petroleum Remediation Program has reviewed the investigation work completed at the Property have adequately addressed the petroleum contamination at the Property. The Closure of Leak Site 3661 means that the MPCA staff does not require any additional investigation and/or cleanup work at this time or in the foreseeable future.

3.7 LETTER TO MR. SCOTT TANKENOFF WITH 2200 MINNEHAHA, LLC FROM MR. MARK KOPLITZ WITH THE MPCA RE: PETROLEUM RELEASE SITE FILE CLOSURE SITE ID# LEAK00016407, DATED FEBRUARY 8, 2007 (UST LEAK 16407 CLOSURE LETTER)

The UST Leak 16407 Closure Letter was issued to 2200 Minnehaha, LLC to indicate that the MPCA Petroleum Remediation Program has reviewed the investigation work completed at the Property and determined that the investigation has adequately addressed the petroleum contamination associated with the former USTs formerly at the Bystrom Site. The Closure of Leak Site 16407 means that the MPCA staff does not require any additional investigation and/or cleanup work at this time or in the foreseeable future.

3.8 PHASE ONE ENVIRONMENTAL SITE ASSESSMENT FOR BYSTROM BROTHERS, 2200 SNELLING AVENUE, MINNEAPOLIS, MINNESOTA 55404, DATED MAY 20, 2009 (THE 2009 ESA)

The 2009 ESA identified the following recognized environmental conditions for the Property:

- Environmental investigations and sampling have identified volatile organic compounds (VOCs) including chlorinated and non-chlorinated solvents as well as petroleum based VOCs within soils in the upper 4-6 feet below ground surface (bgs) at the Property and across the Bystrom Site. Chlorinated solvent impacts in soil include trichloroethene (TCE), tetrachloroethene (PCE), cis-1,2-dichloroethene (cis-1,2-DCE) and trans 1,2-dichloroethene (trans-1,2-DCE) as well as semi-volatile organic compounds (SVOCs), heavy metals, namely barium, arsenic, lead, mercury and cadmium exceeding the Minnesota Pollution Control Agency (MPCA) Residential Soil Reference Value (SRV) soil standards. The extent of metals impacts at the site appear to be limited to the upper soils based on results of the 2006 Phase Two. The heavy metal impacts are likely the result of past industrial land usage such as a barrel manufacturing and wood treating process as well as metal machining. These chemicals are no longer used but were used in historical manufacturing operations at the Bystrom Site. The Bystrom Site has not yet been issued a No Action Determination from the MPCA Voluntary Investigation and Cleanup (VIC) Program for non-petroleum contaminants in soil and groundwater. An environmental deed restriction is in place for the Bystrom Site. Future redevelopment of the Bystrom Site will provide an opportunity to remediate a significant portion of non-petroleum contaminants. The 2009 ESA recommended that as future redevelopment progresses, each phase of the redevelopment be presented to the MPCA VIC Program for review and ultimate approval of a Development Response Action Plan (DRAP). Upon completion of the redevelopment and remediation of non-petroleum contaminants, The 2009 ESA recommended requesting No Action Determinations for soil and groundwater after the redevelopment activities are completed for each phase of development.

The 2009 ESA revealed no recognized environmental conditions on the Property except for the following:

- Liesch was contacted by Mike Riesse with Hennepin County Environmental on April 15, 2009 regarding a report of a possible drum burial location at the Property that may have occurred in 1987. The possibility of buried drums at the Property was first reported to the MPCA in 1989. This report of buried drums is listed on the MPCA Spills Database as a closed issue. The original reports by Bystrom Management put the general area of the reported drum burial just

northwest of the 300 Mill Shop building. The drums were reported to contain waste solvent and sludge. Liesch investigated this report during the Liesch Phase Two (see **Section 3.3**) by advancing several sub-surface soil and groundwater borings in the area of the reported drum burial location. This sub-surface soil and groundwater sampling found no evidence of drums or significant contamination in the reported area of drum disposal. Information provided to Liesch on April 15, 2009 by Mr. Riesse indicated that a new and anonymous source contacted the MPCA on March 26, 2009 claiming to be a former employee of Bystrom employed between 1987 and early 1990. The anonymous source claims that during his employment he was directed by Bystrom to bury 20 to 40 drums of waste solvent during the installation of a utility located north of the 300 Mill Shop space. This anonymous source has not been an employee of Bystrom since the 1990's. Liesch had follow-up conversations with Mr. Riesse and Mr. Ed Olson, the MPCA VIC Project Manager for the Property. Both Mr. Riesse and Mr. Olson verbally agreed that since there was significant investigation as part of the Liesch Phase Two of the various reported drum burial locations, the new information provided by this anonymous source does not warrant further investigation. Hennepin County will continue to investigate this issue with some former Bystrom Brothers employees who this new source has implicated in burying the suspected drums. If new information becomes available, Hennepin County and the MPCA will advise Liesch and the property owner. Since the original MN SPILL Database for the original drum burial report was issued closure in 1996 and the MPCA and Hennepin County are not requiring additional investigation, this issue is considered a historical recognized environmental condition for the Property.

The 2009 ESA revealed no historical recognized environmental conditions on the Property except for the following:

- The Bystrom Site, including the Property, is listed as Closed Leak Site #3661 and Closed UST Leak #16407. The MPCA issued closure for petroleum related soil and groundwater contaminates present in February of 2007 meaning no further assessment of the soil and/or groundwater contaminants are necessary at the time or in the foreseeable future. DRO, SVOC and petroleum related VOCs, impacts also appear to primarily exist in the top 6 feet below ground surface of soil. Significant DRO impacts, while not likely directly related to metals or VOC detections, appear to be commingled in similar areas. SVOCs impacts are believed to be related to the DRO impacts. SVOC impacts are also greatest in areas exhibiting elevated DRO impacts. While no further investigation of petroleum related soil or groundwater impacts are required for the Bystrom Site, future redevelopment of the Bystrom Site will provide an opportunity to remediate these petroleum contaminates from the Bystrom Site. The 2009 ESA recommended that as future redevelopment progresses that each phase of the redevelopment be presented to the MPCA Petroleum Brownfields Program (PBP) for review and ultimate approval of a DRAP.

3.9 PHASE II ENVIRONMENTAL SITE ASSESSMENT, SEWARD COMMONS PHASE 3 DEVELOPMENT, FORMER BYSTROM BROTHERS PARCELS, MINNEAPOLIS, MINNESOTA, PREPARED BY BRAUN INTERTEC AND DATED NOVEMBER 1, 2012 (BRAUN SOIL ASSESSMENT)

The Braun Soil Assessment provides the results of the investigation conducted on the Property as well a portion of the Seward Common Site to the east of Snelling Avenue. The Braun Soil Assessment consisted of advancing nineteen geoprobe soil borings (S-33 through S-51) on the Property to approximately 14

fbg to further assess the horizontal and vertical extent of soils that will be disturbed during the proposed redevelopment. The Braun Soil Assessment identified the following:

- Naphthalene was detected in Soil Samples S-38 (2-4') and S-S-38 (10'), but the concentrations were well below regulatory thresholds. TCE was detected in Soil Samples S-33 (2-4'), S-33 (6-8'), S-38 (2-4'), S-38 (8-10'), S-41 (2-4') and S-44 (0-2') at concentrations ranging from 0.43 mg/kg to 3.3 mg/kg, which exceeded the SLV of 0.14 mg/kg. VOCs including 1,2,4-trimethybenzene, 1,4-dichlorobenzene, naphthalene, xylenes, toluene and TCE were detected at Soil Sample S-48 (0-2'). The VOC concentrations were below regulatory thresholds, with the exception of the TCE. The TCE concentration of 0.52 mg/kg exceeded the SLV of 0.14 mg/kg.

- PAHs were detected above the laboratory MRLs in soil samples analyzed; however, none of the individual compounds were detected above their respective SRVs or SLVs, where established. The calculated BaP equivalent for carcinogenic PAHs did not exceed regulatory thresholds with the exception of Soil Samples S-33 (2-4') and S-38 (2-4'). The BaP equivalent calculated for Soil Samples S-33 (2-4') and S-38 (2-4') were 3.40 mg/kg and 17.20 mg/kg, respectively, which exceeded the Industrial SRV of 3 mg/kg. The BaP equivalent in Soil Sample S-38 (2-4') also exceeded the SLV of 10.2 mg/kg. Soil Sample S-47 (0-2'). The BaP equivalent calculated for Soil Sample S-47 (0-2') was 5.60 mg/kg, which exceeded the Industrial SRV of 3 mg/kg.

- Total RCRA metals, along with cobalt and copper, were detected above the laboratory MRLs in all sixteen soil samples analyzed. Arsenic and/or lead concentrations exceeded a regulatory threshold in three of the soil samples. Arsenic was detected in Soil Sample S-38 (2-4') and S-44 (0-2') at concentrations of 9.4 mg/kg and 12 mg/kg, which slightly exceeded the Residential SRV of 9 mg/kg. Lead was detected in Soil Samples S-33 (2-4') and S-38 (2-4') at concentrations of 870 mg/kg, 710 mg/kg, respectively, which exceeded the Industrial SRV of 700 mg/kg and SLV of 525 mg/kg. Lead was detected in Soil Sample S-44 (0-2') at a concentration of 450 mg/kg, which exceeded the Residential SRV of 300 mg/kg. Lead was analyzed using the TCLP in the three samples where elevated concentrations of lead were detected; the TCLP lead results did not exceed 5 mg/L, indicating the soil is not characteristically hazardous. A chromium concentration exceeded a regulatory threshold in one of the soil samples. Chromium was detected in native Soil Sample S-49 (6-8') at a concentration of 28 mg/kg, which slightly exceeded the SLV of 18 mg/kg. The SLV for hexavalent chromium is 18 mg/kg while the SLV for trivalent chromium is 1,000,000 mg/kg. Because it is unlikely that all, if any, of the chromium detected is hexavalent chromium, chromium is not considered a contaminant of concern. TCLP lead was not detected above the laboratory MRL in Soil Sample S-35 (2.5-5'), and was not detected above the characteristically hazardous threshold in Soil Sample S-49 (0-2).

- DRO was detected in 9 of the 16 soil samples analyzed at concentrations ranging from 11 mg/kg to 380 mg/kg. Currently, there are no established regulatory limits for DRO. However, MPCA guidelines do not allow for off-Site reuse of soil with concentrations in excess of 100 mg/kg.

No VOCs, PAHs or DRO, were detected above the laboratory MRLs in samples collected from the native soils. Fill soils were identified to depths between 2 to 10 fbg. The contaminates that were detected in soils generally were consistent with the depths of the fill soil and contaminants including VOCs, PAHs and DRO appear to be present between 0 to 6 fbg beneath the building.

The soil analytical results for the Property for the Braun Assessment Report are included as **Table 5**.

4.0 Development Response Action Plan

4.1 RESPONSE ACTIONS

This RAP has been developed to address known environmental concerns identified at the Property. The following response actions are proposed for the Property:

- The existing buildings will be demolished to allow full access to the underlying soils and the full remediation of the Property. Abatement of any asbestos building materials will be completed prior to demolition.
- All soils which exhibit contaminant concentrations exceeding the MPCA's Tier I SLV, Residential SRV and DRO/GRO exceeding 10 ppm will be managed off-site at a Subtitle D Landfill. This response action allows for proper off-site disposal of contaminated soils remediated from the Property. Soils which are determined to be below the MPCA's Tier I SLV, Residential SRV and exhibiting DRO or GRO concentrations below 10 ppm may be reused on-site or managed off-site as beneficial fill. Based on the soil assessment completed to date, it is anticipated that most soils between 0-6 feet below grade may require landfill disposal. Soils below 6 feet will primarily be reused on-site. Over excavation is expected to occur along the west and east sides of the Property by approximately 4 feet. This over excavation will encroach onto the MetroTransit Right of Way.
- Monitoring and management of all soils during the excavation for the building, underground parking to depths of approximately 12 feet below grade (fbg), the installation of building footings, foundations, general site grading and utilities. This response action allows for proper monitoring to ensure segregation of soils for off-site disposal from those suitable for beneficial reuse at the Property or off-site.
- The proposed building on the Property will have underground parking beneath the entire footprint of the building. Mechanical ventilation of the underground parking will be engineered into the design of the structure. The underground parking will provide adequate vapor mitigation for the proposed building.

The proposed response actions are described in detail below to ensure proper monitoring, handling, management and disposal of impacted soils displaced at the Property. The response actions also provide development conditions suitable for the proposed redevelopment. All response actions will be conducted in accordance with appropriate Site Safety Plans prepared by each Contractor.

4.1.1 Building Demolition

The demolition of the existing structure which is shown on **Figure 3** is necessary to allow full access to contaminated soil beneath the building. The existing building occupies the entire surface area of the Property, therefore demolition is necessary to allow for the full access to the underlying soils to complete the necessary remediation at the Property. A full asbestos survey will be completed for the building. All asbestos containing materials will be abated and properly disposed in accordance with Federal and State requirements by a licensed abatement contractor.

4.1.2 Excavation of Impacted Soils

The Phase 3 Development envisions construction of a multi-unit residential apartment complex on the Property with underground parking. A conceptual set of building plans for the proposed development are provided in **Appendix A**. The proposed building has a building footprint of approximately 26,225 square feet of the 46,621 square foot Property. The remaining area will be used for sidewalks, patios, green apace and landscaping. It is estimated that approximately 12,350 in-place cubic yards (~17,000 tons) of contaminated soil will be excavated from the Property by removing the top 6 feet of soil across the Property.

Based on soil investigations completed at the Property and the Bystrom Site, the majority of the impacted soils are in the upper 0-6 feet of soils on the Property. This estimated depth includes deeper areas to 10 feet below grade and shallower areas to 2 feet below grade. Based on analytical testing to date, the soils deeper than 6 fbg exhibit soil concentrations less than the Tier I SLV, Residential SRV and less than 10 ppm GRO/DRO and are suitable for off-site reuse. Soils that do not exceed the Tier I SLV, Residential SRV or GRO/DRO less than 10 ppm will be beneficially reused as backfill the Property or off-site as beneficial reuse fill at another commercial development.

Soils that are determined to exceed the MPCA Tier I SLV, Residential SRV, and DRO/GRO exceeding 10 ppm will be disposed of as daily cover or in-cell placement at a local Subtitle D landfill. Sampling of soils for disposal at the landfill will be completed in compliance with the selected landfill. It is anticipated that the landfill approval will be issued based on the historical soil sampling completed to date. Contaminated soil with impacts from both petroleum and non-petroleum sources can often be disposed of at a municipal solid waste (MSW) landfill as either an industrial waste or an alternative daily cover material. The decision on whether the material can be used as a daily cover is dependent upon the level of contamination present in the material subject to disposal, the associated exposure and environmental risks, and the volume of the facilities current daily cover stockpile. As with land application, landfilling takes advantage of naturally occurring micro-organisms in the MSW and soil to biodegrade the petroleum constituents. In addition, some volatilization of contaminant constituents present in the impacted soils takes place during the landfill operation and concurrently with landfill gas management.

4.2 SOIL MONITORING AND SOIL SCREENING ACTION LIMITS

This RAP proposes remediation activities to excavate and remove contaminated soils that exceed the MPCA's Tier I SLV, Residential SRVs, and DRO/GRO exceeding 10 ppm across the Property and disposal of the contaminated soil off-site at a Subtitle D landfill as daily cover or in-cell placement. Based on the results of analytical testing, soil between grade to 6 fbg will be direct hauled to a landfill for disposal.

4.2.1 Field Screening

An environmental technician (ET) will be on-site during soil excavation and grading activities to screen soils for evidence of impact, collect laboratory soil samples as necessary, and direct and document the disposition of the impacted materials.

Field screening will be conducted on grab samples obtained from the soil excavation activities or from the bucket of the backhoe being used by the excavation contractor. Soils will be screened using visual

and olfactory observations. Field screening for VOCs will also be conducted when impacts are apparent, based upon visual and olfactory observations. VOC field screening will be conducted in general accordance with MPCA Field Screening Procedures outline in MPCA Fact Sheet 4-05 "Soil Sample Collection and Analysis Procedure" using a photoionization detector (PID). The ET will screen soils using a PID equipped with a 10.6 electron volt (e.V.) lamp calibrated to an isobutylene standard. Due to common lamp failure with 11.7 e.V. PID lamps, the 10.6 e.V. lamp which is a reliable field screening tool will be used.

The following will be used to determine on or off-site reuse and final disposition of soils which are disturbed at the Property:

1. Soil to be exported from the Property for unrestricted commercial/industrial beneficial reuse would have all of the following characteristics:

    - Free of debris, asbestos containing material, visual staining and petroleum/chemical odors;
    - Field headspace readings using a PID below background concentrations (e.g., less than 5 ppm); and
    - Soil analytical concentrations below Residential SRVs and Tier I SLVs; and
    - Soil analytical concentrations less than 10 mg/kg for GRO and DRO using silica gel cleanup procedures.

    If considerable volumes of concrete and other inert material are identified and it is cost effective, this material may be mechanically screened assuming the above conditions are met.

2. Soil to be potentially re-used on the Property in an unrestricted manner would have all of the following soil characteristics:

    - Free of debris, asbestos containing material, visual staining and petroleum/chemical odors;
    - Field headspace readings using a PID below 10 ppm;
    - Soil analytical concentrations less than 10 mg/kg for GRO and DRO using silica gel cleanup procedure; and
    - Soil analytical concentrations below Residential SRVs and Tier I SLVs.

    If considerable volumes of concrete and other inert material are identified and it is cost effective, this material may be mechanically screened on-site and re-used assuming the above conditions are met.

3. It is anticipated that the upper portion (0-6') of the soils excavated across the Property to accommodate the underground parking will require landfill disposal based on the laboratory results. If the soil has one or more of the following characteristics, the material will be shipped to permitted disposal facility:

    - Contains debris or has visual staining or petroleum/chemical odors;
    - Field headspace readings using a PID above background concentrations (e.g., greater than 10 ppm);
    - Soil analytical concentrations greater than 10 mg/kg DRO/GRO; and/or,
    - Soil analytical concentrations above Residential SRVs or Tier I SLVs.

If considerable volumes of concrete and other inert material are identified and it is cost effective, the soil with debris may be mechanically screened to reduce of volume of soil to be disposed of at a MPCA approved disposal facility.

4.2.2 Final Excavation Sampling

Based on the results of the Braun Soil Assessment, sufficient vertical profiling has been completed and provides sufficient laboratory analytical data to document site conditions that will satisfy the following MPCA final excavation sampling requirements:

1) **Bottom Sampling**: The Braun Soil Assessment has document the vertical extent of soil contamination and shows soil concentrations are non-detect at the base of the proposed 12 foot excavation. Therefore, if the Braun Soil Assessment provides sufficient non-detect sampling results for the base of the excavation, further sampling at the base of the excavation is not recommended.

   If field screening and observations identified unexpected or un-anticipated contaminants near the base of the excavation, the following excavation sampling to document the extent of soil excavation and contaminant removal at the base of the excavation will be collected for laboratory analysis of the following parameters:

- Polynuclear Aromatic Hydrocarbons (PAH) EPA Method 8270;
- VOCs in accordance with EPA Method SW846 8260;
- Diesel Range Organics;
- Gasoline Range Organics; and
- Resource Conservation and Recovery Act (RCRA Metals) EPA Method 6010.

Table A

Excavation Floor Sampling

Area of Floor (sq ft)	Number of Samples
<500	2
500-<1,000	3
1,000-<1,500	4
1,500-<2,500	5
2,500-<4,000	6
4,000-<6,000	7
6,000-<8,500	8
8,500-<10,890 (0.25 acres)	9

Area of Floor (sq ft)	Number of Samples
>10,890	15-30 foot grid
130,680 +	30 foot grid plus

2) **Sidewall Sampling:** Excavation sampling to document the extent of soil excavation and contaminant removal along the sidewall of the excavation will be collected for laboratory analysis of the following parameters:

- Polynuclear Aromatic Hydrocarbons (PAH) EPA Method 8270;
- VOCs in accordance with EPA Method SW846 8260;
- Diesel Range Organics;
- Gasoline Range Organics: and
- Resource Conservation and Recovery Act (RCRA Metals) EPA Method 6010.

Table B below provides a summary of the number of samples anticipated to be collected based on the aggregate area of all sidewalls in the excavation.

Table B

Excavation Sidewall Sampling

Aggregate Area of all Sidewalls (sq ft)	Number of Samples
< 500	4
500 – 1,000	5
1,000 – 1,500	6
1,500 – 2,000	7
2,000 – 3,000	8
3,000 – 4,000	9
> 4,000	1 sample per 45 lineal feet of sidewall

When sampling the sidewalls of excavations that exceed 5 feet in depth, the sidewall sampling locations will be staggered in the vertical plane.

3) **Stockpile Sampling:** The Braun Soil Assessment has documented the soil contaminant concentrations for the proposed landfill disposal and/or on-site or off-site reuse of soils at the Property. If during the excavation activities, new areas of contamination are identified, that are suspected of being greater than the Braun Soil Assessment results provided, the following stockpile sampling to characterize stockpile soils will be collected for laboratory analysis of the following parameters:

- Polynuclear Aromatic Hydrocarbons (PAH) EPA Method 8270;
- VOCs in accordance with EPA Method SW846 8260;
- Diesel Range Organics;
- Gasoline Range Organics; and
- Resource Conservation and Recovery Act (RCRA Metals) EPA Method 6010.

Table C below provides a summary of the number of samples anticipated to be collected based on the cubic yards of soil stockpiled.

Table C

Stockpile/Soil On-Site Reuse Sampling

Cubic Yards of Soil	Number of Samples
0-500	1 per 100 cubic yards
501 – 1,000	1 per 250 cubic yards
1,000 or more	1 per 500 cubic yards

4.2.3 ASBESTOS

In the event that suspect ACM is identified in the excavated soils, work will halt in that area and a Minnesota Department of Health (MDH) certified asbestos inspector will collect a sample for analysis. If asbestos greater than 1% ACM by volume is detected in the sample, an Emissions Control Plan will be submitted and approved by the MPCA before work resumes in that area. Any potential asbestos containing material found in the sub-surface will be managed in accordance with the current VIC Guidance Document #9 "VIC Program Guidance for Investigation and Remediating Asbestos Waste Material".

4.2.4 UNDERGROUND STORAGE TANKS

All known USTs have been removed from the Property; however, should development activities identify unknown USTs, the UST(s) will be removed by a certified tank contractor and environmental closure sampling will be completed. If petroleum impacts are identified, excavation would be used to delineate the extents of impact. Petroleum contaminated soil originating from a UST release would be disposed of at a landfill.

4.2.5 WATER WELLS

If unidentified water wells are discovered, they would be sealed by licensed water well contractor in accordance with MDH guidelines.

4.2.6 CONCRETE OR BRICK

Debris such as concrete or brick removed during excavation work shall not be returned to the Property and will be disposed of in a permitted landfill. If considerable volumes of concrete and other inert material are identified and it is cost effective, the soil with debris may be mechanically screened to reduce of volume of soil to be disposed of at a MPCA approved disposal facility.

4.2.7 CLEAN FILL IMPORTING

Sampling of imported fill will not be completed if the location of the fill material is undeveloped land (i.e. no known source of contamination). The same principal (no known source of contamination) would apply to obtaining fill from a quarry or gravel pit.

If there is a reason to suspect contaminated fill (e.g. uncontrolled pile of fill from a construction site, a known release site, a current or formerly developed site), Wenck proposes to sample this material prior to importing it to the Property. The contractor will be responsible to make sure enough time is given to sample and analyze the soils prior to transporting the soils. Wenck proposes one soil sample per approximately 500-cubic yards of the proposed material to be imported be collected and analyzed to characterize the fill material. The samples will be analyzed for: VOCs, PAHs, RCRA metals, DRO (utilizing the silica gel clean up procedure) and GRO. The fill material will be considered acceptable if DRO and GRO are below 10 mg/kg; VOCs are below laboratory reporting limits and the RCRA metals are below the MPCA residential SRVs and Tier I SLVs.

Another option at a suspect contaminated fill site would be to review a Phase I ESA report and a Phase II ESA report, if available, to learn more about possible contamination. If there is sufficient information in the reviewed reports, confirmation sampling may not be necessary. Field screening soil samples for visual, olfactory and organic vapors, as measured with a PID, could be an additional step if warranted after review of available reports. Collecting soil samples for lab analysis would be the last confirmation step to see if contamination exists, if the field review and field screening of soil was not favorable.

4.2.8 UTILITY TRENCHES

Underground utility trenches through areas of petroleum impacts exhibiting organic vapors, as measured with a PID using headspace analysis techniques, in excess of 10 ppm will be lined with two sheets of 10 mil polyethylene sheeting with taped seams to prevent organic vapors from accumulating in the utility corridor.

4.2.9 Green Space

Greenspace areas (top 4 feet) soil backfill will be free of debris, asbestos containing material, visual staining and petroleum/chemical odors. Field screening will ensure headspace readings below 10 ppm; soil analytical concentrations less than 10 mg/kg for GRO and DRO using silica gel cleanup procedure; and soil analytical concentrations below Residential SRVs and Tier I SLVs.

4.3 VAPOR MITIGATION

Redevelopment plans include underground parking under the proposed building. Underground parking will incorporate air handling units capable of removing automotive exhausts, which also provides protection from soil vapor intrusion and accumulation. Plans for the air handling system will be provided to the MPCA once final building and mechanical system design is completed.

4.4 GROUNDWATER

Groundwater at the Property exists at a depth of 25 feet of more below grade. The redevelopment activities proposed for the Property are not anticipated to extend to ground water. However, the potential for stormwater or groundwater to collect in excavations and or dewatering for installation of utilities is possible. Should stormwater or groundwater be encountered, dewatering will be required. The removal of water will require proper disposal. In this event, Wenck will obtain, upon the request of the contractor, a temporary permit to discharge to a municipal sanitary sewer treatment facility from the Metropolitan Council Office of Environmental Services (MCES). The water discharge to the sanitary sewer system will be sampled and analyzed in accordance with MCES permit requirements.

5.0 Construction Contingency Plan

5.1 GENERAL

This RAP / CCP has been prepared to address the handling of suspected petroleum-contaminated soil, as well as any unanticipated wastes during encountered during the implementation of the proposed subsurface construction-related activities. A list of potential waste types is discussed in greater detail in Section 8.5 below. If encountered, these materials must be managed consistent with statutes, rules, regulations and guidance from applicable federal, state and local agencies governing the excavation, management, sampling, storage, transportation and disposal of this material.

In the event that an unanticipated waste or contaminated soil is encountered, Wenck will conduct a hazard assessment/evaluation to determine health and safety requirements (i.e., assessment of monitoring activities, personal protective equipment [PPE] requirements, etc.). If necessary, upon completion of the field assessment the Site Health and Safety Plan (SHSP) will be modified within 24-hours. Safety requirements will then be communicated to all contractors involved in handling the unanticipated waste or contaminated soils.

It should be stressed that it appears unlikely that unanticipated waste or contaminated soil, beyond that previously identified on the Site, will be encountered.

5.2 PROJECT ORGANIZATION

5.2.1 Property Owner – OP2C Waconia, LLC

Contact 1:
Brian Miller
Executive Director
Seward Commons, LLC
2619 East Franklin Avenue
Minneapolis, MN 55406
Phone: (612) 435-0275
Email: Brian@redesigninc.org

5.2.2 Owner's Environmental Consultant – Wenck Associates, Inc.

Contact 1:
Aaron Benker
Project Manager
Wenck Associates, Inc.
1800 Pioneer Creek Center
P.O. Box 249
Maple Plain, MN 55359
Office: (763) 479-5132
Cell: (612) 719-3282
Email: abenker@wenck.com

5.2.3 Construction Contractor Information

General Construction Contractor - To be Determined

5.2.4 Regulatory Agency – Minnesota Pollution Control Agency

Contact 1 (Non-Petroleum-Related Contamination):
Ed Olson, Project Manager
Voluntary Investigation and Cleanup Program
MPCA
520 Lafayette Avenue
St. Paul, MN 55155-4194
Office: (651) 757-2627
Email: edward.olson@state.mn.us

Contact 2 (Petroleum-Related Contamination):
Mark Koplitz, Project Manager
Petroleum Brownfield Program
MPCA
520 Lafayette Avenue
St. Paul, MN 55155-4194
Office: (651) 757-2503
Email: mark.koplitz@state.mn.us

5.3 SITE CONTROL

During any subsurface construction activities, Wenck will have a field technician (FT) on-Site to oversee the handling of the Site soil. If during these activities contaminated media is encountered the FT will have Site control. The FT will provide on-Site hazard evaluation of the encountered wastes or contaminated soil and coordinate communication with the parties listed above any findings, recommended actions, or change in status. While on-Site, the FT will monitor and collect samples for testing and disposition determination of any such wastes or contaminated soil, including maintaining

the appropriate documentation throughout the project (i.e., chain-of-custody documentation, lab testing results, disposal manifests, etc.) The FT shall have, at a minimum, a 40-Hour Hazardous Site Worker Operator (HAZWOPER) Certification including any and all 8-hour refreshers.

If wastes or contaminated soil is encountered during Project work, an exclusion zone will be designated on-site around the area of concern. The zone will be physically delineated by the FT with flagging, caution tape, or fencing, as appropriate.

The FT will direct the construction contractor to provide the necessary workers or subcontractors to perform any work within the exclusion zone. All personnel allowed entry into the exclusion zone shall be properly trained and certified. Prior to conducting the work the contractor will be required to provide copies of personnel 40-hour HAZWOPER certifications as well as a copy of the contractor's Health and Safety Plan prior to conducting work. Only personnel who have proof of up-to-date certification (i.e., HAZWOPER) will be allowed to enter the exclusion zone.

Public access to the Site will be restricted, and any compromised perimeter fencing that may allow unauthorized access will be promptly repaired. In the event that an exclusion zone is needed, the FT will direct further response actions in conjunction with MPCA oversight.

5.4 RECOGNITION OF POTENTIAL WASTE AND/OR CONTAMINATED SOILS

The following occurrences may be signs that hazardous materials have been encountered at the Site during the subsurface activities:

- Strong or unusual chemical odors of solvents, petroleum, etc. from the excavation;
- Encountering suspected industrial waste such as tars, sludges, semi-solids, powders, resins, or liquids in the excavation;
- Encountering suspected ACM material;
- Discolored soils in or from the excavation;
- Drums and/or containers (labeled or unlabeled), buried metal objects such as cans, jars, or tanks in the excavation;
- Persons who suddenly become ill.

If any of the above occurs indicating that a hazardous substance may have been encountered, activities will be suspended pending further evaluation. As mentioned above, the Wenck FT will assess the situation using the available field instrumentation, personal protective equipment, and his/her own knowledge and experience to determine the nature of the material and whether it should be segregated for special handling. The FT will then ensure that Site personnel follow the instructions provided.

5.5 SITE HAZARD EVALUATION ACTIVITIES

5.5.1 Chemical Vapor Hazards

Based on investigation findings, it is possible that low concentrations of chemical vapors may be generated during invasive earthwork activities at site. The concentrations are not expected to pose a health risk to on-site workers or downwind personnel. Should the FT discover evidence of a potential vapor hazard, site activities will be temporarily discontinued. The area in question will be secured and evaluated. Work will continue only after the hazard has been thoroughly evaluated and mitigation and air monitoring plans have been generated.

5.5.2 Particulate Hazards

Particulate matter may be made airborne during excavation activities. **Inhalation** is the most rapid route of exposure to the body by immediately introducing substances to the respiratory tissue and bloodstream. Health hazards to on-site workers could also exist from **ingestion** and through **dermal contact** with compounds. Ingestion of substances should be virtually eliminated by forbidding eating, drinking, smoking, and any other hand-to-mouth activities on-site. Hands and face should be washed after leaving the site and prior to any eating, drinking or smoking. Dermal contact will be minimized by hand washing, wearing proper protective clothing, and by using gloves during sampling activities.

5.6 WASTE EVALUATION

In general, excavated, graded and/or augured soils from within the Project area will be continuously inspected for the presence of:

- Demolition debris,
- General refuse,
- Free product (chemical Dense Non-Aqueous Phase Liquid [DNAPL], oil residues, sludge, etc.),
- Underground Storage Tanks (USTs),
- Barreled wastes,
- Electrical transformers,
- Creosote timbers,
- Car batteries,
- Oil filters,
- Waste tires,
- Soils containing visible ash or clinkers,
- Stained soils and/or soils exhibiting strong or unusual odors,
- Asbestos-containing materials (ACM), or
- Any other unusual fill material.

If the above items are identified during excavation, the material will be segregated based on waste type. Additional discussion on segregation and screening procedures is discussed below.

5.6.1 Demolition Debris

Demolition debris (if encountered) will be segregated from soils and stored in an area designated by the FT separately from soil that appears unimpacted. Demolition debris will be appropriately characterized and subsequently disposed at a permitted demolition solid waste disposal facility. If asbestos-containing materials (ACM) or asbestos-containing waste materials (ACWM) is observed work will be discontinued and an appropriately certified inspector will be sent to the site to sample the material. If ACM or ACWM is identified, a licensed asbestos removal contractor will be hired to remove the material from the site. All work including but not limited to; notification, air monitoring, waste handling and disposal will be conducted per 40 CFR Part 61, Subpart M.

5.6.2 Refuse

Excavated materials may include a mixture of decomposable organic materials (wood, paper, vegetation, etc.) and inorganic material such as concrete, glass, plastic, metal, etc. Excavated refuse materials mixed with soil will be segregated and placed in a designated area for testing followed by off-site disposal. Wenck in consultation with the MPCA, will determine appropriate testing requirements for disposal purposes.

5.6.3 Free Product

If free-product is encountered, work will cease until appropriate collection measures can be assembled on the site and the MPCA representative notified. Wenck, in consultation with the MPCA, will determine appropriate handling, testing and disposal requirements.

5.6.4 Underground Storage Tanks

If unknown underground storage tanks (UST) are encountered, following determination of whether any product remains, an MPCA-certified UST contractor will remove the tanks. Residual products will be removed from the tank(s) and transported off-site for proper disposal. The tank(s), if of iron construction, will be hauled to a scrap facility to be recycled. Wenck, in consultation with the MPCA, will determine appropriate handling, testing and disposal requirements.

5.6.5 Barreled Wastes

DOT approved overpack drums will be used to contain buried barreled wastes if they are discovered. Wenck, in consultation with the MPCA, will determine appropriate testing requirements for disposal purposes. After approval from the MPCA, testing of the materials will be conducted for disposal purposes. Wenck will retain appropriate documentation for future reference. The contents of the drum will be sampled and characterized for disposal in accordance with appropriate state and federal requirements.

5.6.6 Electrical Transformers

If buried electrical transformers are encountered, it should be immediately determined whether they are still connected and energized. They should be sampled for the presence of PCBs and handled according to Toxic Substance Control Act (TSCA) and applicable MPCA regulations. It should be ascertained whether they need to be drained prior to transport and handled according to Minnesota Department of Transportation (MNDOT) regulations. If leakage is observed surrounding the transformers, soil sampling should be conducted according to MPCA guidance.

5.6.7 Creosote Timbers

Materials such as treated railroad ties or wooden pavers will be removed from the subsurface and managed appropriately (i.e., recycled or disposed of off-site). Wenck in consultation with the MPCA, will determine appropriate handling, testing and disposal requirements. Wenck will retain appropriate documentation for future reference.

5.6.8 Batteries

Batteries (if encountered) will be segregated from soils and placed in a corrosion-resistant box. Any recovered batteries will be collected by an approved vendor and hauled off-site for recycling. Wenck, in consultation with the MPCA, will determine appropriate handling, testing and disposal requirements. Wenck will retain appropriate documentation for future reference.

5.6.9 Oil Filters

Oil filters will be segregated from the soil and placed in a steel 55-gallon drum. When a sufficient number of filters are accumulated, they will be picked up by an approved vendor and hauled off-site for recycling. Wenck, in consultation with the MPCA, will determine appropriate handling, testing and disposal requirements. Wenck will retain appropriate documentation for future reference.

5.6.10 Waste Tires

Waste tires will be segregated from the soil and placed in a covered roll-off container. When a sufficient number of tires are accumulated, they will be collected by an approved vendor and hauled off-site for recycling. Wenck, in consultation with the MPCA, will determine appropriate handling, testing and disposal requirements. Wenck will retain appropriate documentation for future reference.

5.6.11 Ash or Clinkers

If encountered, ash material containing clinkers will segregated from the excavated materials. Such material will be appropriately characterized to ensure that it meets appropriate landfill approval. Wenck, in consultation with the MPCA and the receiving landfill, will determine appropriate testing requirements for disposal purposes. Following appropriate sampling and analytical testing, the materials will be hauled off site for proper disposal. Wenck, in consultation with the MPCA, will determine appropriate handling, testing and disposal requirements. Wenck will retain appropriate documentation for future reference.

5.6.12 Stained Soils or Soil Exhibiting Strong or Unusual Odors

Soils revealing petroleum or unusual staining or odors will be segregated from the excavated materials. The materials will be placed in stockpiles and screened using the field screening procedures in Section 5.7 below. Wenck, in consultation with the MPCA and the receiving landfill, will determine appropriate testing requirements for disposal purposes. Following appropriate sampling and analytical testing, the materials will be hauled off site for proper disposal. Wenck will retain appropriate documentation for future reference.

5.7 FIELD SCREENING AND SAMPLING OF CONTAMINATED SOIL

The following presents a general overview of the collection of soil samples for field screening and analytical testing. Field screening and soil sampling activities associated with petroleum-related impacts will follow the procedures outlined in the MPCA Guidance Documents.

5.7.1 Headspace Screening Procedure

Contaminated soils will first be screened for the presence of petroleum-related constituents using soil headspace methodology and sheen testing. The following equipment will be used to conduct headspace organic vapor screening: photoionization detector (PID), clean, pint-sized polyethylene bag baggies, log book, or record sheet, and approved personal protective equipment.

Photoionization detectors (PIDs) will be equipped with a 10.6 eV lamp source. Headspace screening will be performed using PID instrumentation. The PID calibration will be performed on-site and at least daily to yield "total organic vapors" in volume parts per million (ppm) of an isobutylene equivalent. Wenck will follow the manufacturer's instructions for operation, maintenance, and calibration of the instrument. Wenck will keep calibration records in the field book.

Wenck will collect samples from excavation walls, soil piles, or backhoe buckets from freshly exposed surfaces. For consistency, only static headspace analysis for field screening of soil samples is to be used. Static headspace analysis must be performed using the following method:

1. Using a stainless steel spoon or gloved hand, half-fill a new polyethylene bag with sample (the volume ratio of soil to air is equal), then immediately seal it. Manually break up the soil clumps within the bag.
2. Allow headspace development for at least 15 minutes at approximate room temperature. Vigorously shake bags for 15 seconds at the beginning and end of the headspace development period. When temperatures are below the operating range of the instrument, perform headspace development and analysis in a heated vehicle or building. Keep the sample in a shaded area out of direct sunlight. Record the ambient temperature during headspace screening. Complete headspace analysis within approximately 20 minutes of sample collection.
3. After headspace development, introduce the instrument sampling probe through a small opening in the bag to a point about one-half of the headspace depth. Keep the probe free of water droplets and soil particles.
4. Record the highest meter response on a sampling form. Maximum response usually occurs within about two seconds. Erratic meter response may occur if high organic vapor concentrations or moisture is present. Note any erratic headspace data in the field book.

Impacted soil exhibiting headspace results greater than 10 ppm will be segregated separately from impacted soil exhibiting a headspace result less than 10 ppm. Soil not exhibiting any of the evidence of petroleum impacts or waste types listed in Section 5.6 will not be sampled and be re-used on-site as unrestricted fill.

5.7.2 Soil Segregation and Sampling

Soil exhibiting non-petroleum-related contamination will be segregated and stockpiled based on the waste characteristic or type. The FT will determine and secure a staging area for placement of contaminated soil. The FT will prepare the area by placing a 10-mil plastic on the ground and constructing a 1-foot high soil berm around the perimeter. The plastic will extend beyond the perimeter berm to prevent runoff from and run-on to the staging area. At the end of the day, and prior to leaving the site, the stockpile(s) will be covered with 10-mil plastic sheeting and properly secured. The cover will extend beyond the perimeter soil berm and will be maintained as necessary.

Soil will be sampled at the following rates:

Table 5-1: General Soil Sampling Rates

Stockpile Size (cubic yards)	Number of Samples
0 – 500	1 per 100 cubic yards
501 – 1,000	1 per 250 cubic yards
1,001 or more	1 per 500 cubic yards

Note: Sampling frequency will be determined in cooperation with landfill and MPCA representatives

5.8 GENERAL SOIL SAMPLING PROCEDURES

Prior to collecting soil samples, each sample container label will be completed in the field using a waterproof permanent marker. Labels will include the following information:

- Site name
- Sample identification code
- Project number
- Date/time
- Sampler's initials
- Preservation added (if any)
- Analysis to be performed

To minimize the possibility of cross-contamination a new pair of disposable (i.e., nitrile or latex) gloves will be used for each sample collected. When using a sampling tool (i.e., spade or coring device), wash the tool with a detergent solution (e.g. Liquinox® Alconox® or equivalent), rinse it, and then dry it before each use.
Samples collected for laboratory analyses will be immediately placed in their appropriate lab-provided containers (with preservatives if applicable), placed on ice and shipped to the laboratory for analysis. When sampling excavation stockpiles, sidewalls or floors, the FT will remove at least one foot of exposed

soil prior to collecting the sample to ensure the collection of a fresh sample. Samples previously used for soil screening or soil classification for analytical samples will not be used for laboratory analysis.

Quality control samples including blind field blanks, matrix spike (MS) and matrix spike duplicate (MSD) samples will be collected as part of the field sampling activities. Field duplicate samples will be collected at a ratio of 1:10. MS and MSD samples will be collected at a rate of 1:10 for the MS samples and 1:20 for the MSD samples. Laboratory-provided trip blanks will be sent with all sample coolers containing volatiles samples.

5.8.1 Stockpile Sampling Parameters

Soil stockpile sample parameters will be determined after consulting with the MPCA. In general, sample parameters will depend on field screening results and type of waste.

5.8.2 Excavation Sampling

Upon completion of any subsurface construction activities within an area exhibiting waste or contaminated soil and prior to the placement of any necessary engineered fill as part of future grading activities, confirmation samples will be collected to characterize materials left in place.

Excavation floor sampling in will be collected at the following rates:

Table 5-2: Excavation Floor Sampling Rates

Area of Floor (sq ft)	Number of Samples
<500	2
500-<1,000	3
1,000-<1,500	4
1,500-<2,500	5
2,500-<4,000	6
4,000-<6,000	7
6,000-<8,500	8
8,500-<10,890 (0.25 acres)	9
>10,890	30 foot grid
130,680 +	30 foot grid plus

Where sidewalls are present in the excavation area, sidewall samples will be collected as soon as possible so as to not delay Project activities. Samples will be collected at an interval of one per 45 lineal feet of sidewall, biased toward the depth intervals where impacts have been noted during field investigation activities. Confirmation samples will be quickly collected from the excavation sidewalls and floor and placed in plastic baggies for temporary storage. After samples are collected, the construction activities will be continued. Immediately upon collection of the confirmation samples Wenck, in consultation with the MPCA, will determine appropriate testing requirements based on the type of waste encountered. After determining sampling parameters the samples will be immediately placed into appropriate lab-provided containers, labeled and placed on ice for transport to the laboratory performing the analytical testing.

It should be noted that only the material required to be handled as part of the construction activities will be removed from the excavation. Excavation sampling will be conducted merely to document what material was left in place and not to document successful removal of all impacted material.

All floor and sidewall confirmation sample locations and will be quickly surveyed using a hand-held GPS device the location of the trench will also be quickly survey to provide general location information. Excavation depths will be estimated.

5.8.3 Typical Laboratory Methodologies

Table 5-3: Typical Laboratory Methodologies

Analyte	Method	Sample Container	Sample Volume	Field Preservation	Hold Time
Metals	Method 6010/7471	4 oz. glass	150 grams	None	180 days
TCLP Metals	Method 6010/7471	4 oz. glass	250 grams	None	180 days
PCBs	Method 8082	4 oz. glass	250 grams	None	14 days
cPAHs (Extended List)	Method 8270 by SIM	4 oz. glass	250 grams	None	14 days
DRO	8015	60 ml amber glass	25-35 grams	None (lab preserved w/methylene chloride)	14 days
GRO	8015	60 ml amber glass	25-35 grams	Methanol	14 days
Oil & Grease	Method 9071	4 oz. glass	30 grams	None	28 days
Herbicides	Method 8151	4 oz. glass	250 grams	None	14 days
Pesticides (organophosphate compounds)	Method 8141	4 oz. glass	250 grams	None	14 days
Pesticides	Method 8081	4 oz. glass	250 grams	None	14 days
Nitrate + Nitrite, Nitrogen	Method 353.2	2 oz. glass	30 grams	None	28 days
VOCs	Method 5030	2 oz. glass	30 grams	None	14 days

If through consultation with the MPCA it is determined samples not included in the above list are required for disposal or confirmation purposes laboratory, methodologies will be forwarded to the MPCA at that time.

5.9 DISPOSITION REQUIREMENTS

Waste generated during the project that has been determined to not meet the reuse scenarios discussed above will be appropriately profiled and disposed in a permitted landfill within thirty days of receiving landfill disposal approval.

5.10 GENERAL FIELD DOCUMENTATION PROCEDURES

General field documentation procedures include:

- The FT will maintain a daily field log which will contain the following information: date, time, temperature, wind direction, name of personnel on-site (contractors, regulatory officials, Owner representatives, etc.) status of project, and monitoring results from the Contractor and Wenck.
- Photo-documentation of the field work.
- The FT will maintain all disposal documentation generated during the field activities.
- Organization and proper handling of any other necessary documentation generated during the field activities.

5.11 EXCAVATION BACKFILL MATERIAL

It is the responsibility of the contractor to provide clean backfill material. Clean backfill will be used in areas where waste has been encountered and removed from the construction area.

6.0 Implementation Reporting

Upon completion of the Site grading and utility activities (i.e., all soil work) related to the construction project, an implementation report summarizing the RAP / CCP activities, and any laboratory analytical testing results necessary to document Site conditions, will be submitted to the MPCA for review.

7.0 Conclusions

Upon completion of the response actions at the Property, a RAP/CCP Implementation Report will be submitted to the MPCA VIC and Petroleum Brownfields Programs documenting that the remediation and monitoring was conducted in accordance with the MPCA approved RAP/CCP. Upon review and approval by MPCA Petroleum Brownfields and VIC staff, the parties involved will seek the following assurances:

1. A No Further Action Determination Letter for soil and ground water impacts at the site.
2. A letter indicating all petroleum and/or non-petroleum impacted soils associated with areas of identified impacts and any new areas identified during development were managed appropriately and in accordance with the approved RAP/CCP and MPCA PBP procedures.

Tables

Table 1
Soil Analytical Results - Liesch 2006
Seward Commons - Phase 3 Development
Minneapolis, Minnesota

Client Sample ID					B-12 (0-2')	B-13 (0-2')	B-14 (2-4')	B-15 (0-2')	B-15 (6-8')	B-16 (0-2')	B-17 (0-2')	B-17 (4-6')	B-18 (0-2')	B-19 (2-4')	B-35 (0-4')	B-36 (20')	B-37 (4')	B-38 (20')
Collect Date		Regulatory Limits			10/3/2006	9/29/2006	10/3/2006	9/29/2006	9/28/2006	9/29/2006	9/28/2006	9/28/2006	10/2/2006	10/2/2006	10/3/2006	10/24/2006	10/24/2006	10/24/2006
Parameter	Units	Tier 1 SLV	Tier 1 SRV	Tier 2 SRV														
Total Solids	%	--	--	--	88.1	92.5	88.5	99.2	97.3	91.2		89.3	91.6	86.4	91.2	97.3	79.7	93.6
Resource Conservation and Recovery Act (RCRA) Metals																		
Mercury	mg/kg	6	0.5	1.5	--	--	<0.022	--	--	--	--	<0.022	--	--	--	<0.020	**0.17**	<0.021
Arsenic	mg/kg	15.1	5	20	--	--	**2.6**	--	--	--	--	**5.2**	--	--	--	<1.0	**14**	<1.1
Barium	mg/kg	842	1200	18000	--	--	**76**	--	--	--	--	**81**	--	--	--	**19**	**150**	**24**
Cadmium	mg/kg	4.4	25	200	--	--	<0.28	--	--	--	--	**0.69**	--	--	--	<0.26	**2.2**	<0.27
Chromium	mg/kg	NE	NE	NE	--	--	**13**	--	--	--	--	**12**	--	--	--	**6.5**	**10**	**4.8**
Lead	mg/kg	525	300	700	--	--	**6.6**	--	--	--	--	**6.7**	--	--	--	**1.8**	**300**	**1.8**
Selenium	mg/kg	1.5	160	1300	--	--	<1.1	--	--	--	--	<1.1	--	--	--	<1.0	<1.2	<1.1
Silver	mg/kg	3.9	160	1300	--	--	<0.56	--	--	--	--	<0.56	--	--	--	<0.63	<0.51	<0.53
Volatile Organic Compounds (VOCs) - detected compounds only																		
Acetone	mg/kg	0.7	340	1000	<0.057	**0.084**	<0.056	<0.25	<0.26	**0.072**	--	**0.067**	<0.27	<0.058	**0.063**	<0.051	<0.063	<0.053
Benzene	mg/kg	0.034	6	10	<0.0011	<0.0011	<0.0011	<0.0050	<0.0051	<0.0011	--	<0.0011	<0.0054	<0.0012	**0.0011**	<0.0010	<0.0012	<0.0011
cis-1,2-Dichloroethene	mg/kg	0.14	8	22	<0.0011	**0.0029**	<0.0011	<0.0050	<0.0051	<0.0011	--	<0.0011	<0.0054	<0.0012	**0.14**	<0.0010	<0.0012	<0.0011
trans-1,2-Dichloroethene	mg/kg	0.27	11	33	<0.0011	<0.0011	<0.0011	<0.0050	<0.0051	<0.0011	--	<0.0011	<0.0054	<0.0012	**0.012**	<0.0010	<0.0012	<0.0011
Ethylbenzene	mg/kg	4.7	200	200	<0.0011	<0.0011	<0.0011	<0.0050	<0.0051	<0.0011	--	<0.0011	<0.0054	<0.0012	<0.0011	<0.0010	<0.0012	<0.0011
p-Isopropyltoluene	mg/kg	NE	NE	NE	<0.0011	<0.0011	<0.0011	<0.0050	<0.0051	<0.0011	--	<0.0011	<0.0054	<0.0012	<0.0011	<0.0010	<0.0012	<0.0011
2-Butanone (MEK)	mg/kg	6.4	5500	19000	<0.011	<0.011	<0.011	<0.050	<0.051	<0.011	--	<0.011	<0.054	<0.012	<0.011	<0.010	<0.012	<0.011
Naphthalene	mg/kg	7.5	10	28	<0.0057	<0.0054	<0.0056	<0.025	<0.026	<0.0055	--	<0.0056	<0.027	<0.0058	<0.0055	<0.0051	<0.0063	<0.0053
n-Propylbenzene	mg/kg	NE	30	93	<0.0011	<0.0011	<0.0011	<0.0050	<0.0051	<0.0011	--	<0.0011	<0.0054	<0.0012	<0.0011	<0.0010	<0.0012	<0.0011
Tetrachloroethene	mg/kg	0.068	72	131	<0.0011	<0.0011	<0.0011	<0.0050	<0.0051	<0.0011	--	<0.0011	<0.0054	<0.0012	**0.0067**	<0.0010	<0.0012	<0.0011
1,2,4-Trichlorobenzene	mg/kg	0.31	200	985	<0.0011	<0.0011	<0.0011	<0.0050	<0.0051	<0.0011	--	<0.0011	<0.0054	<0.0012	**0.54**	<0.0010	<0.0012	<0.0011
Trichloroethene	mg/kg	0.14	29	46	<0.0011	<0.0011	<0.0011	<0.0050	<0.0051	<0.0011	--	<0.0011	<0.0054	<0.0012	<0.0011	<0.0010	<0.0012	<0.0011
1,2,3-Trichloropropane	mg/kg	0.35	NE	NE	<0.0011	<0.0011	<0.0011	<0.0050	<0.0051	<0.0011	--	<0.0011	<0.0054	**0.0013**	<0.0011	<0.0010	<0.0012	<0.0011
1,2,4-Trimethylbenzene	mg/kg	NE	8	25	<0.0011	<0.0011	<0.0011	<0.0050	<0.0051	<0.0011	--	<0.0011	<0.0054	<0.0012	<0.0011	<0.0010	<0.0012	<0.0011
1,2,3-Trimethylbenzene	mg/kg	NE	NE	NE	<0.0011	<0.0011	<0.0011	<0.0050	<0.0051	<0.0011	--	<0.0011	<0.0054	<0.0012	<0.0011	<0.0010	<0.0012	<0.0011
1,3,5-Trimethylbenzene	mg/kg	NE	3	10	<0.0011	<0.0011	<0.0011	<0.0050	<0.0051	<0.0011	--	<0.0011	<0.0054	<0.0012	<0.0011	<0.0010	<0.0012	<0.0011
Xylenes, Total	mg/kg	45	45	130	<0.0034	<0.0032	<0.0034	<0.015	<0.015	<0.0033	--	<0.0034	<0.016	<0.0035	<0.0033	<0.0031	<0.0038	<0.0032
Wisconsin Diesel Range Organics (WI DRO)																		
WI DRO	mg/kg	NE	NE	NE	<9.1	**32**	<9.0	<8.1	<8.2	<8.8	--	**62**	**60**	<9.2	**180**	<8.2	**170**	<8.5
Wisconsin Gasoline Range Organics (WI GRO)																		
WI GRO	mg/kg	NE	NE	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Semi-Volatile Organic Compounds (SVOCs) - detected compounds only																		
Acenaphthene	mg/kg	50	1200	5260	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	<0.41	<0.35
Acenaphthylene	mg/kg	NE	NE	NE	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	<0.41	<0.35
Anthracene	mg/kg	942	7880	45400	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	<0.41	<0.35
Benzo(a)anthracene	mg/kg	NE	NE	NE	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	**0.73**	<0.35
Benzo(b)fluoranthene	mg/kg	NE	NE	NE	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	**0.79**	<0.35
Benzo(k)fluoranthene	mg/kg	NE	NE	NE	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	<0.41	<0.35
Benzo(g,h,i)perylene	mg/kg	NE	NE	NE	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	<0.41	<0.35
Benzo(a)pyrene	mg/kg	NE	2	3	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	**0.61**	<0.35
Bis(2-chloroethoxy)methane	mg/kg	NE	NE	NE	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	<0.41	<0.35
4-Bromophenyl-phenylether	mg/kg	NE	NE	NE	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	<0.41	<0.35
2-Chloronaphthalene	mg/kg	NE	NE	NE	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	<0.41	<0.35
Chrysene	mg/kg	NE	NE	NE	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	**0.81**	<0.35
2,6-Dinitrotoluene	mg/kg	0.001	25	175	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	**8.3**	<0.34	**1**	<0.35
Fluoranthene	mg/kg	295	1080	6800	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	<0.41	<0.35
Fluorene	mg/kg	47	850	4120	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	<0.41	<0.35
Hexachloroethane	mg/kg	0.05	NE	NE	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	<0.41	<0.35
Indeno(1,2,3-cd)pyrene	mg/kg	NE	NE	NE	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	<0.41	<0.35
Isophorone	mg/kg	0.16	NE	NE	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	<0.41	<0.35
Naphthalene	mg/kg	7.5	10	28	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	<0.41	<0.35
n-Nitrosodiphenylamine	mg/kg	0.88	1950	3720	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	**0.1**	<0.35
n-Nitrosodi-n-propylamine	mg/kg	NE	0.7	1.2	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	<0.41	<0.35
Phenanthrene	mg/kg	NE	NE	NE	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	**1**	<0.35
Benzylbutyl phthalate	mg/kg	28	580	3700	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	<0.41	<0.35
Pyrene	mg/kg	272	890	5800	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	**1.2**	<0.35
1,2,4-Trichlorobenzene	mg/kg	0.31	200	985	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	<0.41	<0.35
4-Chloro-3-methylphenol	mg/kg	NE	NE	NE	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	<0.41	<0.35
2,4-Dichlorophenol	mg/kg	0.076	48	230	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	<0.41	<0.35
2,4-Dimethylphenol	mg/kg	0.34	390	1925	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	<0.41	<0.35
2-Nitrophenol	mg/kg	NE	NE	NE	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	<0.41	<0.35
4-Nitrophenol	mg/kg	NE	NE	NE	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	<0.41	<0.35
Pentachlorophenol	mg/kg	0.034	6	120	<0.37	--	--	--	--	<0.36	--	--	--	<0.38	<7.2	<0.34	<0.41	<0.35
BAP Equivalent	mg/kg	10.2	2	3	<0.37													
Polychlorinated Biphenyls (PCBs)																		
PCB 1016	mg/kg	2.1	1.2	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PCB 1221	mg/kg				--	--	--	--	--	--	--	--	--	--	--	--	--	--
PCB 1232	mg/kg				--	--	--	--	--	--	--	--	--	--	--	--	--	--
PCB 1242	mg/kg				--	--	--	--	--	--	--	--	--	--	--	--	--	--
PCB 1248	mg/kg				--	--	--	--	--	--	--	--	--	--	--	--	--	--
PCB 1254	mg/kg				--	--	--	--	--	--	--	--	--	--	--	--	--	--
PCB 1260	mg/kg				--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pesticides	mg/kg				--	--	--	--	--	--	<MDL	--	<MDL	<MDL	--	--	--	--

NOTES:
All results provided in milligrams per kilogram (mg/Kg) which is equivalent to parts per million (ppm)
Detected compounds shown in **Boldface**
-- Indicates sample not analyzed for given parameter
NE - Not Established
Tier 1 SLV - Soil Leaching Value
Tier 1 SRV - Soil Reference Value Residential
Tier 2 SRV - Soil Reference Value Industrial
Compounds exceeding regulatory limits are color coded
<MDL - Less than laboratory Method Detection Limit

Table 2
Groundwater Analytical Results - Liesch 2006
Seward Commons - Phase 3 Development
Minneapolis, Minnesota

Client Sample ID			B-13	B-16	B-19	B-37	TRIP
Collect Date			9/29/2006	9/28/2006	10/2/2006	10/24/2006	2/15/2006
Parameter	Units	HRL					
Resource Conservation and Recovery Act (RCRA) Metals							
Mercury,Dissolved	µg/l	NE	<0.20	<0.20	<0.20	<0.2	--
Arsenic,Dissolved	µg/l	NE	<20	<20	<20	<20	--
Barium,Dissolved	µg/l	2000	**35**	**77**	**96**	**120**	--
Cadmium,Dissolved	µg/l	4	<5.0	<5.0	<5.0	<5.0	--
Chromium,Dissolved	µg/l		<10	<10	<10	<10	--
Lead,Dissolved	µg/l	NE	<5.0	<5.0	<5.0	<5.0	--
Selenium,Dissolved	µg/l	30	<20	<20	<20	<20	--
Silver,Dissolved	µg/l	30	<10	<10	<10	<10	--
Volatile Organic Compounds (VOCs) detected compounds only							
cis-1,2-Dichloroethene	µg/l	70	<1.0	**24**	**2.8**	**1.1**	<1.0
Trichloroethene	µg/l	5**	**3.1**	**13**	**9.4**	**5.2**	<1.0
Wisconsin Diesel Range Organics (WI DRO)							
WI DRO	µg/l	200*	<100	<100	<100	<100	--
Semi-Volatile Organic Compounds (SVOCs)							
No SVOCs detected above the laboratory detection limit.	µg/l	--	<MDL	<MDL	<MDL	<MDL	--

NOTES:

All results provided in micrograms per liter (ug/L) which is equivalent to parts per billion (ppb)
Detected compounds shown in **Boldface**
-- Indicates sample not analyzed for given parameter
NE - Not Established
HRL - Health Risk Limits
Compounds exceeding regulatory limits are color coded
* In response to the draft US Environmental Protection Agency (US EPA) health risk assessment for 1,1,2-Trichloroethylene (TCE), the MDH recommends that an exposure limit of five micrograms of TCE per liter of water (5 ug/L) be used in place
** Health Based Value

Table 4
Groundwater Monitoring Well Analytical Results Summary - Liesch 2006
Seward Commons
Minneapolis, Minnesota

Client Sample ID		HRL	MW-1		MW-2		MW-3		MW-4	
Collect Date			11/2/2006	12/8/2006	11/2/2006	12/6/2006	11/2/2006	12/6/2006	11/2/2006	12/6/2006
Parameter	Units									
Barium,Dissolved	µg/l	2000	**84**	**81**	**91**	**78**	**110**	**120**	**62**	60
Selenium,Dissolved	µg/l	30	**24**	**<20**	<20	<0.02	<20	<20	**23**	<20
Silver, Dissolved	µg/l	30	**<10**	**79**	<10	<10	<10	<10	<10	<10
cis-1,2-Dichloroethene	µg/l	70	**2.2**	**2.1**	<1.0	<1.0	**1.7**	**3.2**	<1.0	<1.0
Trichloroethene	µg/l	5**	**78**	**78**	**12**	**11**	**6.1**	**9.4**	**1.7**	**1.5**
WI DRO	µg/l	200*	**190**	**120**	**130**	**120**	**140**	**200**	<100	<100

Notes

All results provided in micrograms per liter (ug/L) which is equivalent to parts per billion (ppb)
Detected compounds shown in **Boldface**
-- Indicates sample not analyzed for given parameter
NE - Not Established
HRL - Health Risk Limits
Compounds exceeding regulatory limits are color coded
* In response to the draft US Environmental Protection Agency (US EPA) health risk assessment for 1,1,2-Trichloroethylene (TCE), the MDH recommends that an exposure limit of five micrograms of TCE per liter of water (5 ug/L) be used in place of the existing MDH HRL of 30 ug/L for drinking water from private wells. This exposure limit is the current US EPA Maximum Contaminant Level for TCE.
** Health Based Value

Table 5
Soil Analytical Results - Braun 2012
Seward Commons
Minneapolis, Minnesota

Compound/Parameter	S-25 (0.25-2.5) 2/13/2012 Fill, No Debris, (0.00) ppm	S-25 (5.0-7.5) 2/13/2012 Native, (0.00) ppm	S-26 (0-2.5) 2/13/2012 Fill, No Debris, (0.00) ppm	S-26 (7.5-10.0) 2/13/2012 Native, (0.00) ppm	S-27 (2.5-5.0) 2/13/2012 Fill, Possible Ash, Wood Debris, (0.00) ppm	S-27 (7.5-10.0) 2/13/2012 Native, (0.00) ppm	S-28 (0-2.5) 2/13/2012 Fill, Moth Ball Odor, Asphalt Debris, (0.00) ppm	S-28 (10-12.0) 2/13/2012 Native, (0.00) ppm	S-29 (0-2.5) 2/13/2012 Fill, No Debris, Slight Petro Odor, (0.00) ppm	S-29 (5.0-7.5) 2/13/2012 Native, (0.00) ppm	S-30 (0-2.5) 2/13/2012 Fill, Debris, (0.00) ppm	S-30 (5-7.5) 2/13/2012 Native, (0.00) ppm	S-31 (2.5-5.0) 2/13/2012 Native, (0.00) ppm	S-31 (7.5-10.0) 2/13/2012 Native, (0.00) ppm	S-32 (0-2.5) 2/13/2012 Fill, Asphalt Debris, (0.00) ppm	S-32 (5.0-7.5) 2/13/2012 Native, (0.00) ppm	Residential Soil Reference Value (mg/kg)	Industrial Soil Reference Value (mg/kg)	Tier I Soil Leaching Value (mg/kg)
	1200770	1200770	1200770	1200770	1200770	1200770	1200770	1200770	1200770	1200770	1200770	1200770	1200770	1200770	1200770	1200770			
Volatile Organic Compounds (mg/kg)																			
cis-1,2-Dichloroethene	<0.057	<0.052	0.064	<0.054	3.7	<0.052	4.9 [23]	<0.051	<0.054	<0.053	<0.054	<0.052	<0.054	<0.052	<0.053	<0.051	8	22	0.14
Naphthalene	<0.14	<0.13	0.27	<0.13	<0.14	<0.13	870 [23]	<0.13	0.22	<0.13	<0.14	<0.13	<0.14	<0.13	0.24	<0.13	10	28	7.5
trans-1,2-Dichloroethene	<0.057	<0.052	<0.061	<0.054	0.21	<0.052	<0.56 [23]	<0.051	<0.054	<0.053	<0.054	<0.052	<0.054	<0.052	<0.053	<0.051	11	33	0.27
Trichloroethene	0.52	<0.052	2.7	<0.054	43 [23]	<0.052	0.91 [23]	<0.051	0.78	<0.053	<0.054	<0.052	<0.054	<0.052	1.2	<0.051	29	46	0.14
All other reported VOCs	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NE	NE	NE
Semivolatile Organic Compounds (mg/kg)																			
2-Methylnaphthalene	<0.16	<0.14	0.28	<0.15	<0.15	<0.15	51 [21][23]	<0.15	<0.20	<0.16	<0.23 [21]	<0.16	<0.15	<0.14	0.33	<0.14	100	369	NE
Acenaphthene	<0.16	<0.14	0.39	<0.15	0.15	<0.15	16 [21][23]	<0.15	<0.20	<0.16	<0.23 [21]	<0.16	<0.15	<0.14	0.44	<0.14	1200	5260	50
Acenaphthylene	0.24	<0.14	1.2	<0.15	0.17	<0.15	62 [21][23]	<0.15	1.4	<0.16	0.46 [21]	<0.16	<0.15	<0.14	1.6	<0.14	NE	NE	NE
Anthracene	0.27	<0.14	2	<0.15	0.55	<0.15	120 [21][23]	<0.15	1	<0.16	0.39 [21]	<0.16	<0.15	<0.14	4.2	<0.14	7880	45400	942
Benz(a)anthracene	1	<0.14	7.4	<0.15	2	<0.15	140 [21][23]	<0.15	2.7	<0.16	1.3 [21]	<0.16	<0.15	<0.14	24 [22]	<0.14	cPah	cPah	cPah
Benzo(a)pyrene	1	<0.14	8.5 [22]	<0.15	2.1	<0.15	130 [21][23]	<0.15	3.7	<0.16	1.2 [21]	<0.16	<0.15	<0.14	29 [22]	<0.14	cPah	cPah	cPah
Benzo(b)fluoranthene	0.99	<0.14	7.5 [22]	<0.15	1.9	<0.15	98 [21][23]	<0.15	3.3	<0.16	1.3 [25][21]	<0.16	<0.15	<0.14	26 [22]	<0.14	cPah	cPah	cPah
Benzo(g,h,i)perylene	0.52	<0.14	4.3	<0.15	0.98	<0.15	73 [21][23]	<0.15	4.3	<0.16	0.66 [26][21]	<0.16	<0.15	<0.14	13 [22]	<0.14	NE	NE	NE
Benzo(k)fluoranthene	0.93	<0.14	6.2	<0.15	1.6	<0.15	69 [21][23]	<0.15	2.8	<0.16	1.2 [21]	<0.16	<0.15	<0.14	6.8	<0.14	cPah	cPah	cPah
Carbazole	<0.84 [13][20]	<0.73 [13][20]	<0.86 [13][20]	<0.77 [13][20]	<0.77 [13][20]	<0.76 [20]	<140 [13][20]	<0.76 [20]	<1.0 [13][20]	<0.83 [20]	<1.2 [20][25][21]	<0.81 [20]	<0.74 [20]	<0.74 [20]	1.1 [20]	<0.71 [20]	700	1310	NE
Chrysene	1.1	<0.14	7.9	<0.15	2.2	<0.15	130 [21][23]	<0.15	3.2	<0.16	1.3 [21]	<0.16	<0.15	<0.14	28 [22]	<0.14	cPah	cPah	cPah
Dibenz(a,h)anthracene	<0.16 [16]	<0.14 [16]	0.32 [19]	<0.15 [16]	<0.15 [17]	<0.15	<2.7 [15][21][23]	<0.15	<0.20 [16]	<0.16	<0.23 [21]	<0.16	<0.15	<0.14	4.2	<0.14	cPah	cPah	cPah
Dibenzofuran	<0.16	<0.14	0.3	<0.15	<0.15	<0.15	93 [21][23]	<0.15	<0.20	<0.16	<0.23 [21]	<0.16	<0.15	<0.14	0.23	<0.14	104	810	NE
Fluoranthene	1.9	<0.14	12 [22]	<0.15	4.2	<0.15	410	<0.15	6.6	<0.16	2.6 [25][26][21]	<0.16	<0.15	<0.14	39 [22]	<0.14	1080	6800	295
Fluorene	<0.16	<0.14	<0.17	<0.15	0.16	<0.15	<2.7 [21][23]	<0.15	<0.20	<0.16	<0.23 [21]	<0.16	<0.15	<0.14	<0.14	<0.14	850	4120	47
Indeno(1,2,3-cd)pyrene	0.46	<0.14	3.7	<0.15	0.92	<0.15	76 [21][23]	<0.15	3	<0.16	0.55 [21]	<0.16	<0.15	<0.14	9.8 [22]	<0.14	cPah	cPah	cPah
Naphthalene	<0.16	<0.14	0.56	<0.15	0.2	<0.15	390	<0.15	0.3	<0.16	<0.23 [21]	<0.16	<0.15	<0.14	0.68	<0.14	10	28	7.5
Phenanthrene	0.82	<0.14	6	<0.15	2.3	<0.15	590	<0.15	2.2	<0.16	1.2 [21]	<0.16	<0.15	<0.14	13 [22]	<0.14	NE	NE	NE
Pyrene	2	<0.14	14 [19][21]	<0.15	4	<0.15	310 [17]	<0.15	8.6	<0.16	2 [25][26][21]	<0.16	<0.15	<0.14	62 [19][22]	0.17	890	5800	272
BaP Equivalent**	1.35	0.00	11.24	0.00	2.78	0.00	186.88	0.00	4.89	0.00	1.65	0.00	0.00	0.00	38.29	0.00	2	3	10.2
Total Petroleum Hydrocarbons (mg/kg)																			
Diesel Range Organics (DRO)	53 [22]	<8.2 [23]	480 [22][31]	<9.2 [23]	66 [22]	<8.9 [23]	4700 [22][30][31]	<8.6 [23]	1700 [22][31]	<9.0 [23]	150 [21][25][31]	<8.5 [23]	<9.1 [22]	<8.1	1400 [22][30][31]	<8.6 [23]	NE	NE	NE
Metals (mg/kg)																			
Arsenic	4.9	1.9	4.8	1.9	5.8	1.8	5.6	1.6	2.2	2.5	3.6	2.1	6.1	3.4	3.8	2.2	9	20	15.1
Barium	200	19	96	18	180	25	130	12	34	26	57	27	47	16	70	46	1100	18000	842
Cadmium	0.5	<0.48	0.6	<0.47	0.91	0.56	0.7	<0.46	<0.48	<0.47	<0.48	<0.45	<0.52	<0.44	1.9	<0.44	25	200	4.4
Chromium	15	7	13	11	13	10	17	9.3	21	9.6	10	9.7	11	6.6	20	11	87 [a]	650 [a]	18 [a]
Cobalt	9.1	5.6	5.3	4.4	5.5	5.1	5.2	3.3	5.1	5.4	3.8	5.4	7	3.5	4.6	8.2	600	2600	30
Copper	24	7.9	36	6.5	35	8.2	65	4.1	18	6.8	13	6.9	5.5	5.2	28	9.7	100	9000	400
Lead	170	2.5	160	3.1	320	3.8	200	2.6	26	3.5	35	3.1	8.6	3.6	200	3.3	300	700	525
Mercury	0.26	<0.018	0.29	<0.020	0.11	<0.019	0.7	<0.016	0.029	<0.019	0.092 [23][26]	<0.016	<0.022	<0.014	0.15	<0.015	0.5	1.5	1.6
Selenium	<1.0	<0.97	<1.1	<0.94	<1.1	<0.92	<0.97	<0.92	<0.96	<0.94	<0.97	<0.90	<1.0	<0.88	<0.91	<0.87	160	1300	1.5
Silver	<0.50	<0.48	<0.53	<0.47	<0.55	<0.46	<0.49	<0.46	<0.48	<0.47	<0.48	<0.45	<0.52	<0.44	<0.46	<0.44	160	1300	3.9
Other Parameters																			
% Solids (% Wt)	88	96	90	93	90	97	89	98	93	94	92	96	92	97	95	97	NA	NA	NA
Toxicity Characteristic Leaching Procedure (TCLP) - (mg/L)																			
Lead	<(0.10)	---	<(0.10)	---	0.22	---	<(0.10)	---	---	---	---	---	---	---	<(0.10)	---	NE	NE	NE

Notes:

[1] 2-Butanone(MEK) recovery for continuing calibration sample is 73.1%. Method requirements are 80%-120%. There may be a low bias in the sample results

[3] 2-Butanone(MEK) recovery for continuing calibration sample is 78.6%. Method requirements are 80%-120%. There may be a low bias in the sample results.

[4] 2-Butanone(MEK) recovery for the continuing calibration sample is 78.6%. Method requirements are 80% to 120%. There may be a high bias in the reported results.

[5] Acetone recovery is 134% in the continuing calibration sample. Method requirements are 80-120%. There may be a high bias for this compound.

[6] Carbazole recovery for the continuing calibration sample is 124%. Method requirements are 80% to 120%. There may be a high bias in the reported results.

[7] Carbazole recovery for the continuing calibration sample is 131%. Method requirements are 80% to 120%. There may be a high bias in the reported results.

[8] Vinyl Chloride recovery for continuing calibration sample is 128%. Method requirements are 80%-120%. There may be a high bias in the sample results.

[14] Carbon Tetrachloride recovery for continuing calibration sample is 121%. Method requirements are 80%-120%. There may be a high bias in the sample results.

[15] Dibenz(a,h) anthracene recovery for the continuing calibration sample is 124%. Method requirements are 80% to 120%. There may be a high bias in the reported results.

[16] Carbazole recovery for the continuing calibration sample is 205%. Method requirements are 80% to 120%. There may be a high bias in the reported results.

[18] Pyrene recovery for the continuing calibration sample is 135%. Method requirements are 80% to 120%. There may be a high bias in the reported results.

[20] The laboratory control sample recovery is outside of laboratory control limits.

[21] The sample chromatogram indicates the presence of lower boiling hydrocarbons than expected in the diesel range chromatogram.

[23] The sample chromatogram indicates the presence of lower and higher boiling hydrocarbons than expected in the diesel range chromatogram.

[24] The sample chromatogram indicates the presence of higher boiling hydrocarbons than expected in the diesel range chromatogram.

[27] The sample was diluted due to the presence of high levels of non-target analytes resulting in elevated reporting limits.

[30] One or more surrogate recoveries reported with this sample analysis are outside of the laboratory control limits.

[31] The method reporting limits (MRLs) are elevated due to adjustments of the sample preparation amounts. This was necessary because of the sample matrix.

[22] The method reporting limit (MRL) was raised for one or more analytes; a dilution of the sample was necessary due to high analyte levels and/or matrix interferences.

[33] The method reporting limit (MRL) is elevated because a dilution was required due to the presence of a sample matrix interference with the internal standard.

mg/kg = Milligrams per kilogram.

mg/L = Milligrams per liter.

< = Less than the reporting limit indicated in parentheses.

---- = Not analyzed or calculated for this parameter

NE = Not Established

ND = Not Detected

SRV - Soil Reference Value established by the Minnesota Pollution Control Agency; 1999, revised 2009

SLV - Soil Leaching Value established by the Minnesota Pollution Control Agency; 1999, revised 2005

cPAH = Individual criteria not established. Included in BaP equivalent calculation.

** = Benzo(a)pyrene (BaP) equivalent is calculated based on the concentration and weighted toxicity of carcinogenic PAHs (cPAH); Minnesota Pollution Control Agency, 2002.

[a] = Criteria for mixture of o, m and p-xylenes.

[b] = Criteria for 4-Methylphenol

[c] = Criteria for hexavalent chromium.

[d] = Criteria for mixture of alpha- and gamma-chlordane

[e] = Criteria for mixture of Endosulfan I, Endosulfan II, and Endosulfan Sulfate.

[f] = Criteria for mixture of cis- and trans-1,2-Dichloropropene

Table 5
Soil Analytical Results - Braun 2012
Seward Commons
Minneapolis, Minnesota

Compound/Parameter	S-35 (2.5-5.0) 2/14/2012 Fill, No Debris, (0.0) ppm 1200800	S-35 (7.5-10.0) 2/14/2012 Native, (0.0) ppm 1200800	S-36 (0.25-2.5) 2/14/2012 Fill, No Debris, (0.0) ppm 1200800	S-36 (5.0-7.5) 2/14/2012 Native, (0.0) ppm 1200800	S-45 (2.5-5.0) 2/14/2012 Fill, No Debris, (0.0) ppm 1200800	S-45 (7.5-10.0) 2/14/2012 Native, (0.0) ppm 1200800	S-47 (0-2) 2/24/2012 Fill, Possible Ash, (0.0) ppm 1200969	S-47 (2-4) 2/24/2012 Fill, No Debris, (0.0) ppm 1200969	S-48 (0-2) 2/24/2012 Fill, Cinders, (0.0) ppm 1200969	S-48 (4-6) 2/24/2012 Native, (0.0) ppm 1200969	S-49 (0-2) 2/24/2012 Fill, Possible Ash, (0.0) ppm 1200969	S-49 (6-8) 2/24/2012 Native, (0.0) ppm 1200969	S-50(10-12) 2/24/2012 Native, (0.0) ppm 1200969	S-50 (2-4) 2/24/2012 Fill, No Debris, (0.0) ppm 1200969	S-50 (6-8) 2/24/2012 Native, (7.9) ppm 1200969	S-51 (2-4) 2/24/2012 Fill, No Debris, (0.0) ppm 1200969	S-51 (6-8) 2/24/2012 Native, (0.0) ppm 1200969	Residential Soil Reference Value (mg/kg)	Industrial Soil Reference Value (mg/kg)	Tier I Soil Leaching Value (mg/kg)
Volatile Organic Compounds (mg/kg)																				
1,2,4-Trimethylbenzene	<0.13	<0.13	<0.14	<0.13	<0.14	<0.13	<0.13	<0.13	0.17	<0.13	<0.13	<0.13	<0.13	<0.14	<0.13	<0.13	<0.13	8	25	NE
1,4-Dichlorobenzene	<0.053	<0.052	<0.056	<0.052	<0.055	<0.053	<0.053	<0.052	0.093	<0.051	<0.051	<0.051	<0.054	<0.055	<0.053	<0.051	<0.052	30	50	0.13
m,p-Xylenes	<0.11	<0.10	<0.11	<0.10	<0.11	<0.11	<0.11	<0.10	0.14	<0.10	<0.10	<0.10	<0.11	<0.11	<0.11	<0.10	<0.10	45 [a]	130 [a]	45 [a]
Naphthalene	<0.13	<0.13	<0.14	<0.13	<0.14	<0.13	<0.13	<0.13	0.22	<0.13	<0.13	<0.13	<0.13	<0.14	<0.13	<0.13	<0.13	10	28	7.5
o-Xylene	<0.053	<0.052	<0.056	<0.052	<0.055	<0.053	<0.053	<0.052	0.1	<0.051	<0.051	<0.051	<0.054	<0.055	<0.053	<0.051	<0.052	45 [a]	130 [a]	45 [a]
Tetrahydrofuran	<0.26	<0.26	<0.28	<0.26	<0.27	<0.27	<0.26	<0.26	<0.25	<0.25	<0.26	<0.26	<0.27	<0.28	<0.26	<0.26	<0.26	NE	NE	0.16
Trichloroethene	<0.053	<0.052	<0.056	<0.052	<0.055	<0.053	<0.053	<0.052	0.52	<0.051	<0.051	<0.051	<0.054	<0.055	<0.053	<0.051	<0.052	29	46	0.14
All other reported VOCs	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NO	ND	ND	ND	ND	ND	NE	NE	NE
Semivolatile Organic Compounds (mg/kg)																				
2-Methylnaphthalene	<0.14	<0.13	<0.14	<0.14	<0.14	<0.14	<0.69 [33]	<0.14	0.26	<0.13	<0.13	<0.13	<0.14	<0.14	<0.14	<0.13	<0.13	100	369	NE
Acenaphthene	<0.14	<0.13	<0.14	<0.14	<0.14	<0.14	<0.69 [33]	<0.14	<0.13	<0.13	<0.13	<0.13	<0.14	<0.14	<0.14	<0.13	<0.13	1200	5260	50
Acenaphthylene	<0.14	<0.13	<0.14	<0.14	<0.14	<0.14	0.91 [33]	<0.14	<0.13	<0.13	<0.13	<0.13	<0.14	<0.14	<0.14	<0.13	<0.13	NE	NE	NE
Anthracene	<0.14	<0.13	<0.14	<0.14	<0.14	<0.14	0.88 [33]	<0.14	<0.13	<0.13	<0.13	<0.13	<0.14	<0.14	<0.14	<0.13	<0.13	7880	45400	942
Benz(a)anthracene	<0.14	<0.13	0.28	<0.14	<0.14	<0.14	4.3 [33]	<0.14	0.14	<0.13	<0.13	<0.13	<0.14	<0.14	<0.14	<0.13	<0.13	cPah	cPah	cPah
Benzo(a)pyrene	<0.14	<0.13	0.36	<0.14	<0.14	<0.14	4.3 [33]	<0.14	<0.13	<0.13	0.34	<0.13	<0.14	<0.14	<0.14	<0.13	<0.13	cPah	cPah	cPah
Benzo(b)fluoranthene	<0.14	<0.13	0.32	<0.14	<0.14	<0.14	3.6 [33]	<0.14	0.21	<0.13	0.28	<0.13	<0.14	<0.14	<0.14	<0.13	<0.13	cPah	cPah	cPah
Benzo(g,h,i)perylene	<0.14	<0.13	0.17	<0.14	<0.14	<0.14	1.9 [33]	<0.14	<0.13	<0.13	0.19	<0.13	<0.14	<0.14	<0.14	<0.13	<0.13	NE	NE	NE
Benzo(k)fluoranthene	<0.14	<0.13	0.27	<0.14	<0.14	<0.14	2.9 [33]	<0.14	0.14	<0.13	0.24	<0.13	<0.14	<0.14	<0.14	<0.13	<0.13	cPah	cPah	cPah
Carbazole	<0.35 [6]	<0.34 [6]	<0.37 [12]	<0.34 [6]	<0.36 [6]	<0.35 [6]	<1.7 [10] [20] [13]	<0.34 [20] [8]	<0.34 [20] [8]	<0.34 [20] [8]	<0.34 [20] [8]	<0.34 [20] [8]	<0.36 [20] [8]	<0.36 [20] [8]	<0.35 [20] [8]	<0.34 [20] [8]	<0.34 [20] [8]	700	1310	NE
Chrysene	0.15	<0.13	0.32	<0.14	<0.14	<0.14	4.6 [33]	<0.14	0.24	<0.13	0.33	<0.13	<0.14	<0.14	<0.14	<0.13	<0.13	cPah	cPah	cPah
Dibenz(a,h)anthracene	<0.14	<0.13	<0.14	<0.14	<0.14	<0.14	<0.69 [33]	<0.14	<0.13	<0.13	<0.13	<0.13	<0.14	<0.14	<0.14	<0.13	<0.13	cPah	cPah	cPah
Dibenzofuran	<0.14	<0.13	<0.14	<0.14	<0.14	<0.14	<0.69 [33]	<0.14	<0.13	<0.13	<0.13	<0.13	<0.14	<0.14	<0.14	<0.13	<0.13	104	810	NE
Fluoranthene	0.2	<0.13	0.52	<0.14	<0.14	<0.14	8.9 [33]	<0.14	0.32	<0.13	0.47	<0.13	<0.14	<0.14	<0.14	<0.13	<0.13	1080	6800	295
Fluorene	<0.14	<0.13	<0.14	<0.14	<0.14	<0.14	<0.69 [33]	<0.14	<0.13	<0.13	<0.13	<0.13	<0.14	<0.14	<0.14	<0.13	<0.13	850	4120	47
Indeno(1,2,3-cd)pyrene	<0.14	<0.13	0.14	<0.14	<0.14	<0.14	1.7 [33]	<0.14	<0.13	<0.13	0.17	<0.13	<0.14	<0.14	<0.14	<0.13	<0.13	cPah	cPah	cPah
Naphthalene	<0.14	<0.13	<0.14	<0.14	<0.14	<0.14	<0.69 [33]	<0.14	0.2	<0.13	<0.13	<0.13	<0.14	<0.14	<0.14	<0.13	<0.13	10	28	7.5
Phenanthrene	0.14	<0.13	0.28	<0.14	<0.14	<0.14	2.4 [33]	<0.14	0.37	<0.13	0.13	<0.13	<0.14	<0.14	<0.14	<0.13	<0.13	NE	NE	NE
Pyrene	0.22	<0.13	0.52	<0.14	<0.14	<0.14	10 [33]	<0.14	0.24	<0.13	0.65	<0.13	<0.14	<0.14	<0.14	<0.13	<0.13	890	5800	272
BaP Equivalent**	0.00	0.00	0.46	0.00	0.00	0.00	5.60	0.00	0.05	0.00	0.41	0.00	0.00	0.00	0.00	0.00	0.00	2	3	10.2
Total Petroleum Hydrocarbons (mg/kg)																				
Diesel Range Organics (DRO)	19 [22]	<8.4 [23]	31 [22]	<8.1 [23]	13 [22]	<8.9	120 [22]	<8.7 [23]	58 [22]	<8.2	26 [22]	<8.4	<9.0 [23]	<9.6 [23]	<8.4 [23]	<8.8 [22]	<8.7 [23]	NE	NE	NE
Metals (mg/kg)																				
Arsenic	2.7	1.5	2.9	2.1	2.8	1.9	7.4	2.6	<9.8 [27]	2.2	4	2	<1.9	2.1	<2.1	2.7	2	9	20	15.1
Barium	71	38	54	31	48	30	150	49	72	32	110	41	55	59	52	56	31	1100	18000	842
Cadmium	<0.51	<0.44	<0.50	<0.52	<0.52	<0.48	1	<0.47	<2.4 [27]	<0.49	<0.47	<0.50	<0.48	<0.51	<0.53	<0.45	<0.48	25	200	4.4
Chromium	12	8.2	11	6.7	10	9.3	12	9.2	9.3	7.7	9.3	28	10	9.9	13	7.9	9.5	87 [c]	650 [c]	18 [c]
Cobalt	4.7	5.1	4	4.6	5.3	5.1	5.1	5.6	4.7	4.1	5	7.1	7.2	4.9	5.4	4.8	5.1	600	2600	30
Copper	9.2	6.1	30	5.8	4.3	5.9	36	3	48	4.2	11	7.8	7.6	4.5	8.5	6.4	5.5	100	9000	400
Lead	110	3.1	12	3.2	4.6	2.9	170	4.7	140	3.4	270	3.6	3.3	4.6	3.5	17	3.2	300	700	525
Mercury	0.032	<0.017	<0.017	<0.015	<0.020	<0.016	0.38	<0.016	0.061	<0.016	0.27	<0.020	<0.015	<0.019	<0.015	0.044	<0.017	0.5	1.5	1.6
Selenium	<1.0	<0.87	<1.0	<1.0	<1.0	<0.96	<0.96	<0.95	<4.9 [27]	<0.98	<0.93	<1.0	<0.95	<1.0	<1.1	<0.90	<0.97	160	1300	1.5
Silver	<0.51	<0.44	<0.50	<0.52	<0.52	<0.48	<0.48	<0.47	<2.4 [27]	<0.49	<0.47	<0.50	<0.48	<0.51	<0.53	<0.45	<0.48	160	1300	3.9
Other Parameters																				
% Solids (% Wt)	94	97	90	96	91	93	95	96	98	98	98	98	93	91	95	98	97	NA	NA	NA
Toxicity Characteristic Leaching Procedure (TCLP) - (mg/L)																				
Lead	<(0.10)	---	---	---	---	---	---	---	---	---	0.11	---	---	---	---	---	---	NE	NE	NE

Notes:

[2] 2-Butanone(MEK) recovery for continuing calibration sample is 73.1%. Method requirements are 80%-120%. There may be a low bias in the sample results

[10] 2-Butanone(MEK) recovery for continuing calibration sample is 78.6%. Method requirements are 80%-120%. There may be a low bias in the sample results.

[6] 2-Butanone(MEK) recovery for the continuing calibration sample is 78.6%. Method requirements are 80% to 120%. There may be a high bias in the reported results.

[5] Acetone recovery is 134% in the continuing calibration sample. Method requirements are 80-120%. There may be a high bias for this compound.

[8] Carbazole recovery for the continuing calibration sample is 124%. Method requirements are 80% to 120%. There may be a high bias in the reported results.

[7] Carbazole recovery for the continuing calibration sample is 131%. Method requirements are 80% to 120%. There may be a high bias in the reported results.

[9] Vinyl Chloride recovery for continuing calibration sample is 128%. Method requirements are 80%-120%. There may be a high bias in the sample results.

[14] Carbon Tetrachloride recovery for continuing calibration sample is 121%. Method requirements are 80%-120%. There may be a high bias in the sample results.

[13] Dibenz(a,h) anthracene recovery for the continuing calibration sample is 124%. Method requirements are 80% to 120%. There may be a high bias in the reported results.

[18] Carbazole recovery for the continuing calibration sample is 205%. Method requirements are 80% to 120%. There may be a high bias in the reported results.

[11] Pyrene recovery for the continuing calibration sample is 135%. Method requirements are 80% to 120%. There may be a high bias in the reported results.

[28] The laboratory control sample recovery is outside of laboratory control limits.

[24] The sample chromatogram indicates the presence of lower boiling hydrocarbons than expected in the diesel range chromatogram.

[32] The sample chromatogram indicates the presence of lower and higher boiling hydrocarbons than expected in the diesel range chromatogram.

[23] The sample chromatogram indicates the presence of higher boiling hydrocarbons than expected in the diesel range chromatogram.

[27] The sample was diluted due to the presence of high levels of non-target analytes resulting in elevated reporting limits.

[20] One or more surrogate recoveries reported with this sample analysis are outside of the laboratory control limits.

[31] The method reporting limits (MRLs) are elevated due to adjustments of the sample preparation amounts. This was necessary because of the sample matrix.

[33] The method reporting limit (MRL) was raised for one or more analytes; a dilution of the sample was necessary due to high analyte levels and/or matrix interferences.

[33] The method reporting limit (MRL) is elevated because a dilution was required due to the presence of a sample matrix interference with the internal standard.

mg/kg = Milligrams per kilogram.

< = Less than the reporting limit indicated in parentheses.

--- = Not analyzed or calculated for this parameter

NE = Not Established

SRV - Soil Reference Value established by the Minnesota Pollution Control Agency; 1999, revised 2009

SLV - Soil Leaching Value established by the Minnesota Pollution Control Agency; 1999, revised 2005

cPAH = Individual criteria not established. Included in BaP equivalent calculation.

** = Benzo(a)pyrene (BaP) equivalent is calculated based on the concentration and weighted toxicity of carcinogenic PAHs (cPAH); Minnesota Pollution Control Agency, 2002.

[a] = Criteria for mixture of o, m and p-xylenes.

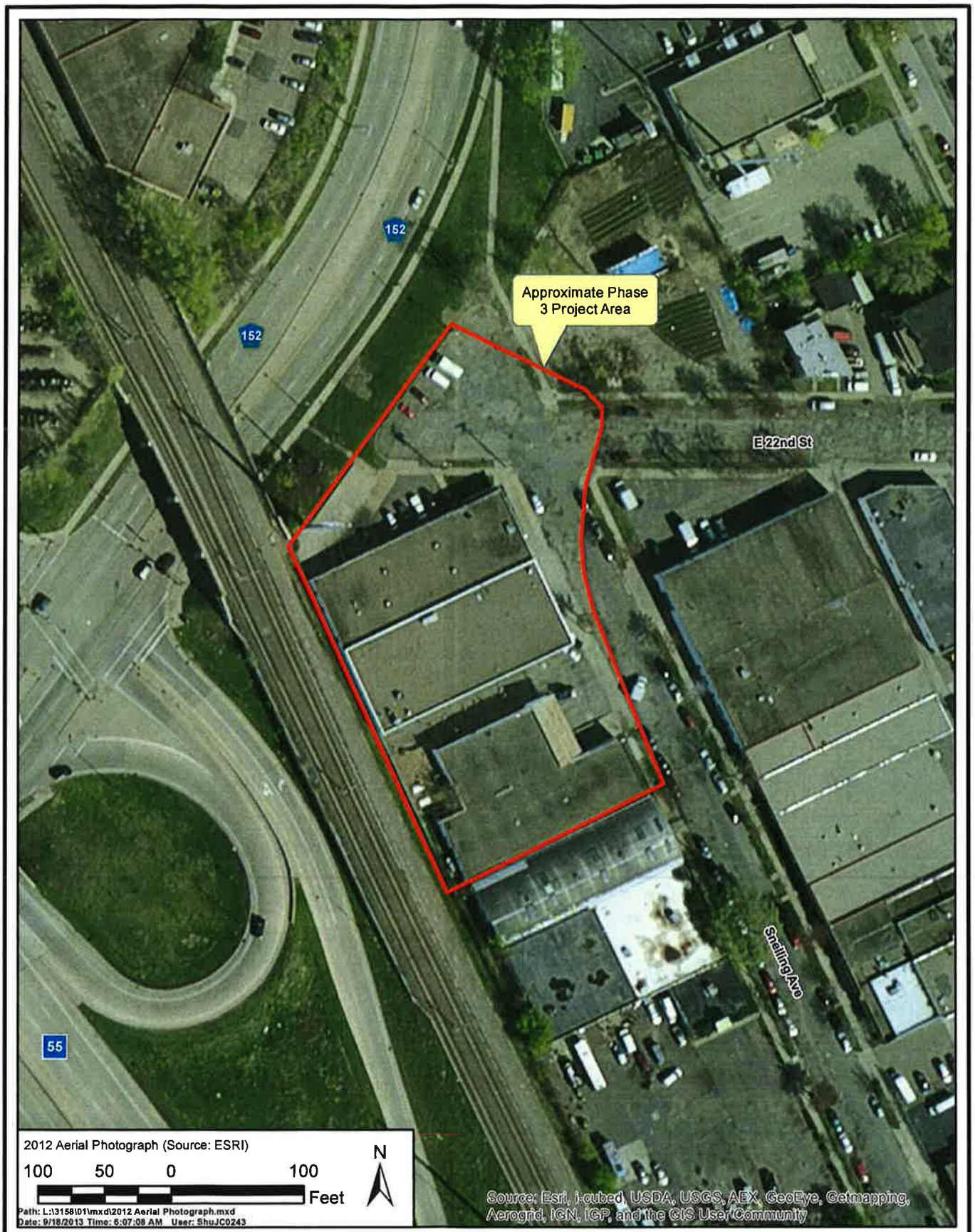
[b] = Criteria for 4-Methylphenol

[c] = Criteria for hexavalent chromium.

[d] = Criteria for mixture of alpha- and gamma-chlordane

[e] = Criteria for mixture of Endosulfan I, Endosulfan II, and Endosulfan Sulfate.

[f] = Criteria for mixture of cis- and trans-1,2-Dichloropropene



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2200 SNELLING AVE, MINNEAPOLIS, MN

2012 Aerial Photograph

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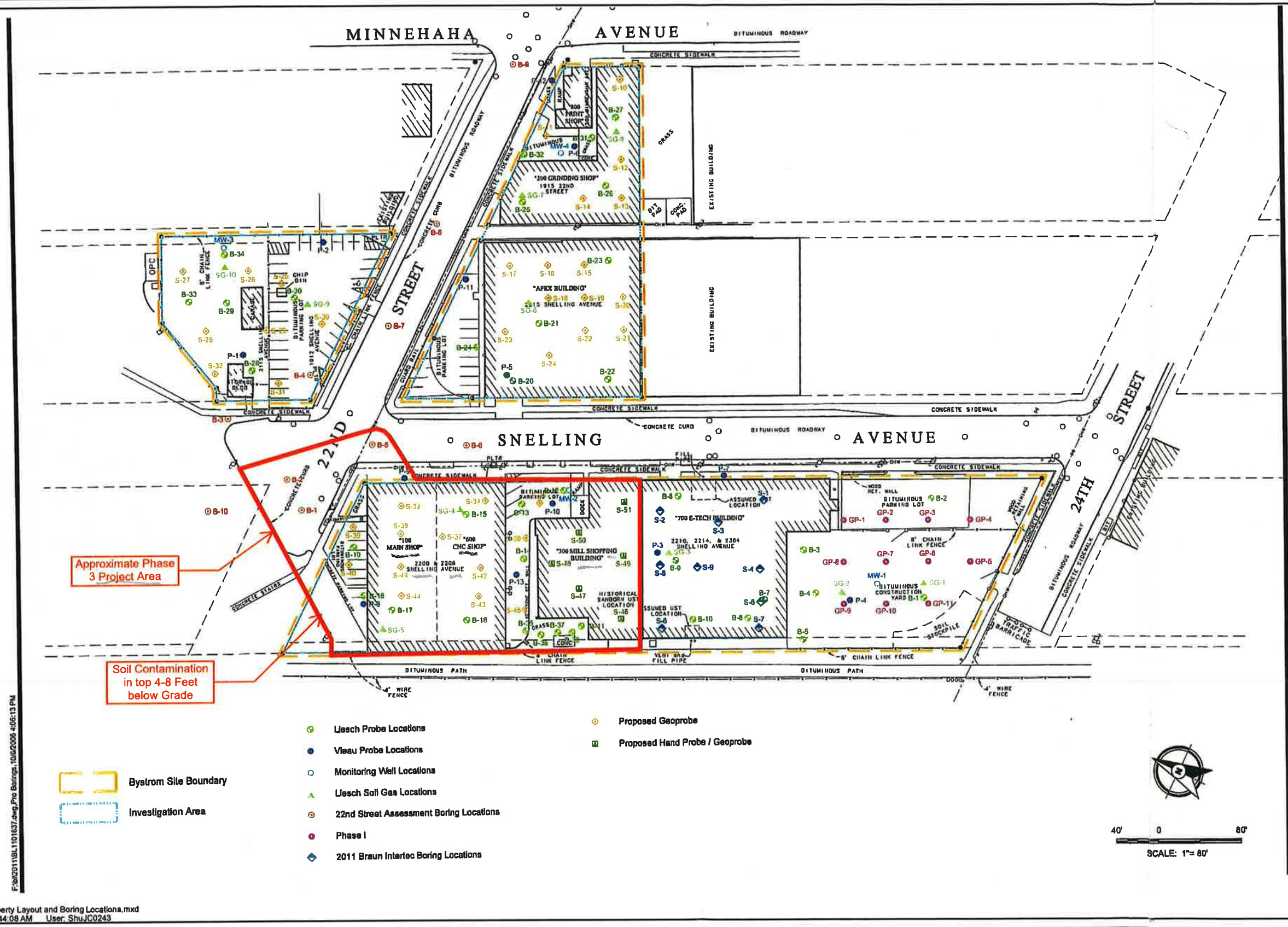
Figure 2



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PROPOSED SOIL BORING SKETCH
PHASE II ENVIRONMENTAL SITE ASSESSMENT
PHASE 2 DEVELOPMENT - SEWARD COMMONS
2304 SNELLING AVENUE
MINNEAPOLIS, MINNESOTA

Project No:	BL1107184
Drawing No:	BL1101637
Scale:	1"= 80'
Drawn By:	JAG
Date Drawn:	5/16/11
Checked By:	JAF
Last Modified:	1/27/12
Sheet:	of
Fig:	2

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Figure 3