

ENVIRONMENTAL • CIVIL/GEOTECH • COMPLIANCE

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July 26, 2000

Mr. John Feeney
Wisconsin Department of Natural Resources
4041 North Richards Street
Post Office Box 12436
Milwaukee, Wisconsin 53212-0436

Reference: *Remedial Action Work Plan*
Tecumseh Products Company-Grafton Facility
900 North Street
Grafton, Wisconsin
FID#: 246009170
BRRTS#: 02-46-000751

KEY ENGINEERING GROUP, LTD.
File No. 1007010

Dear Mr. Feeney:

The purpose of this letter is to provide the Wisconsin Department of Natural Resources (WDNR) with a work plan for the remedial action of soil contaminated with trichlorethene (TCE) and 1,1,1-trichloroethane (TCA) at the above referenced site. This work plan has been prepared by Key Engineering Group, Ltd. (KEY) on behalf of Tecumseh Products Company (Tecumseh).

Background Information

Based on an evaluation of remedial action options (*Remedial Action Options and Design Report - East Parking Lot Area*, RMT, Inc., July 16, 1999) and subsequent meetings and correspondence with the WDNR, the selected remedial action approach is excavation of the most highly contaminated soil and on-site treatment.

The three areas, which are based on a target clean up level of 1 milligram per kilogram (mg/kg) of TCE and 10 mg/kg of TCA, represent approximately 90 percent of the total TCE/TCA mass at the site, as documented in *Contaminant Mass Calculations* (KEY, July 12, 2000).

The three areas are depicted on Figure 1 and are summarized as follows:

Treatment Area	Location	Estimated Volume (cubic yards)	Estimated Area and Depth
Area # 1	Vicinity of SB-18TCA	700	35 by 45 feet; 12 feet
Area # 2	Vicinity of SB-3TCA	280	25 by 30 feet; 10 feet
Area # 3	East of Area # 2	3,400	40 to 80 by 120 feet; 10 feet

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As indicated in Tecumseh's letters dated June 9, 1999, and March 3, 2000, Tecumseh asserts and maintains that the contaminated soil is not a hazardous waste. While the proposed remediation by treatment in tanks is exempt pursuant to NR 630.04(18), Tecumseh's acquiescence to conduct remediation in this proposed fashion cannot and should not be viewed as an acknowledgment that the contaminated soil is a hazardous waste. Tecumseh reserves all rights related to its previous waste determination that the contaminated soil is not a hazardous waste.

Further, the WDNR has agreed that the 1 mg/kg of TCE and 10 mg/kg of TCA levels are site-specific residual contaminant levels pursuant to NR 720.19 and that post-treatment soil below these levels no longer contains solid or hazardous waste. Accordingly, the soil can be backfilled and is not subject to regulation as a solid or hazardous waste.

Description of Remedial Action

Remedial action will consist of the excavation of soils from the impact areas and on-site treatment in "tanks." The tanks will be constructed on-site and will meet the definition of a tank specified in NR 600.03(225). Tank construction, soil excavation and soil treatment will be conducted by North Shore Environmental Construction, Inc. (NSEC) with engineering oversight provided by KEY.

Treatment Tank Construction

Two treatment tanks will be constructed side by side on the northern portion of the site as depicted on Figure 1. The tanks will be approximately 20 feet wide and 300 feet long and each will have a capacity of approximately 500 cubic yards of soil. The base of the tanks will consist of a 20-mil low-density polyethylene liner covered with approximately 6 inches of sand. The base of the tank will be sloped to one end to collect any water that may enter the tank. The walls of the tanks will be constructed of 3/4-inch plywood with exterior wood bracing. The tank wall will extend from approximately 6 inches below grade to approximately 8 inches above grade. A waterproof cover will be placed over the tanks when treatment is not taking place to prevent rainwater from coming into contact with the contaminated soil. The cover will be anchored with tires or sand bags. Tank construction details are shown on Figure 2.

Soils excavated during tank construction will be stockpiled on-site adjacent to the treatment area with appropriate soil/stormwater migration controls. Prior to placement of the liner and sand base materials, three soil samples will be collected at each treatment tank location and analyzed for TCE and TCA to document pre-treatment soil quality conditions.

Contaminated Soil Excavation and Treatment

Contaminated soils will be excavated from the three areas and placed in the treatment tanks (each tank will have a capacity of approximately 500 cubic yards). Soil samples will be collected approximately every 25 feet along the sidewalls of the excavations and analyzed for TCE and TCA to confirm that residual soil contaminant concentrations are below the target clean up levels. Because the excavations are anticipated to extend to or near the water table, samples will not be collected from the base of the excavation.

Contaminated soil will be treated in the treatment tanks by tilling the soil using a Scat® machine. Prior to treatment with the Scat® and periodically as needed, the soils will be dried using an infrared heater. The Scat® lifts the soil into a hood, tills the soil and collects the volatilized contaminants with a blower attached to an activated carbon collection unit. The spent activated carbon collection unit will be disposed of as a hazardous waste. The hood contains water spray nozzles to control dust. The Scat® is pulled over the soil by a tractor that moves adjacent to the tanks.

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Soil treatment will be performed approximately eight hours a day, five days a week during dry periods; during rainy periods and on the weekends, the tanks will remain covered. It is estimated that each tank will be tilled approximately two to three times per day, and a treatment period of approximately two weeks will be needed for each treatment phase (1,000 cubic yard volume). The total duration of treatment is therefore anticipated to be approximately 10 to 11 weeks without delays due to rain.

Treatment Performance and Confirmation Sampling

The following protocol will be implemented to monitor the performance and confirm the effectiveness of soil treatment process:

- A sampling grid consisting of eight 10-foot by 75-foot sections (approximately 70 cubic yards) will be established for each treatment tank.
- Screening soil samples (grab samples) will be collected randomly from within each grid section at depths of approximately 1 to 2 feet after the first day of treatment and approximately every two days thereafter (after approximately six to eight passes with the Scat®). The soil samples will be submitted for screening analysis of TCE and TCA to a Wisconsin state certified laboratory (APL, Inc.).
- Each grid section which does not meet the target clean up levels will be resampled following further treatment.
- When treatment performance sample data indicates that the treated soils meet the TCE and TCA target clean up levels, four soil samples will be randomly collected from each treatment tank and analyzed for TCE and TCA in accordance with SW-846 Method 8260.

Backfilling

Following cleanup confirmation, treated soils will be backfilled into the previously excavated areas. The initial excavation will be backfilled with imported material. Subsequent excavations will be backfilled with treated soil. At the end of the remediation project, the imported back fill material will be removed and spread on the east side parking lot area.

Stormwater Management

The excavation and treatment procedures will be performed in a manner to minimize water accumulation within the excavations or treatment tanks; however, dewatering will be implemented if necessary. For relatively small volumes of water, the water will be pumped onto the soils undergoing treatment. When this is not feasible, a representative sample of the water will be collected and analyzed to characterize the water for disposal as a hazardous waste and a licensed disposal firm will be retained by NSEC to pump and dispose of the water.

Treatment Tank Closure

At the completion of the remedial action project, the treatment tanks will be disassembled and the sand will be analyzed for TCE and TCA using the same sampling protocol as the treated soil. If the sand does not contain detectable levels of TCE and TCA, the sand will be left in place and covered with the stockpiled soil originally removed to construct the treatment tanks. If the sand contains detectable levels of TCE or TCA below the 1 mg/kg and 10 mg/kg treatment target concentrations, it will be removed from the treatment area and spread at the location of the formerly excavated and

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backfilled areas. If the sand contains either TCE or TCA above the treatment target concentrations, the sand will be subjected to the same treatment process as the excavated soil until the sand either contains nondetectable concentrations of TCE and TCA or the concentrations are below the treatment target concentrations. Three soil samples will be collected beneath the base of each treatment tank and analyzed for TCE and TCA to confirm soil quality has not been impacted as the result of treatment operations at this location. The soil removed to construct the treatment tanks will be returned and the area will be revegetated. The tank materials (plywood, lumber and plastic liner) will be disposed of as a solid waste.

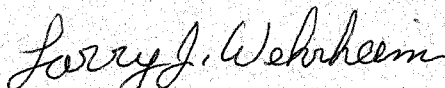
Remedial Action Schedule

The remedial action is scheduled to begin in late July 2000.

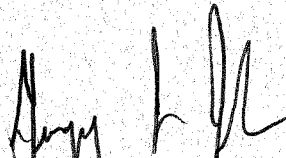
I will call to discuss any questions you may have and to obtain the department's approval of this plan.

Sincerely,

KEY ENGINEERING GROUP, LTD.



Larry J. Wehrheim, CHMM, P.G.
Senior Project Manager



Gregory L. Johnson, CHMM, P.H., P.G., P.E.
Senior Engineer/Scientist

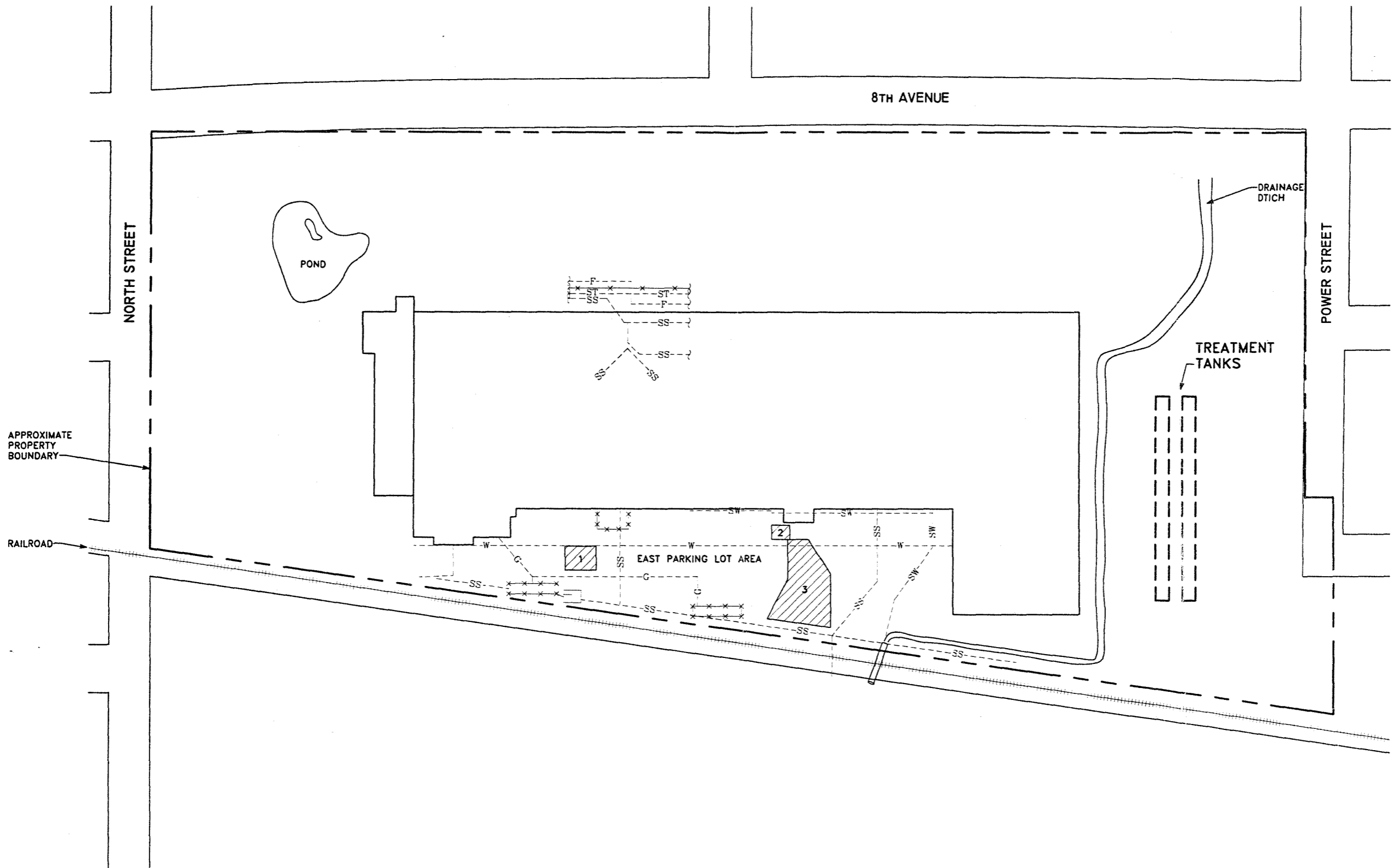


Kenneth W. Wein, CHMM
Vice President

LJW/mas

Enclosures: Figure 1 Site Layout
Figure 2 Treatment Tank Details

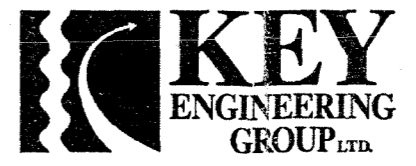
cc: Kerry DeKeyser, Tecumseh Products Company
Chuck Scheffer, North Shore Environmental Construction, Inc.



- LEGEND**
- REMEDIAL ACTION TARGET AREAS
 - FENCE
 - FIRE LOOP
 - GAS LINE
 - SANITARY SEWER
 - STORM WATER SEWER
 - WATER LINE

0 75 150
SCALE: 1"=150'

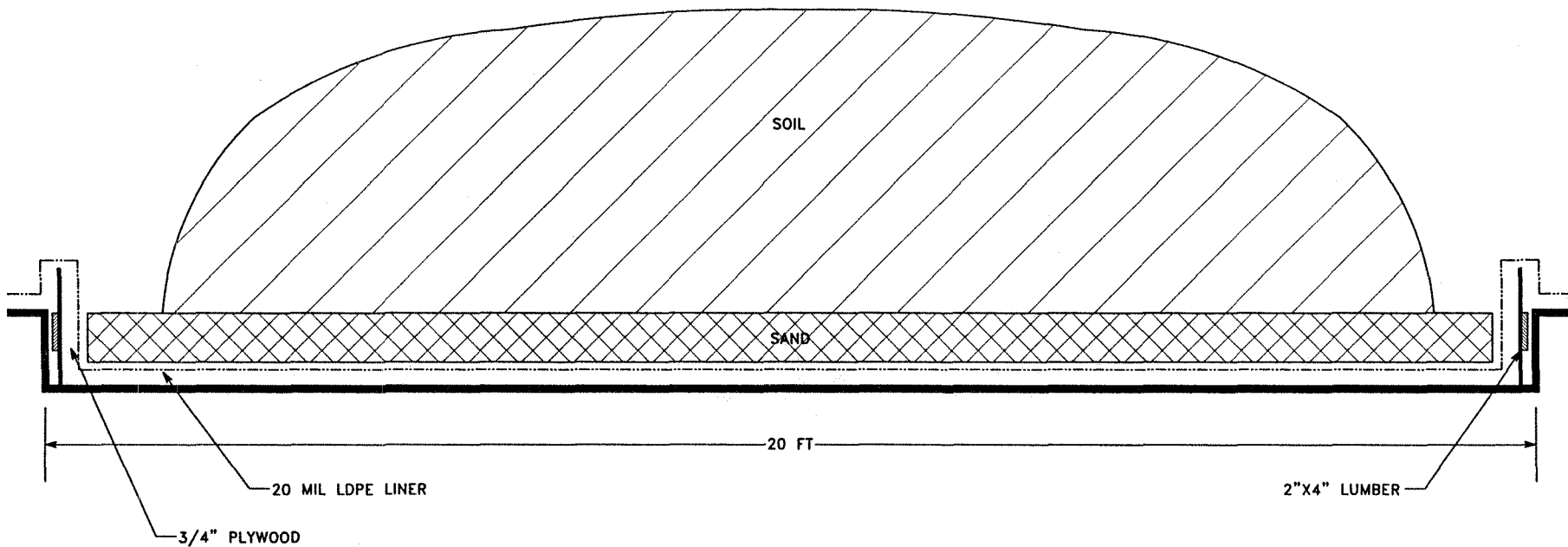
DRN. BY:	J.J.J.	DATE:	07/19/00
DSN. BY:	L.J.W.	FILE NO.:	1007010
CHK. BY:	L.J.W.	DWG. NO.:	10070100
REV. BY:	G.L.J.	SHEET NO.:	1



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**FIGURE 1
SITE LAYOUT**

REMEDIAL ACTION WORK PLAN
EAST PARKING LOT AREA
TECUMSEH PRODUCTS COMP.
900 NORTH STREET
GRAFTON, WISCONSIN



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 NOT TO SCALE		
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DSN. BY:	L.J.W.	FILE NO.: 1007010
CHK. BY:	L.J.W.	DWG. NO.: 10070101
REV. BY:	G.L.J.	SHEET NO.: 2

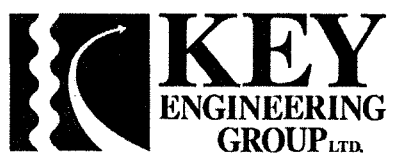


FIGURE 2
TREATMENT TANK
DETAILS (TYPICAL)
 REMEDIAL ACTION WORK PLAN
 EAST PARKING LOT AREA
 TECUMSEH PRODUCTS COMP.
 900 NORTH STREET
 GRAFTON, WISCONSIN