03-57-002801
02-57-001682
Reedsburg Cleaners

KEY ENGINEERING GROUP LTD.
ENVIRONMENTAL • CIVIL/GEOTECH • COMPLIANCE

W66 N215 Commerce Court
Cedarburg, Wisconsin 53012
(414) 375-4750 • (800) 645-7365
Cedarburg • Racine • DePere

SITE INVESTIGATION WORK PLAN

REEDSBURG CLEANERS
349 EAST MAIN STREET
REEDSBURG, WISCONSIN 53959
WDNR BRRTS#: 03-57-002801 LUST
WDNR BRRTS#: 02-57-001682 ERRP
PECFA CLAIM#: 53959-1941-49

September 17, 1998

PREPARED FOR:

REEDSBURG CLEANERS
140 MAINE STREET
MAUSTON, WISCONSIN 53948

Inc. 500

KEY ENGINEERING GROUP LTD.
Environmental • Civil/Geotech • Compliance

W66 N215 Commerce Court
Cedarburg, Wisconsin 53012
(414) 375-4750
(800) 645-7365
Fax (414) 375-9680

September 17, 1998

Ms. Jennifer Tobias
Remediation and Redevelopment Program
Wisconsin Department of Natural Resources
South Central Region Headquarters
3911 Fish Hatchery Road
Fitchburg, Wisconsin 53711-5397

RECEIVED
SEP 18 1998
SO. DIST. HDQTRS

Reference: *Site Investigation Work Plan*
Reedsburg Cleaners
349 East Main Street
Reedsburg, Wisconsin 53959
WDNR BRRTS#: 03-57-002801 LUST
WDNR BRRTS#: 02-57-001682 ERRP
PECFA Claim#: 53959-1941-49

KEY ENGINEERING GROUP, LTD.
File No. 0808004

Dear Ms. Tobias:

Enclosed is the *Site Investigation (SI) Work Plan* for the above referenced project. This *SI Work Plan* includes applicable background information and the purpose, objective, scope, procedures, and preliminary schedule for the SI.

Please feel free to contact us at (414) 375-4750 if you have any questions regarding this work plan.

Sincerely,

KEY ENGINEERING GROUP, LTD.

Curtis M. Hoffart, CHMM
Staff Scientist

Gregory L. Johnson, CHMM, P.G., P.E.
Manager of Technical Services

CMH/kar

cc: Mr. Wayne Butz, Reedsburg Cleaners
WDCOM/PECFA File

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Manager of Technical Services

Key ENVIRONMENTAL SERVICES, INC.

W66 N215 Commerce Court, Cedarburg, WI 53012 • (414) 375-4750 • (800) 645-7365 • Fax (414) 375-9680
6216 Washington Avenue, Suite C, P.O. Box 085182, Racine, WI 53408-5182 • (414) 886-4439 • Fax (414) 886-4675

Letter of Transmittal

TO: REMEDIATION + REDEVELOPMENT
SOUTH CENTRAL REGION
3911 FISH HATCHERY Rd
FITCHBURG WI 53711

DATE 09/22	FILE NO. 080004
ATTENTION MS JENNIFER TOBIAS	
RE: REEDSBURG CLEANERS	
349 MAIN ST	
REEDSBURG WI	

WE ARE SENDING YOU:

- ☐ Letter
- ☐ Proposal
- ☐ Contract
- ☐ Disks
- ☐ Report
- ☐ Bid Document
- ☐ Plans/Specs
- ☐ Samples
- ☐ Work Plan
- ☐ Request for Proposal
- ☒ NR700 CERTIFICATION

COPIES	DATE	NO.	DESCRIPTION

THESE ARE TRANSMITTED AS CHECKED BELOW:

- ☐ For approval
- ☐ For signature
- ☐ For bids due _____ 19____
- ☐ For your use
- ☐ For distribution
- ☐ Approved as submitted
- ☐ As requested
- ☐ Returned for corrections
- ☐ Approved as noted
- ☐ For review and comment
- ☐ _____
- ☐ _____

REMARKS: _____

COPY TO: _____ FROM: Greg KONICEK

WHITE COPY - Client YELLOW COPY - Project File

If enclosures are not as noted, please notify us at once.

NR 700 CERTIFICATIONS

"I, Gregory A. Konicek, hereby certify that I am a hydrogeologist as that term is defined in Chapter NR 712.03 (1), Wisconsin Administrative Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in Chapters NR 700 to 726, Wisconsin Administrative Code."

Signature

Date 9/21/98

"I, Gregory L. Johnson, hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of chapter A-E 4, Wisconsin Administrative Code; that this document has been prepared in accordance with the Rules of Professional Conduct in chapter A-E 8, Wisconsin Administrative Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chapters NR 700 to 726, Wisconsin Administrative Code."

Signature

Stamp

FILE NO. 0808004.WP

NR 700 CERTIFICATIONS

"I, Gregory A. Konicek, hereby certify that I am a hydrogeologist as that term is defined in Chapter NR 712.03 (1), Wisconsin Administrative Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in Chapters NR 700 to 726, Wisconsin Administrative Code."

Signature _____ Date _____

"I, Gregory L. Johnson, hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of chapter A-E 4, Wisconsin Administrative Code; that this document has been prepared in accordance with the Rules of Professional Conduct in chapter A-E 8, Wisconsin Administrative Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chapters NR 700 to 726, Wisconsin Administrative Code."

Signature _____ Stamp

FILE NO. 0808004.WP

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1.0 INTRODUCTION

1.1 General

This *Site Investigation (SI) Work Plan* for the Reedsburg Cleaners site (subject site) in Reedsburg, Wisconsin, was prepared and is being submitted on behalf of Reedsburg Cleaners to the Wisconsin Department of Natural Resources (WDNR) by Key Engineering Group, Ltd. (KEY). This *SI Work Plan* was prepared in general accordance with Chapter NR 716 of the Wisconsin Administrative Code (WAC).

1.2 Purpose of Site Investigation

Tetracholoethene (PCE) was detected in a monitoring well located in the vicinity of the subject site during a leaking underground storage tank (LUST) site investigation associated with the property east of the subject site and North Locust Street (Spellman Monument, 403 East Main Street, WDNR File Reference #1103). The WDNR subsequently requested that Reedsburg Cleaners investigate an apparent release of PCE from an on-site aboveground storage tank (AST) located on the subject site in a letter dated November 15, 1995.

Petroleum contamination was detected on the subject site during a May 10, 1996 site investigation conducted by Advent Environmental. The WDNR was notified of this contamination on July 11, 1996 and the WDNR subsequently documented Reedsburg Cleaners responsibility to investigate the degree and extent of the contamination in a letter dated July 31, 1996. The WDNR's letter indicated that three (3) underground storage tanks (USTs) abandoned in-place on the subject site are believed to be the source of the petroleum contamination. Copies of the WDNR's November 15, 1995 and July 31, 1996 letters are included in Appendix 1.

1.3 Objective and Scope of Site Investigation

The objective of the SI is to define the degree and extent of PCE and petroleum impacts in soil and groundwater due to the use of the PCE AST and petroleum USTs at the subject site, respectively.

The objective of the SI will be met by installing groundwater quality monitoring wells (water table observation wells and piezometers) and collecting and analyzing groundwater samples. The sample results will be compared with NR 140 groundwater quality standards.

1.4 Site Investigation Contacts

The site contact's mailing address and phone number are as follows:

Mr. Wayne Butz
Reedsburg Cleaners
140 Maine Street
Mauston, Wisconsin 53948
(608) 847-5904

KEY has been contracted by Reedsburg Cleaners to conduct a SI. The KEY contact person is Mr. Curtis Hoffart. Mr. Hoffart's address and phone number are as follows:

Mr. Curtis Hoffart, CHMM.
Key Engineering Group, Ltd.
W66 N215 Commerce Court
Cedarburg, Wisconsin 53012
(414) 375-4750
(414) 375-9680 (Fax)

In accordance with the Petroleum Environmental Clean up Fund Act (PECFA), as required by the Wisconsin Department of Commerce (WDCOM), the project contractors will be selected based on the lowest competitive quote for the proposed scope of work. The participating contractors will be certified and qualified in accordance with applicable local and state regulations.

2.0 SITE BACKGROUND INFORMATION

2.1 Site Location

The subject site is geographically located in the southeast ¼ of the northwest ¼ of Section 10, Township 12 North, Range 4 East, Sauk County, Wisconsin, and is identified by the street address of 349 East Main Street (S.T.H. 23/33), Reedsburg, Wisconsin. The site location is depicted on Figure 1.

2.2 Site Description

The subject site is approximately 4,913 square feet in size (0.1 acres). An approximate 1,670 square foot building occupied by Reedsburg Cleaners (dry cleaner) is located on the northwest portion of the subject site. A building adjoining the west side of the site building is located on the property west of the subject site. The adjoining building consists of two (2) commercial spaces addressed as 335 and 337 East Main Street. 335 East Main Street was vacant during a site reconnaissance on September 4, 1998, and 337 East Main Street was occupied by Dairyland Veterinary Service. An empty grass and gravel lot is located immediately west of the building adjoining the site building. The subject site is bound by East Main Street and commercial and residential properties to the south, a residential property including a house and detached garage (125 North Locust Street) to the north, and North Locust Street and Spellman Monument (403 East Main Street) to the east. A site vicinity map is provided as Figure 2.

Three (3) 1,000-gallon leaded gasoline USTs, which had apparently been filled with sand, are located on the east side of the subject site. Additionally, one (1) 500-gallon fuel oil UST had apparently been removed from the northeast portion of the subject in the early 1990s. The remnants of an apparent gasoline dispensing island are located on the south-central portion of the subject site. PCE used for dry cleaning operations is stored in a fenced-in area on the northeast portion of the subject site in an AST with a capacity of approximately 75 to 100 gallons. Apparent UST fill and vent pipes, potential indicating the presence of an existing UST, were observed north of the site building, between the site building and the adjacent residential garage to the north. The contents, capacity, and ownership of the UST potentially at this location are not known. The exterior surface of the subject site generally consist of concrete. The site layout is depicted on Figure 3.

2.3 Site and Underground Storage Tank History

KEY conducted an in-house UST search for the subject site by accessing the Wisconsin Department of Workforce Development's (WDWD's) online UST database. The results of the search indicated that three (3) 1,000-gallon leaded gasoline USTs are registered as closed (filled with inert material). The results also indicated that one (1) 500-gallon fuel oil UST has been removed from the subject site. Copies of the online database information are presented in Appendix 2.

An unlimited Sanborn Map Search Report for the subject site was requested from EDR Sanborn, Inc. (EDR), 3530 Post Road, Southport, Connecticut, in an effort to determine whether the location of the subject site had ever been recorded on their fire insurance maps. The response from EDR indicated that coverage was available for the subject site for the years 1885, 1892, 1898, 1904, 1912, 1918, 1924, and 1944. Copies of the response and select portions of the maps including the subject site and immediate vicinity are included in Appendix 3.

The fire insurance maps dated 1885 to 1924 depicted a dwelling on the subject site and the 1944 map depicted a filling station. Other notable map observations include:

- Several apparent residential wells were depicted within an approximate one (1) block radius from the subject site on the 1885 map. A public well was depicted approximately one (1) block west of the subject site near the intersection of East Main Street and North Park Street (formerly Market Street) on the 1885 and 1892 maps.

- A "blacksmith machine shop" was depicted west of the subject site on the 1904 map.

- A 250-gallon gasoline UST was depicted near the southwest corner of the building (formerly depicted as a blacksmith machine shop) west of the subject site on the 1912 and 1918 maps. This building was depicted as a "garage" on the 1918, 1924, and 1944 maps.

- Two (2) gasoline USTs were depicted in the East Main Street roadway adjacent to a "garage" located west of the subject site on the northeast corner of the intersection of East Main Street and North Park Street on the 1918 map. Two (2) gasoline tanks were also depicted south of this property on the 1944 map; however, only one (1) gasoline tank was depicted in this vicinity on the 1924 map.

- Two (2) gasoline tanks were depicted in the East Main Street roadway adjacent to the "garage" located west of the subject site on the 1924 and 1944 maps (the 250-gallon gasoline UST depicted on this property in 1912 and 1918 was no longer depicted).

- Two (2) gasoline tanks were depicted on the current Spellman Monument property east of the site on the 1944 map. This site was identified as a "filling station."

- Three (3) gasoline tanks were depicted on the northeast portion of the subject site on the 1944 map.

KEY conducted a telephone interview with Mr. Wayne Ballweg, the City of Reedsburg building inspector, on August 14, 1998 to gather general information regarding the subject site and immediate vicinity. Mr. Ballweg indicated that he had been in the City since 1982 and that the subject site had previously been a filling station before it became occupied by the dry cleaner. According to Mr. Ballweg, the portion of the building occupied by two (2) commercial spaces adjoined to the west side of the Reedsburg Cleaners building was not located on the subject site. Mr. Ballweg faxed KEY a parcel map for the vicinity of the subject site, which has been provided in Appendix 4.

2.4 Site Topography and Drainage

The site topography and drainage features were evaluated by reviewing the *U.S. Geological Survey, Reedsburg West, Wisconsin, 7.5 Minute Series (topographic) Quadrangle Map.* The elevation of the subject site is approximately 900 feet above mean sea level (MSL). The topography of the area in the vicinity of the subject site is depicted as sloping to the southwest. The Baraboo River is located approximately 2,000 feet southwest of the subject site. The majority of storm water at the subject site runs into the adjacent roadways and subsequently into storm sewer catch basins.

2.5 Site Geology and Hydrogeology

Unconsolidated deposits in the vicinity of the subject site are categorized as glaciolacustrine (lake) deposits generally consisting of sand, silt, and clay (Hindall and Borman, 1974). The bedrock geology in the vicinity of the subject site consists of a sequence of Cambrian age sandstone including the Trempealeau Formation, Franconia Sandstone, and/or Dresbach Group. The sandstone sequence is underlain by Precambrian crystalline rocks (Hindall and Borman, 1974). Information provided in the WDNR case file for

the Spellman Monument site east of the subject site indicated that near surface site geology consisted of 7 to 9 feet of friable sandstone over competent Cambrian age sandstone.

Geologic logs and well construction reports for City of Reedsburg municipal wells were obtained from the WDNR case file for a LUST site located east of the Spellman Monument (Meyer 76, 441 East Main Street, WDNR LUST case #1079). The depth to bedrock identified in the geologic logs and well construction reports was generally 15 to 20 feet below ground surface (bgs). Copies of the geologic logs and well construction reports are included in Appendix 5.

Groundwater in the site vicinity is present in the near surface Cambrian sandstone aquifer (Hindall and Borman, 1974). This unconfined aquifer is underlain by Precambrian rocks.

The groundwater flow direction in the vicinity of the subject site is westerly to southwesterly toward the Baraboo River based on Spellman Monument LUST case file documentation. Local conditions, such as water supply wells, buried utility lines and tunnels, roadways, building foundations, and fill soils may affect the local groundwater flow direction. Based on groundwater elevation data collected during the Spellman Monument site investigation, groundwater is estimated to be present at a depth of approximately 18 feet bgs at the subject site.

2.6 Preliminary Evaluation of Other Contaminated Sites

The WDNR currently maintains LUST case files for several properties to the east and west of the subject site. The properties closest to the subject site include:

- Spellman Monument, 403 East Main Street (east of subject site)
- Meyer 76, 441 East Main Street (east of subject site)
- Gade-Kleeber Property, 305 East Main Street (west of subject site)

KEY conducted a cursory review of LUST file documentation for these sites to identify the general status of each case and to evaluate the potential that contaminants originating on the subject site are commingling with contamination from these off-site sources. Copies of select LUST site documentation is included in Appendix 6.

2.6.1 Spellman Monument

Based on groundwater elevation data provided in the Spellman Monument WDNR case file, the subject site is located down gradient from the Spellman Monument site. Applicable Spellman Monument case file information is summarized as follows:

- Concentrations of petroleum volatile organic compounds (PVOCs) exceeding NR 140 ESs by several orders of magnitude were detected in groundwater samples collected from two (2) groundwater monitoring wells located immediately west of the property (MW-2 and MW-4) (east of North Locust Street and up gradient of the subject site).

- Approximately 6 gallons and 72 gallons of free product have been bailed from MW-2 and MW-4, respectively, between September 1993 and June 1998.

- Concentrations of PVOCs exceeding NR 140 ESs were detected in groundwater samples collected from a monitoring well located immediately south of the subject site in the S.T.H. 23/33 right-of-way (ROW) (MW-7), as well as in a monitoring well located south of the subject site and East Main Street (MW-8).

- PCE was detected at concentrations as high as three (3) orders of magnitude higher than the NR 140 ES at MW-7. PCE was not detected at MW-8 or a piezometer nested with MW-8 (MW-8A).

- Remedial action consisting of soil vapor and groundwater extraction and natural attenuation had been proposed for the site; however, Spellman Monument is currently conducting a semi-annual groundwater monitoring program to further evaluate natural attenuation until site investigation activities are conducted at the subject site.

2.6.2 Meyer 76

The Meyer 76 LUST site is located immediately east of the Spellman Monument site (up gradient from the subject site). Applicable Meyer 76 information obtained from the WDNR LUST case file is summarized as follows:

- Four (4) USTs (fuel oil, diesel, waste oil, and gasoline) were removed from the site in 1991. Two (2) gasoline USTs, which have apparently been relined, are believed to currently be in service at the site.

- Site investigation data indicated that groundwater is present at a depth of approximately 21 to 24 feet bgs and sandstone bedrock is present at depths less than 2 feet bgs.

- Site investigation groundwater data indicated that PVOC concentrations had been detected in site groundwater at concentrations exceeding NR 140 ESs; however, based on the data available, groundwater concentrations have generally decreased since 1992.

- The site investigation appears to be completed for the site; however, no documentation was reviewed indicating a proposed remedial action plan.

2.6.3 Gade-Kleeber Property

The Gade-Kleeber Property is located west (down gradient) of the subject site. Because a significant well network has been constructed associated with the Gade-Kleeber Property site investigation, potential groundwater impacts from the subject site could be preliminarily evaluated. Applicable Gade-Kleeber Property documentation data obtained from Vierbicher Associates is summarized as follows:

- Limited groundwater data was available for the Gade-Kleeber Property investigation; however, the data reviewed did not suggest that petroleum impacts were present in groundwater up gradient from the Gade-Kleeber Property (in the direction of the subject site).

- PCE was apparently detected in monitoring wells located on the southeast corner of the intersection of East Main Street and South Park Street (MW-3) and the intersection of Vine Street and South Park Street (MW-7) in 1993. More recent data, which would have included data from a piezometer nested with MW-3 and a well apparently closest to the subject site (MW-9), was not available.

- Based on the information available, it could not be determined whether the PCE concentrations detected approximately one (1) block to the west and southwest were associated with the apparent PCE release at the subject site.

3.0 SITE INVESTIGATION DESCRIPTION

3.1 General

This section presents the scope and rationale of the SI and details procedures for groundwater monitoring well construction and development, groundwater sampling, groundwater elevation survey, in-situ hydraulic conductivity testing, quality assurance/quality control, documentation, and management of investigation derived soil and groundwater.

3.2 Site Investigation Scope and Rationale

The initial phase of the SI will consist of installing approximately five (5) water table observations wells and one (1) piezometer on the subject site and down gradient of the subject site. The proposed locations of locations of the monitoring wells are depicted on Figure 3. The locations of the wells and piezometer are based on the layout of the existing site facilities and utilities, UST and AST locations, regional groundwater flow direction, and current site access. The proposed monitoring well locations were selected assuming that Reedsburg Cleaners would be permitted to use several monitoring wells previously installed in the vicinity of the subject site. The monitoring wells closest to the subject site in the down gradient direction are MW-7, MW-8, and P-8 associated with Spellman Monument site, and MW-9, MW-3, and P-3 associated with the Gade-Kleeber Property.

It is anticipated that the water table observation wells and piezometer will be installed to an approximate depth of 25 feet bgs and 40 feet bgs, respectively. The final number, locations, and depths of the wells and piezometer may change based on conditions encountered during field activities. Subsurface utilities will be verified prior to initiating the SI field activities. The proposed boring locations may change based on utility locations or due to anticipated City of Reedsburg permitting requirements. Subsurface utilities will also be evaluated as potential contaminant migration pathways.

3.3 Drilling Methods and Rock Classification

Due to the likely shallow depth of competent sandstone bedrock at the subject site, drilling will be conducted with a truck-mounted drilling rig using air rotary methods (likely with a 6-inch diameter bit). It is anticipated that casing will be advanced in the upper friable portion of the formation. No soil samples will be collected.

A representative from KEY will collect rock cuttings removed during drilling activities; rock cuttings will be classified by rock type, color, texture, hardness, weathering, and water content. A boring log will be prepared for each boring.

3.4 Groundwater Quality Monitoring Well Construction

Monitoring well placement and materials will meet NR 141 specifications. Each water table observation well will consist of a 10 or 15-foot length of 2-inch diameter, machine slotted, polyvinyl chloride (PVC) well screen placed so that it intersects the groundwater table. The piezometer will utilize a 5-foot length of screen. A 2-inch diameter threaded joint solid PVC riser pipe will extend from the screen to approximately 3 inches bgs and fitted with a water-tight locking cap. A flush-mount steel protective casing will be placed over the PVC pipe. The steel casing will be placed in a concrete pad raised above the surrounding grade, sloping away from the casing.

The filter pack between the PVC screen and outer wall of the borehole will be backfilled with a commercially packaged medium grade sand from the bottom of the borehole to approximately 6 inches above the screened portion of the well. A fine sand filter pack of approximately 6 inches to 2 feet thick will be placed above the medium sand. A chipped bentonite annular space seal will be placed from the top of the fine sand filter pack to 1 foot bgs. The chipped bentonite may be hydrated with water at approximately 1 to 2 foot intervals during placement.

3.5 Groundwater Monitoring Well Development

The wells will be developed to remove sediment produced by construction and to clear the screen slots. The wells will be developed in general accordance with NR 141. The wells will be developed utilizing a pump or Teflon® bailer (depending on the recharge of each well). The wells will first be purged of stagnant water. Well development will consist of emptying each well a minimum of ten (10) times the well and filter pack volume using a sequence of surging and purging if the wells do not pump dry. For wells that can be purged dry, development will consist of slowly purging the well dry.

3.6 Groundwater Sampling

A cleaned Teflon® bailer will be used to collect groundwater samples from each well. The groundwater samples will be transferred to laboratory supplied containers and stored on ice.

The groundwater samples will be submitted to a WDNR certified laboratory for analysis of gasoline range organics (GRO), diesel range organics (DRO), volatile organic compounds (VOCs), and dissolved lead, as appropriate. Natural attenuation indicator parameters including dissolved oxygen, nitrate, sulfate, methane, and ferrous iron may also be measured in the field or submitted for laboratory analysis, as applicable.

Up to four (4) quarterly sampling events may be conducted prior to evaluation of the groundwater data. This data would be incorporated into quarterly groundwater sampling letter reports and be included in the *SI Report* identified in Section 4.0.

3.7 Groundwater Elevation Survey

The elevation and horizontal location of each groundwater quality monitoring well will be surveyed with respect to a known or designated benchmark. Elevations of the ground surface and top of the PVC well casing will be surveyed. The depth to groundwater will be measured with a hand-held electric water level indicator. Efforts will be made to reference the new wells to the benchmark(s) used during other site investigations in the vicinity of the subject site.

3.8 In-Situ Hydraulic Conductivity Testing

The hydraulic conductivity of the saturated zone in the vicinity of the monitoring wells will be estimated by conducting bail down or slug tests.

3.9 Quality Assurance/Quality Control

The down-hole drilling equipment will be decontaminated prior to mobilization and between boring locations. Decontamination will consist of cleaning the down hole drilling equipment with pressurized hot water.

Groundwater monitoring well development, sampling and testing equipment will be decontaminated with an Alconox® detergent/distilled water wash and distilled water rinses. To evaluate the effectiveness of the decontamination process, a water sample or field blank will be collected during the sampling process. The bailer will be cleaned and filled with distilled water and subsequently transferred to laboratory supplied vials. The field blank will be maintained with the other groundwater samples.

A duplicate groundwater sample will be collected from a down gradient well. The duplicate sample will be submitted for the analysis of VOCs to evaluate the precision of the laboratory.

A trip blank supplied by the laboratory will be submitted for analysis during each round of sampling. The trip blank is a water sample prepared by the laboratory and analyzed to identify contamination which may occur due to outside influences.

KEY will follow chain of custody protocols from sample collection to laboratory analysis. Each sample will be identified and labeled with a field sample identification number consisting of a KEY project number, sample matrix identifier, sample location identifier, sampler's name, time and date collected.

KEY will follow analytical methods, container requirements, holding times, sample preservation procedures specified in the WDNR *LUST and Petroleum Analytical and Quality Assurance Guidance* and NR 700, as appropriate.

3.10 Documentation

The drilling; monitoring well construction, development and testing; and soil and groundwater sampling will be documented in the field by a KEY representative using the following field forms provided in Appendix 7:

- Field Notes (KEY)
- Soil Boring Log Information/Soil Boring Log Information Supplement Forms (WDNR Form 4400-122/4400-122A)
- Monitoring Well Construction Form (WDNR Form 4400-113A)
- Monitoring Well Development Form (WDNR Form 4400-113B)
- Survey Form (KEY)
- Groundwater Monitoring Form (KEY)

3.11 Management of Investigation Derived Wastes

Rock cuttings and water generated during drilling and groundwater well construction, development, and sampling will be collected and placed in 55-gallon Department of Transportation (DOT) approved drums. Monitoring well-specific drums will be maintained. One (1) soil sample from each monitoring well location will be collected from the drums and submitted to a WDNR certified laboratory for analysis of VOCs. Based on the soil characterization and the groundwater sample analytical data, the rock cuttings and groundwater will be managed and disposed of in accordance with applicable regulations.

3.12 Site Control and Health and Safety

Site control to prevent bystanders or others from potential contact with contaminated soil will be the responsibility of KEY. Site control and health and safety protocols are detailed in the *Site Health and Safety Plan* in Appendix 8.

4.0 REPORTING

A *SI Report* will be prepared and submitted to WDNR after the objectives of the SI have been met. The *SI Report* will document the SI procedures and results. A *Remedial Action Options (RAO) Report/Remedial Action Plan (RAP)* will be prepared to document an evaluation of remedial action options including natural (passive) bio-degradation/naturalattenuation. The *RAO Report/RAP* will also document the approximate cost to implement the selected RAO. The *RAO Report/RAP* will be submitted to WDCOM and WDNR for approval.

5.0 SCHEDULE

The estimated schedule for completion of the SI is summarized in the following table. This schedule assumes that only one (1) round of groundwater monitoring will be performed prior to preparing the *SI Report* and *RAO/RAP*.

Site Investigation Activity	Estimated Schedule
Obtain Applicable Off-Site Drilling Permits	September/October 1998
Install Groundwater Monitoring Wells	October 1998
Perform Groundwater Sampling and Groundwater Elevation Survey	October 1998
Prepare and Submit *SI Report* * to WDNR**	November 1998
Prepare and Submit the *RAO Report/RAP* to WDCOM and the WDNR	November/December 1998

* Only if the degree and extent of soil and groundwater contamination are determined in the initial phase of the SI, otherwise a second phase of the SI would be implemented.

** In accordance with COMM 47, the *SI Report* will be submitted to WDCOM with the *RAO Report/RAP*.

6.0 REFERENCES

American Society of Testing and Materials, Standard Practice for Diamond Core Drilling for Site Investigation, Designation D2113.

EDR Sanborn, Inc., Sanborn™ Map Report and Fire Insurance Maps, Inquiry #289604-1, September 4, 1998.

Hindall, S.M. and Borman, R.G., Water Resources of Wisconsin-Lower Wisconsin River Basin, Hydrologic Investigation Atlas HA-479, United States Geological Survey, University of Wisconsin-Extension, Wisconsin Geological and Natural History Survey, 1974.

Excerpt from City of Reedsburg Parcel Map via Facsimile from City of Reedsburg.

Reedsburg West, Wisconsin, 7.5 Minute Quadrangle Map, United States Geological Survey, 1975.

Trotta, L.C., and Cotter, R.D., Depth to Bedrock in Wisconsin, United States Geological Survey, University of Wisconsin-Extension, Wisconsin Geological and Natural History Survey, 1973.

Wisconsin Administrative Code, Department of Natural Resources, Environmental Protection, Groundwater Monitoring Well Requirements, Chapters NR 140.

Wisconsin Administrative Code, Department of Natural Resources, Environmental Protection, Groundwater Monitoring Well Requirements, Chapters NR 141.

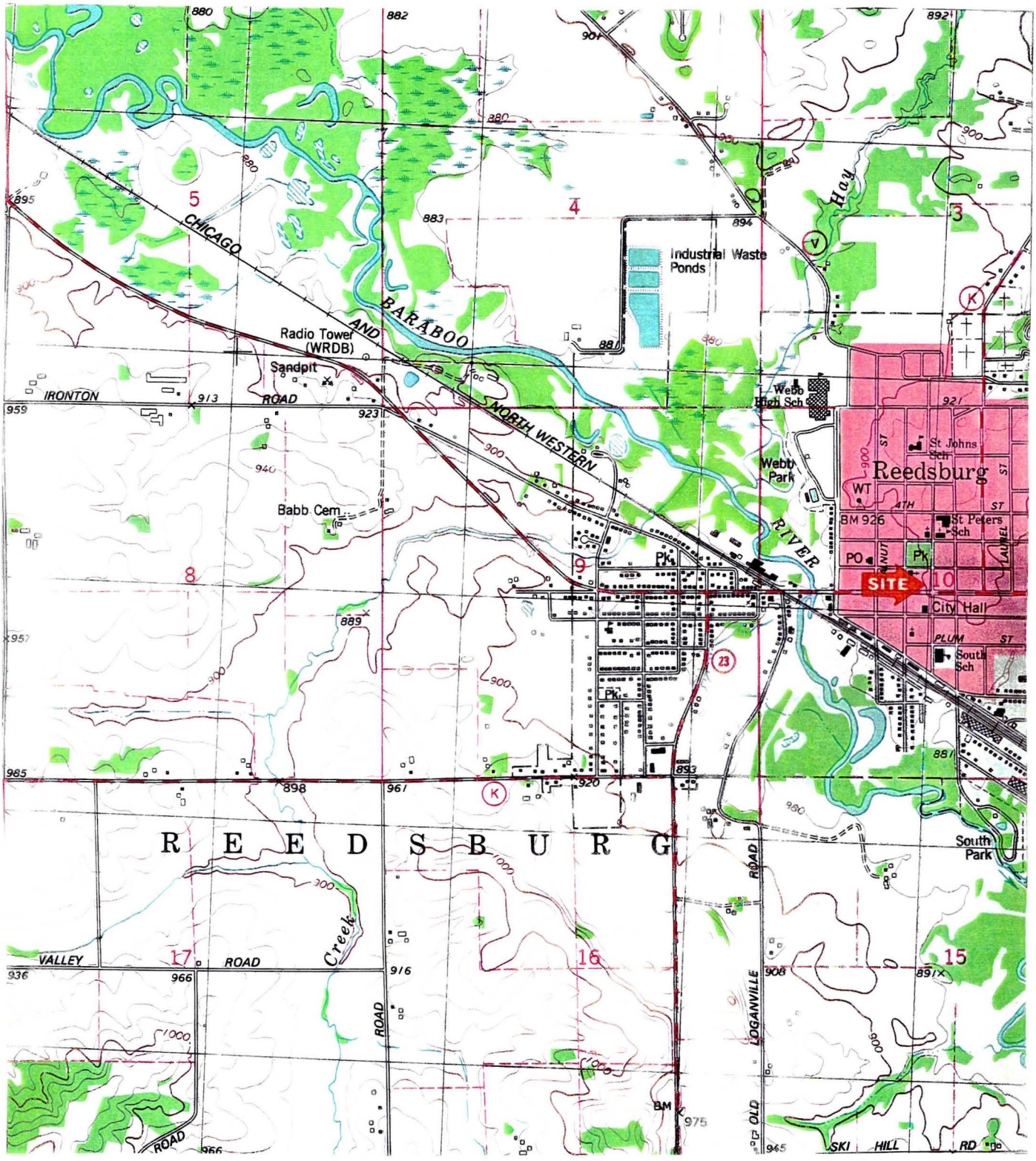
Wisconsin Administrative Code, Department of Natural Resources, Environmental Protection, Investigation and Remediation of Environmental Contamination, Chapters NR 700 Series.

Wisconsin Department of Commerce, COMM 47 Emergency Rule.

Wisconsin Department of Natural Resources, Leaking Underground Storage Tank (LUST) and Petroleum Analytical and Quality Assurance Guidance, PUBL-SW-130-93, July 1993.

Wisconsin Department of Natural Resources, LUST case files for Spellman Monument and Meyer 76.

Wisconsin Department of Natural Resources, "Revised GRO and DRO Methods Effective March 1, 1996" *WDNR Release News*, Volume 6, Number 1, February 1996.



N

SOURCE: *USGS Reedsburg West, Wisconsin Quadrangle Map*
Topographic Map 1975

0 1000 2000

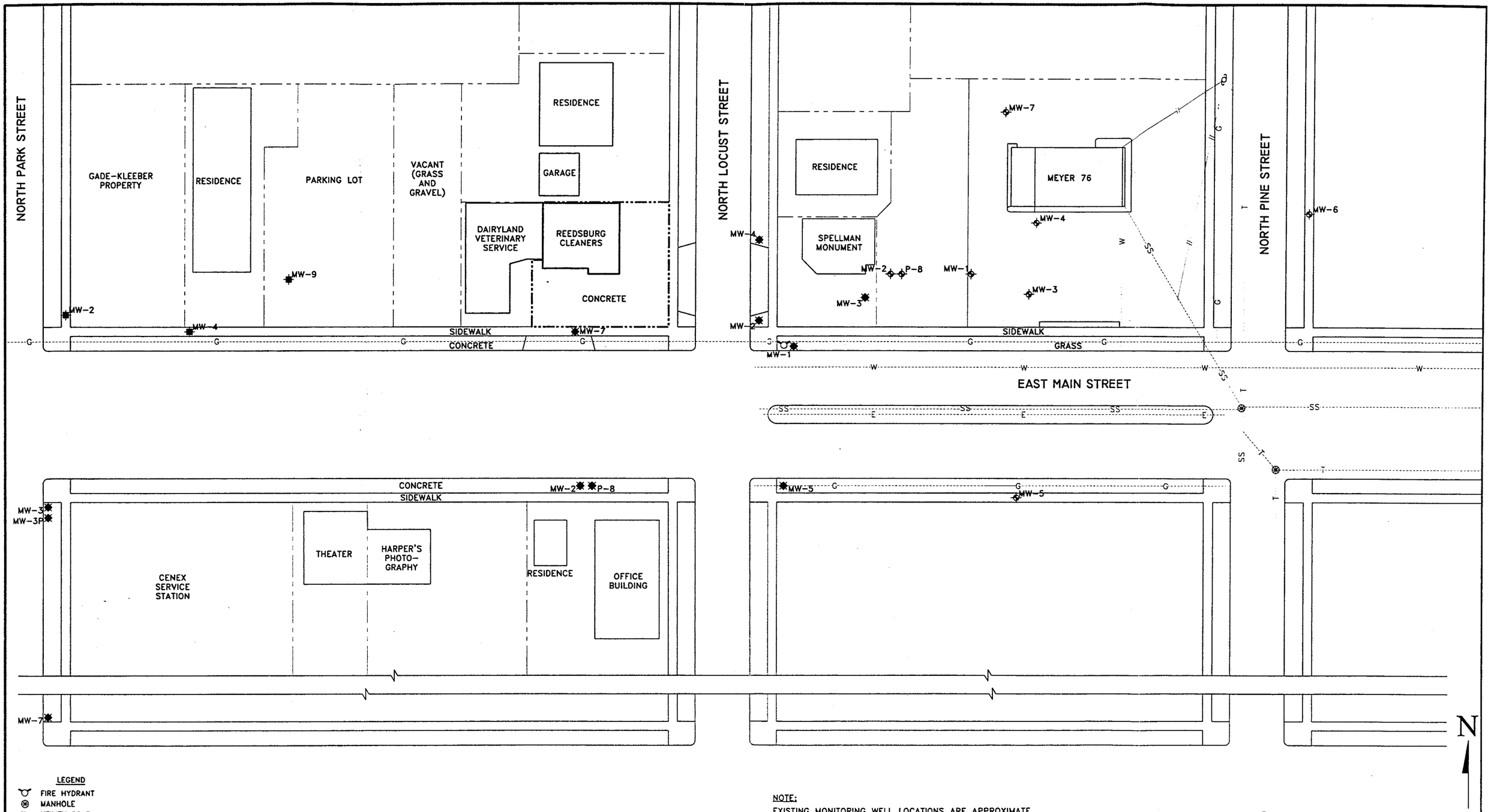
SCALE: 1"=2000'

DRN. BY:	S.L.G.	DATE:	09/09/98
DSN. BY:	C.M.H.	FILE NO.:	0808004
CHK. BY:	C.M.H.	DWG. NO.:	08080041
REV. BY:	G.L.J.	SHEET NO.:	1

KEY ENGINEERING GROUP LTD.

FIGURE 1
SITE LOCATION MAP

SITE INVESTIGATION WORK PLAN
REEDSBURG CLEANERS
349 EAST MAIN STREET
REEDSBURG, WISCONSIN



LEGEND

- FIRE HYDRANT
- MANHOLE
- UTILITY POLE
- —E— ELECTRIC UTILITY
- —G— GAS UTILITY
- —SS— SEWER UTILITY
- —T— TELEPHONE UTILITY
- —W— WATER UTILITY
- —//— OVERHEAD UTILITY
- EXISTING MONITORING WELL LOCATION (GADE-KLEEBER INVESTIGATION)
- EXISTING MONITORING WELL LOCATION (SPELLMAN MONUMENT INVESTIGATION)
- EXISTING MONITORING WELL LOCATION (MEYER 76 INVESTIGATION)

SOURCES:
Parcel Map
City of Reedsburg

WDNR Case File
Spellman Monument

LUST Documentation from Vierbicher Associates
Gade-Kleeber Property

LUST Investigation Project Report
Metco
June 20, 1995

NOTE:
EXISTING MONITORING WELL LOCATIONS ARE APPROXIMATE.

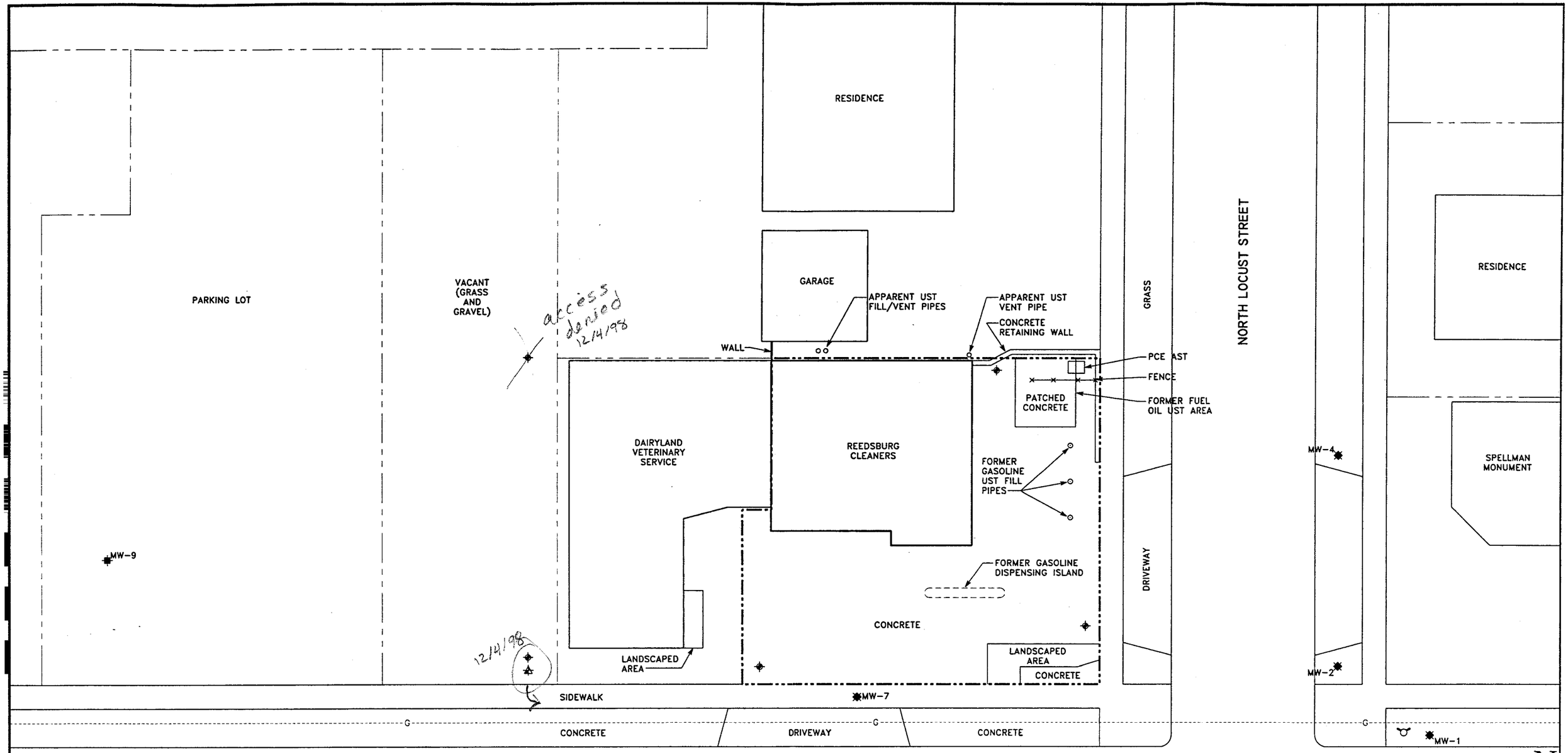
0 25 50
APPROXIMATE SCALE: 1"=50'

DRN. BY:	S.L.G.	DATE:	09/17/98
DSN. BY:	J.J.B.	FILE NO.:	0808004
CHK. BY:	C.M.H.	DWG. NO.:	08080042
REV. BY:	G.L.J.	SHEET NO.:	2

KEY ENGINEERING GROUP LTD.

FIGURE 2
SITE VICINITY MAP

SITE INVESTIGATION WORK PLAN
REEDSBURG CLEANERS
349 EAST MAIN STREET
REEDSBURG, WISCONSIN



LEGEND

- FIRE HYDRANT
- G GAS UTILITY
- W WATER UTILITY
- EXISTING MONITORING WELL LOCATION (SPELLMAN MONUMENT INVESTIGATION)
- PROPOSED WATER TABLE OBSERVATION WELL LOCATION
- PROPOSED PIEZOMETER LOCATION

SOURCES:

Parcel Map
City of Reedsburg

WDNR Case File
Spellman Monument

LUST Documentation from Vierbicher Associates
Gade-Kleeber Property

LUST Investigation Project Report
Metco
June 20, 1995

NOTE:
EXISTING MONITORING WELL LOCATIONS ARE APPROXIMATE.

0 10 20
APPROXIMATE SCALE: 1"=20'

DRN. BY:	S.L.G.	DATE:	09/16/98
DSN. BY:	C.M.H.	FILE NO.:	0808004
CHK. BY:	C.M.H.	DWG. NO.:	08080043
REV. BY:	G.L.J.	SHEET NO.:	3

KEY ENGINEERING GROUP LTD.

FIGURE 3
SITE LAYOUT AND PROPOSED MONITORING WELL LOCATIONS

SITE INVESTIGATION WORK PLAN
REEDSBURG CLEANERS
349 EAST MAIN STREET
REEDSBURG, WISCONSIN

WISCONSIN
DEPT. OF NATURAL RESOURCES

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor
George E. Meyer, Secretary
Ruthe E. Badger, District Director

Southern District Headquarters
3911 Fish Hatchery Road
Fitchburg, WI 53711
TELEPHONE 608-275-3266
FAX 608-275-3338
TDD 608-275-3231

July 31, 1996

File Ref: 03-57-002801
Sauk County

r Wayne Butz
eedsburg Cleaners
49 Main St
eedsburg WI 53959

Subject: Reedsburg Cleaners, 349 Main St, Reedsburg

ear Mr. Butz:

n July 11, 1996, we were notified of the discovery of petroleum contamination on the bove property. Three underground storage tanks, previously abandoned in place, are believed to be the source of this contamination.

he spill law authorizes the Department of Natural Resources to enforce cleanup of contaminated sites, under s. 144.76 of the Wisconsin Statutes. As the owner of the roperty where a hazardous substance discharge has occurred, you are required to determine he horizontal and vertical extent of contamination and clean-up/properly dispose of the ontaminants.

our legal responsibilities are defined both in statute and in administrative rules. The azardous substance spill law, s. 144.76 (3) Wisconsin Statutes, states:

> RESPONSIBILITY. A person who possesses or controls a hazardous substance which is discharged or who causes the discharge of a hazardous substance shall take the actions necessary to restore the environment to the extent practicable and minimize the harmful effects from the discharge to the air, lands, or waters of the state.

isconsin Administrative Code NR 700 through NR 728 establishes requirements for interim actions, public information, site investigation, design and operation of remedial action ystems, and case closure. Wisconsin Administrative Code NR 140 establishes groundwater tandards.

It is important that an investigation begins at your site as soon as possible. The longer ontamination is left in the environment, the farther it can spread and the more difficult nd costly it becomes to cleanup. Since this cleanup must comply with Wisconsin laws and rules, professional engineering and hydrogeologic experience is necessary. Therefore, you should hire a professional environmental consultant who can assure you that Department policies and guidelines are being followed.

Your consultant will help you in providing the Department with the following:

- Submit written verification (such as a letter from the consultant) that you have hired an environmental consultant. Please submit this information within 30 days of the date of this letter.

- Submit an investigation workplan explaining what work will be performed to identify the extent of contamination. This workplan should include a time schedule. Also, please provide documentation of any previous work performed

related to this release.

- Submit the investigation report defining the degree and extent of any soil and/or groundwater contamination.
- Provide a remedial action plan outlining the remedy selected.
- Provide a remedial action report with data supporting your consultant's conclusions and recommendations for future work or site closure.

In addition, you will be required to keep the Department informed on site progress by submitting 30, 60 or 90 day updates. You will be notified when to provide the status reports at the time you submit your investigation workplan. Also, you will receive an annual site status form every February. It will be necessary for you to complete this form and return it promptly to the address provided.

There are times when staffing levels do not allow us to keep current with workload demands. However, to maintain your compliance with the spill law and chs. NR 700 through NR 728, investigation and cleanup actions should not be unnecessarily delayed waiting for DNR responses. In the event that you experience delays, please refer to NR 716.09(3) regarding Department review of sites.

Your correspondence and reports regarding this site should be sent to Marilyn Jahnke, Department of Natural Resources, 3911 Fish Hatchery Road, Fitchburg WI 53711. Unless otherwise requested, please send only one copy of all plans and reports. Correspondence should be identified with the site name and address which is listed in the subject of this letter.

I have enclosed a list of environmental consultants and some important tips on selecting one. If you are eligible for Wisconsins' PECFA program (see end of letter), you will need to compare at least three consultant's proposals before making your selection. Also enclosed are materials on controlling costs, understanding the cleanup process, and choosing a site cleanup method. Please read this information carefully.

Reimbursement from the Petroleum Environmental Cleanup Fund (PECFA) is available for the costs of cleaning up the contamination from eligible petroleum storage tanks. The fund is administered by the Department of Industry, Labor and Human Relations (DILHR). Please contact DILHR at (608) 267-3753 for more information on eligibility and regulations for this program.

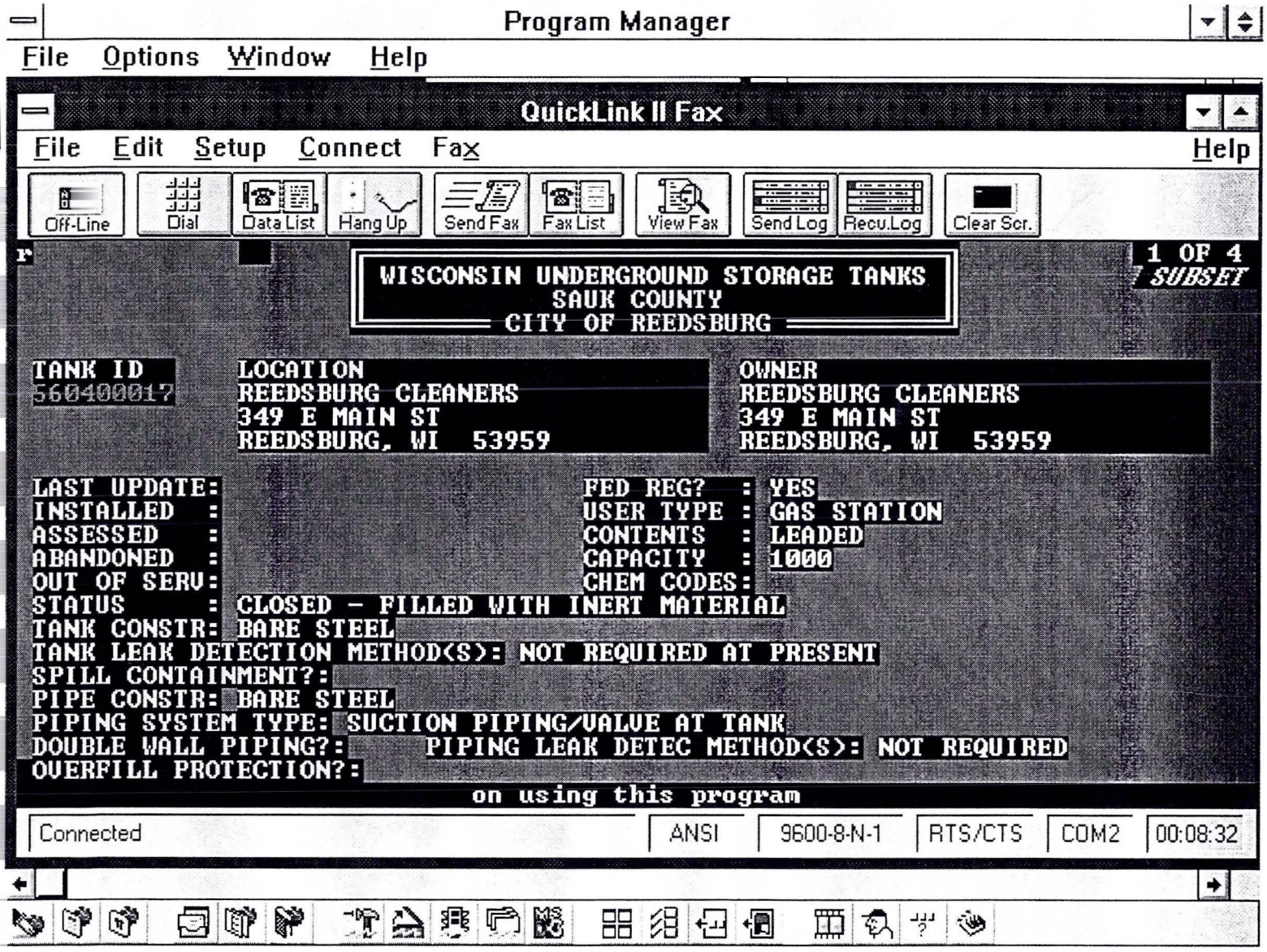
If you have any questions about this letter or your responsibilities, please call me at (608) 275-3212.

Sincerely,

Marilyn Jahnke

Marilyn Jahnke, Program Assistant
Emergency & Remedial Response Program
Telephone: (608) 275-3212

cc: Advent Environmental Services, 10845 N Buntrock Ave 64W, Mequon WI 53092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Recv.Log
Clear Scr.
1 OF 4
SUBSET
WISCONSIN UNDERGROUND STORAGE TANKS
SAUK COUNTY
CITY OF REEDSBURG
TANK ID
560400017
LOCATION
REEDSBURG CLEANERS
349 E MAIN ST
REEDSBURG, WI 53959
OWNER
REEDSBURG CLEANERS
349 E MAIN ST
REEDSBURG, WI 53959
LAST UPDATE:
INSTALLED :
ASSESSED :
ABANDONED :
OUT OF SERV:
STATUS : CLOSED - FILLED WITH INERT MATERIAL
TANK CONSTR: BARE STEEL
TANK LEAK DETECTION METHOD(S): NOT REQUIRED AT PRESENT
SPILL CONTAINMENT?:
PIPE CONSTR: BARE STEEL
PIPING SYSTEM TYPE: SUCTION PIPING/VALVE AT TANK
DOUBLE WALL PIPING?:
PIPING LEAK DETEC METHOD(S): NOT REQUIRED
OVERFILL PROTECTION?:
FED REG? : YES
USER TYPE : GAS STATION
CONTENTS : LEADED
CAPACITY : 1000
CHEM CODES:
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Connected
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9600-8-N-1
RTS/CTS
COM2
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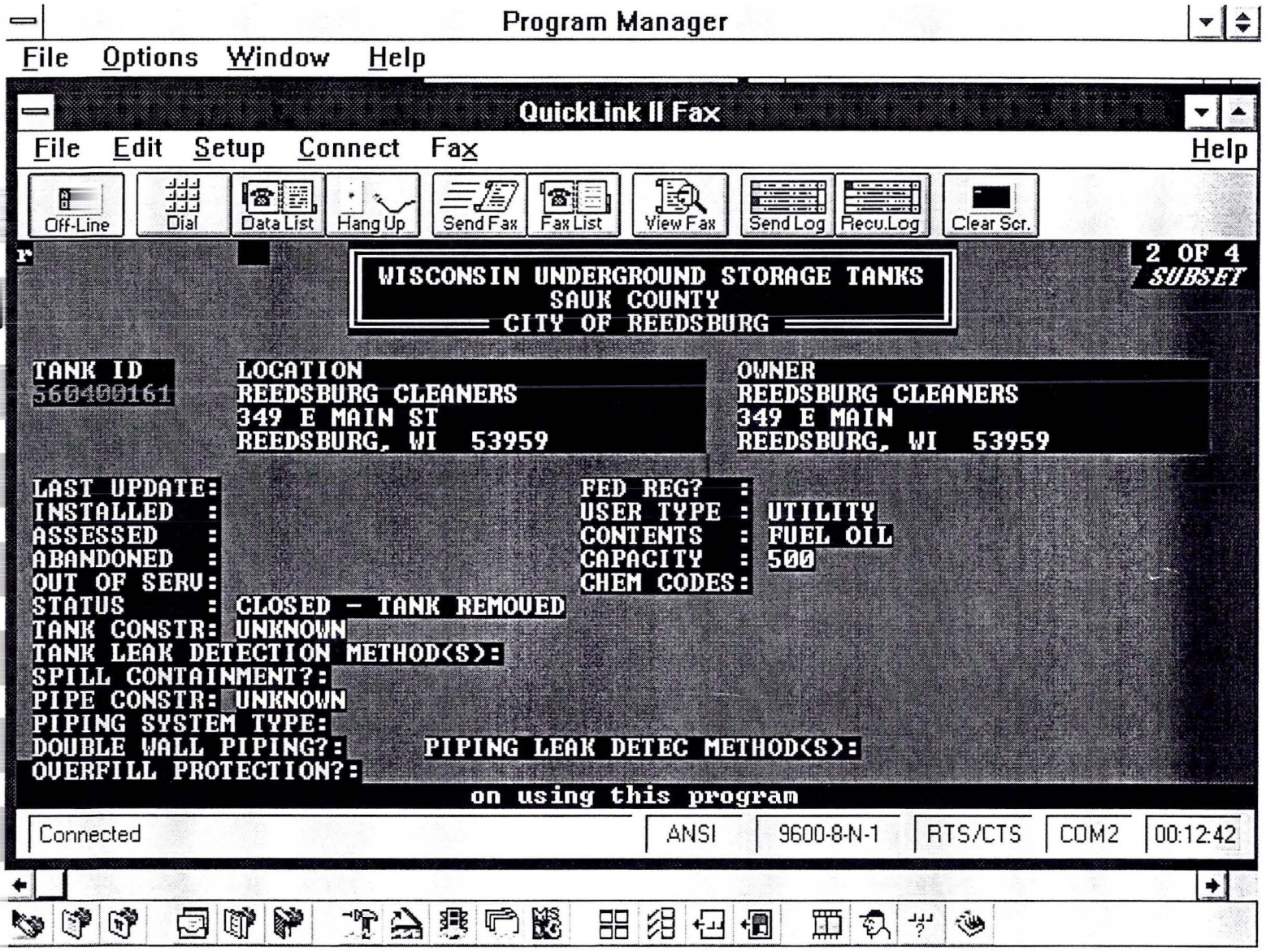
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2 OF 4
SUBSET
WISCONSIN UNDERGROUND STORAGE TANKS
SAUK COUNTY
CITY OF REEDSBURG
TANK ID
560400161
LOCATION
REEDSBURG CLEANERS
349 E MAIN ST
REEDSBURG, WI 53959
OWNER
REEDSBURG CLEANERS
349 E MAIN
REEDSBURG, WI 53959
LAST UPDATE:
INSTALLED :
ASSESSED :
ABANDONED :
OUT OF SERV:
STATUS : CLOSED - TANK REMOVED
TANK CONSTR: UNKNOWN
TANK LEAK DETECTION METHOD(S):
SPILL CONTAINMENT?:
PIPE CONSTR: UNKNOWN
PIPING SYSTEM TYPE:
DOUBLE WALL PIPING?:
OVERFILL PROTECTION?:
FED REG? :
USER TYPE : UTILITY
CONTENTS : FUEL OIL
CAPACITY : 500
CHEM CODES:
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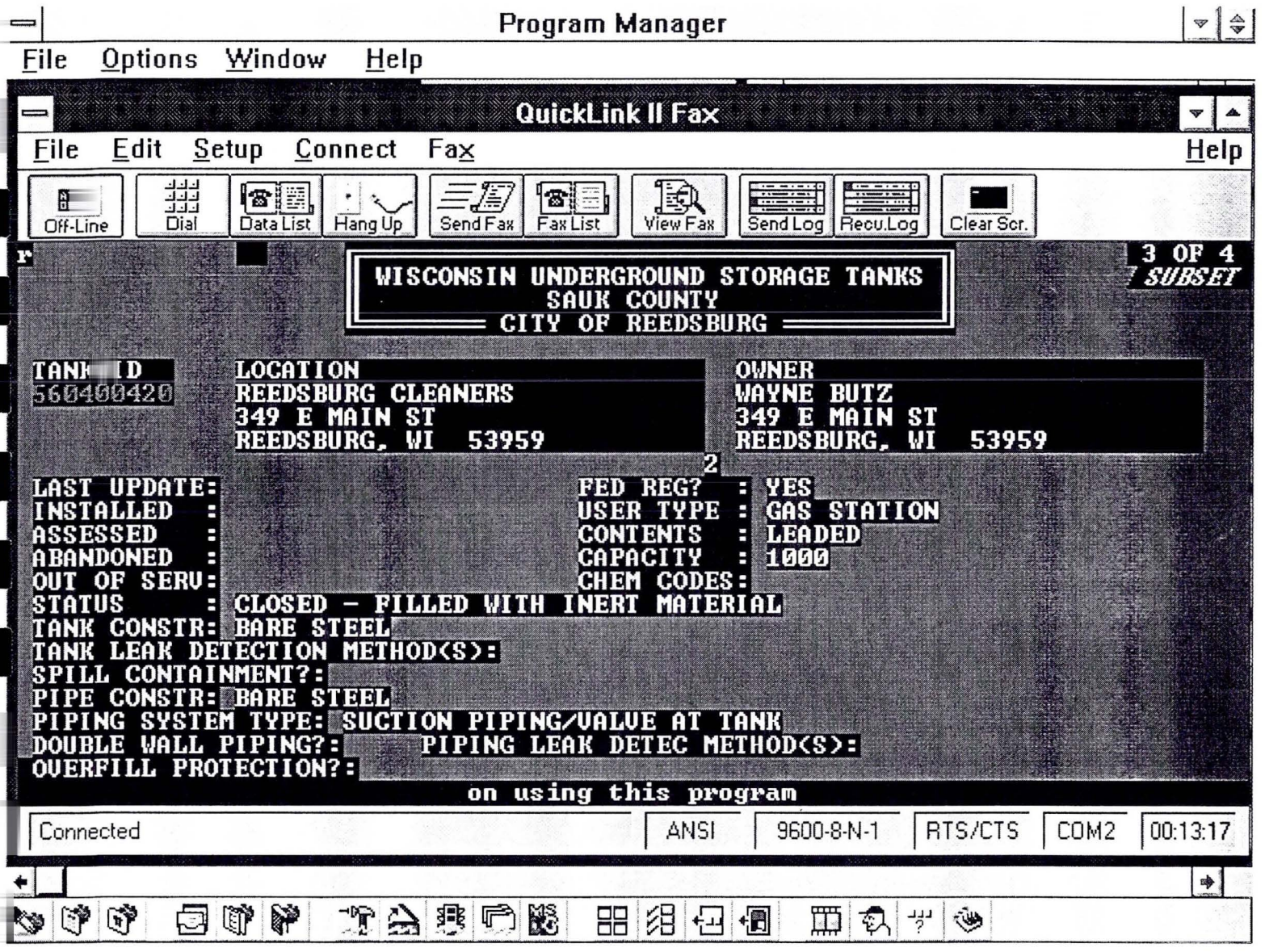
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Recv.Log
Clear Scr.
3 OF 4
SUBSET
WISCONSIN UNDERGROUND STORAGE TANKS
SAUK COUNTY
CITY OF REEDSBURG
TANK ID
560400420
LOCATION
REEDSBURG CLEANERS
349 E MAIN ST
REEDSBURG, WI 53959
OWNER
WAYNE BUTZ
349 E MAIN ST
REEDSBURG, WI 53959
2
LAST UPDATE:
INSTALLED :
ASSESSED :
ABANDONED :
OUT OF SERV:
STATUS : CLOSED - FILLED WITH INERT MATERIAL
TANK CONSTR: BARE STEEL
TANK LEAK DETECTION METHOD(S):
SPILL CONTAINMENT?:
PIPE CONSTR: BARE STEEL
PIPING SYSTEM TYPE: SUCTION PIPING/VALVE AT TANK
DOUBLE WALL PIPING?:
PIPING LEAK DETEC METHOD(S):
OVERFILL PROTECTION?:
FED REG? : YES
USER TYPE : GAS STATION
CONTENTS : LEADED
CAPACITY : 1000
CHEM CODES:
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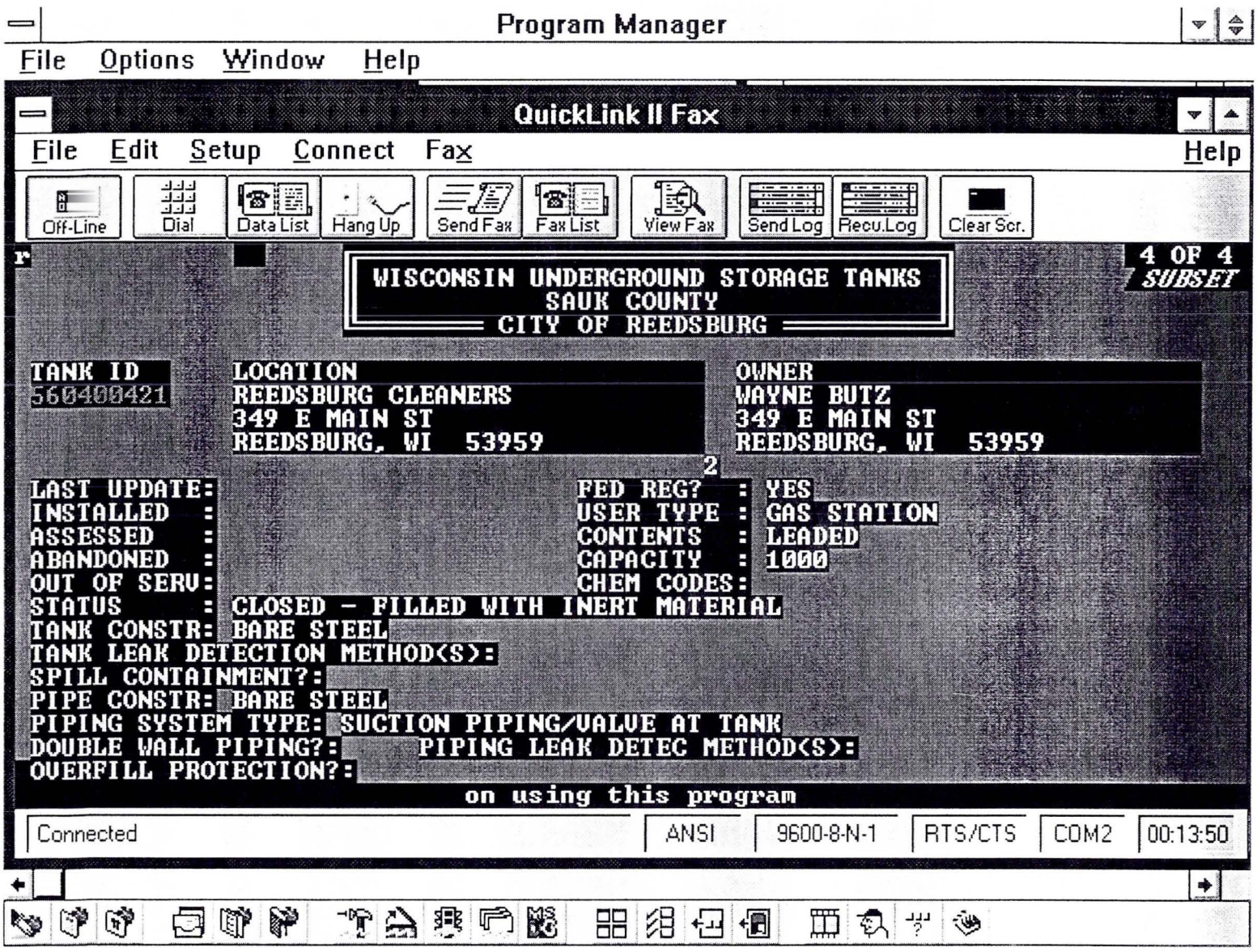
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Hang Up
Send Fax
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Clear Scr.
4 OF 4
SUBSET
WISCONSIN UNDERGROUND STORAGE TANKS
SAUK COUNTY
CITY OF REEDSBURG
TANK ID
560400421
LOCATION
REEDSBURG CLEANERS
349 E MAIN ST
REEDSBURG, WI 53959
OWNER
WAYNE BUTZ
349 E MAIN ST
REEDSBURG, WI 53959
LAST UPDATE:
INSTALLED :
ASSESSED :
ABANDONED :
OUT OF SERV:
STATUS : CLOSED - FILLED WITH INERT MATERIAL
TANK CONSTR: BARE STEEL
TANK LEAK DETECTION METHOD(S):
SPILL CONTAINMENT?:
PIPE CONSTR: BARE STEEL
PIPING SYSTEM TYPE: SUCTION PIPING/VALVE AT TANK
DOUBLE WALL PIPING?:
PIPING LEAK DETEC METHOD(S):
OVERFILL PROTECTION?:
FED REG? : YES
USER TYPE : GAS STATION
CONTENTS : LEADED
CAPACITY : 1000
CHEM CODES:
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Connected
ANSI
9600-8-N-1
RTS/CTS
COM2
00:13:50

Environmental Data Resources, Inc.
an edr company

Sanborn™ Map Report

Ship to:

Curt Hoffart
Key Engineering Group, Ltd.
W66 N215 Commerce Court
Cedarburg, WI 53012

Order Date: 09/02/98 **Completion Date:** 09/04/98

Inquiry #: 289604-1

P.O. #: 0808004

Site Name: Reedsburg Cleaners

Address: 349 Main St

City/State: Reedsburg, WI 53959

Cross Streets: NWC Main + N. Locust Ave

1027157JFC 414-375-4750

Based on client-supplied information, fire insurance maps for the following years were identified:

1944 - 1 map
1924 - 1 map
1918 - 1 map
1912 - 1 map
1904 - 1 map
1898 - 1 map
1892 - 1 map
1885 - 1 map

Total maps: 8

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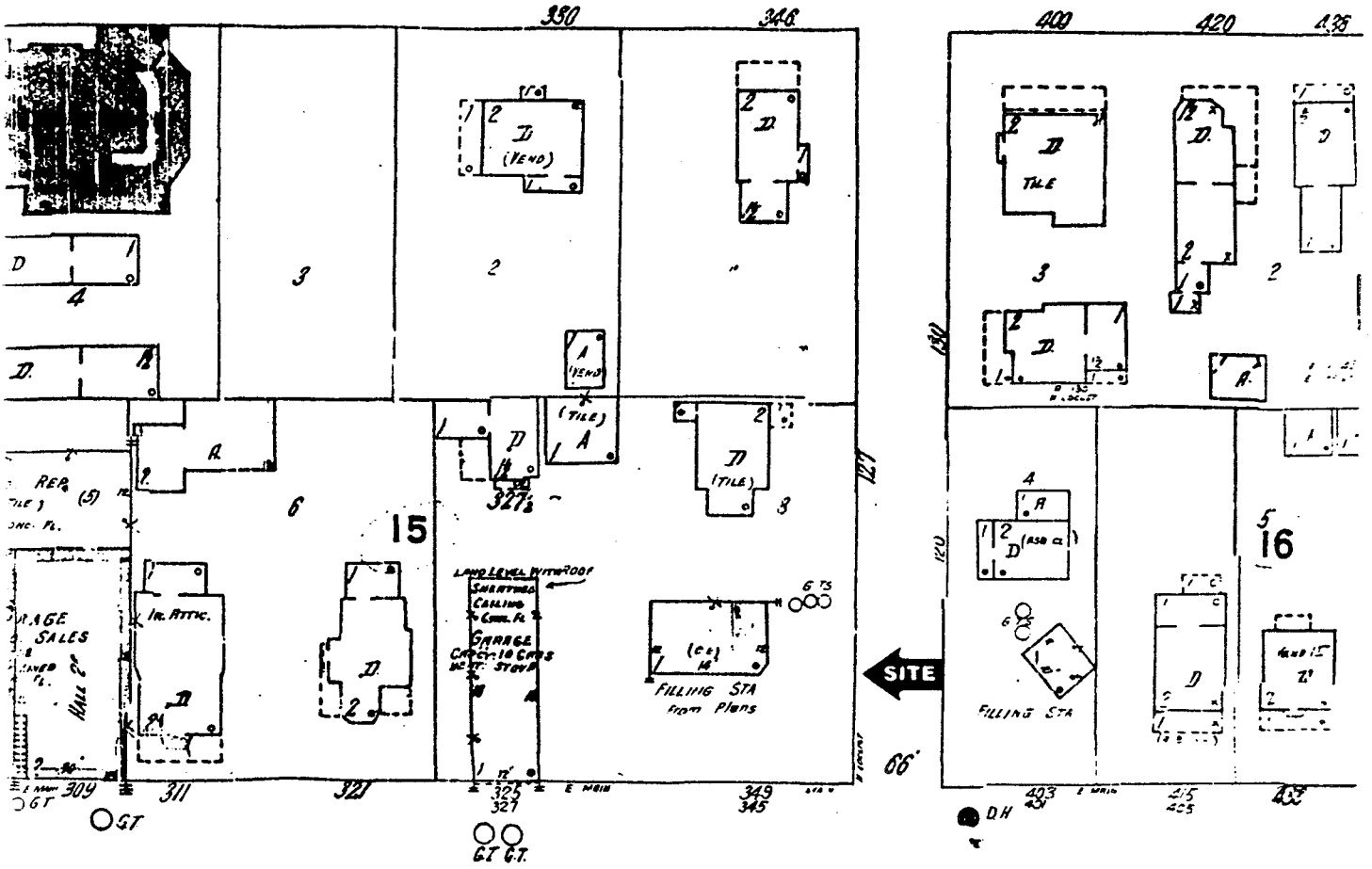

3

1944

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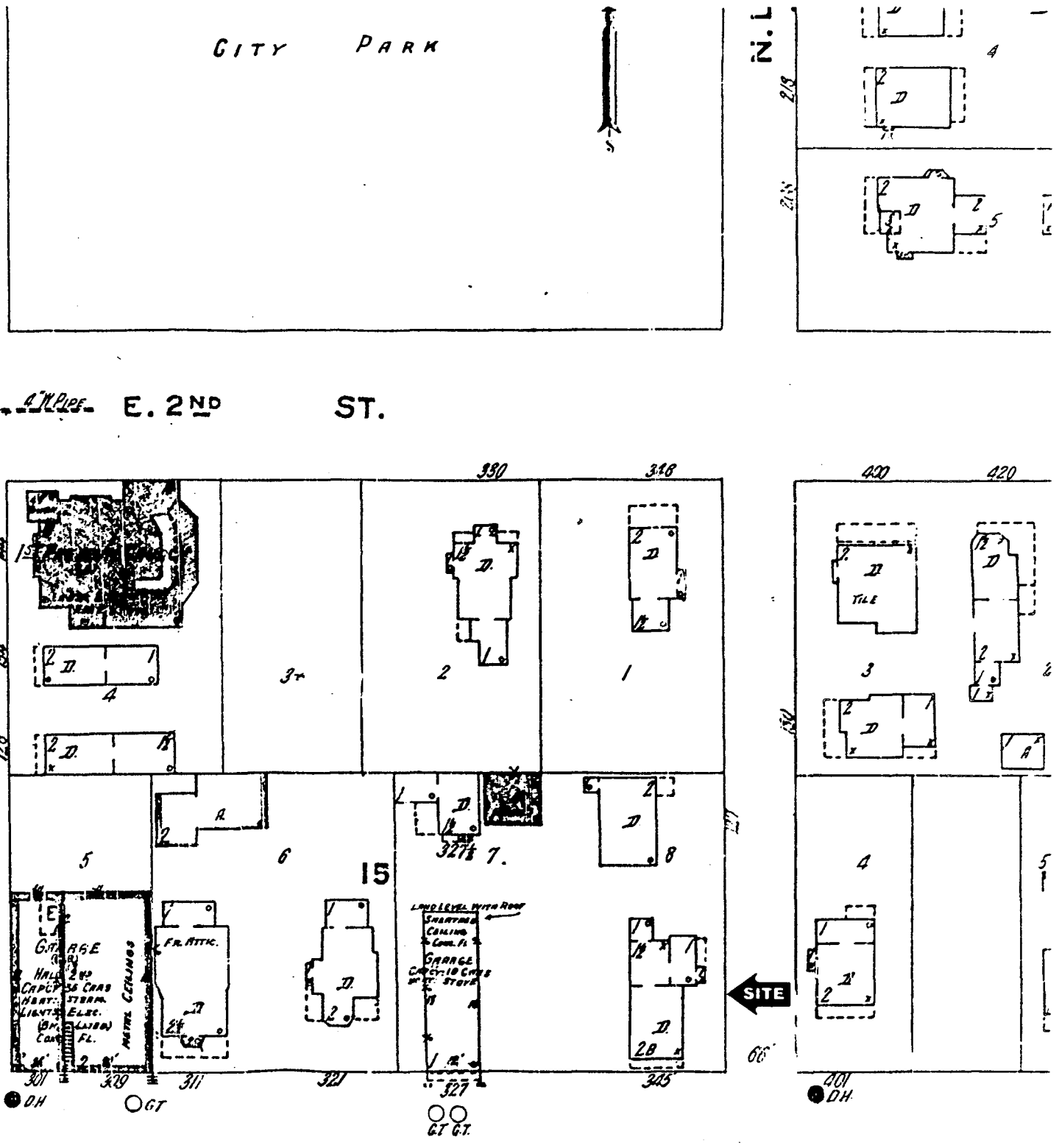
DSN. BY:	C.M.H.	FILE NO.:	0808004
CHK. BY:	C.M.H.	DWG. NO.:	0808004S
REV. BY:	G.L.J.	SHEET NO.:	1

KEY ENGINEERING GROUP LTD.

SANBORN FIRE INSURANCE MAP
1944

SITE INVESTIGATION WORK PLAN
REEDSBURG CLEANERS
349 EAST MAIN STREET
REEDSBURG, WISCONSIN



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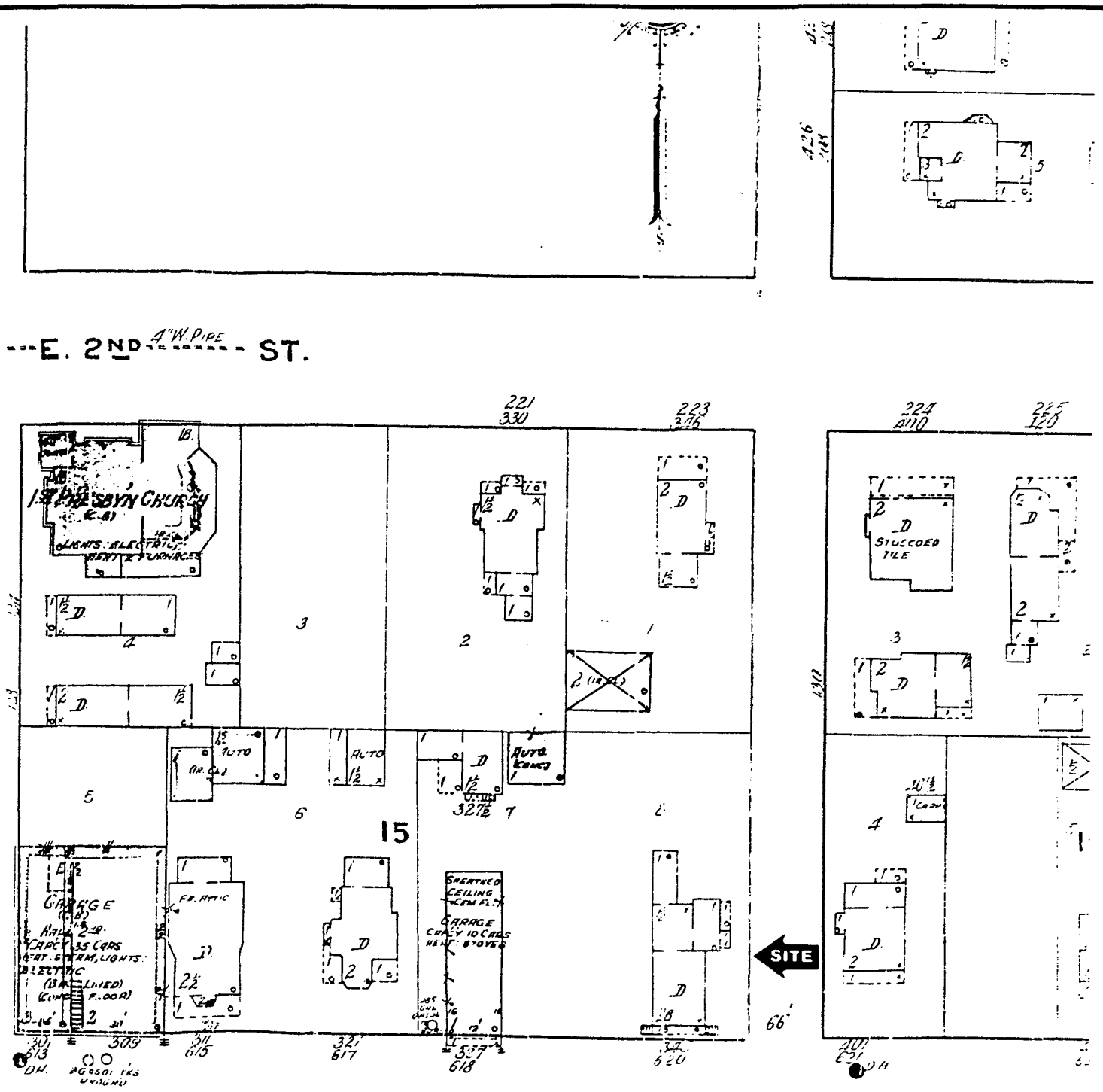
REV. BY:	G.L.J.	SHEET NO.:	1

KEY ENGINEERING GROUP LTD.

SANBORN FIRE INSURANCE MAP 1924

SITE INVESTIGATION WORK PLAN
REEDSBURG CLEANERS
349 EAST MAIN STREET
REEDSBURG, WISCONSIN



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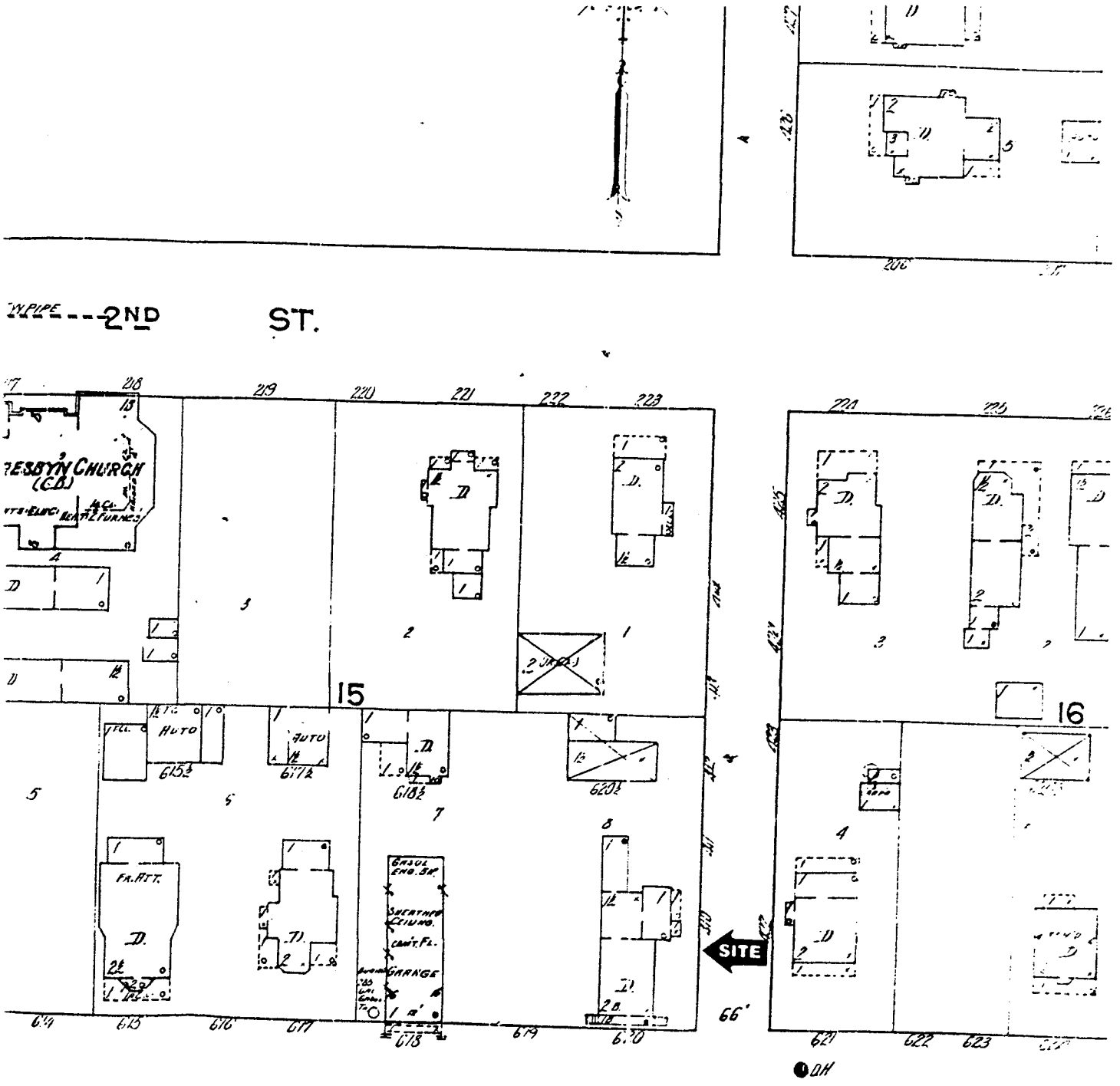
REV. BY:	G.L.J.	SHEET NO.:	1

KEY ENGINEERING GROUP LTD.

SANBORN FIRE INSURANCE MAP 1918

SITE INVESTIGATION WORK PLAN
REEDSBURG CLEANERS
349 EAST MAIN STREET
REEDSBURG, WISCONSIN



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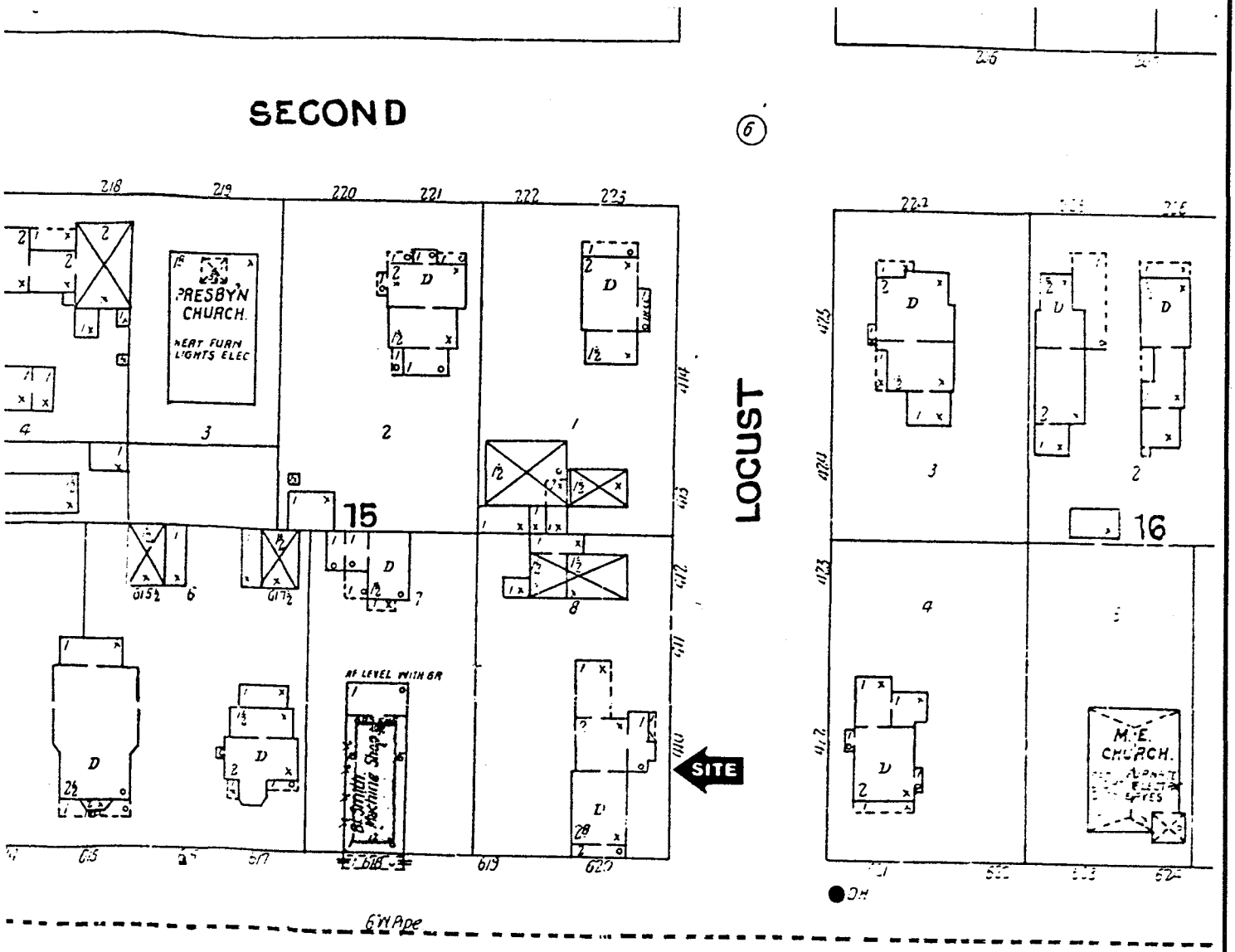
KEY ENGINEERING GROUP LTD.

SANBORN FIRE INSURANCE MAP 1912

SITE INVESTIGATION WORK PLAN
REEDSBURG CLEANERS
349 EAST MAIN STREET
REEDSBURG, WISCONSIN



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REV. BY:	G.L.J.	SHEET NO.:	1

KEY ENGINEERING GROUP LTD.

SANBORN FIRE INSURANCE MAP 1904

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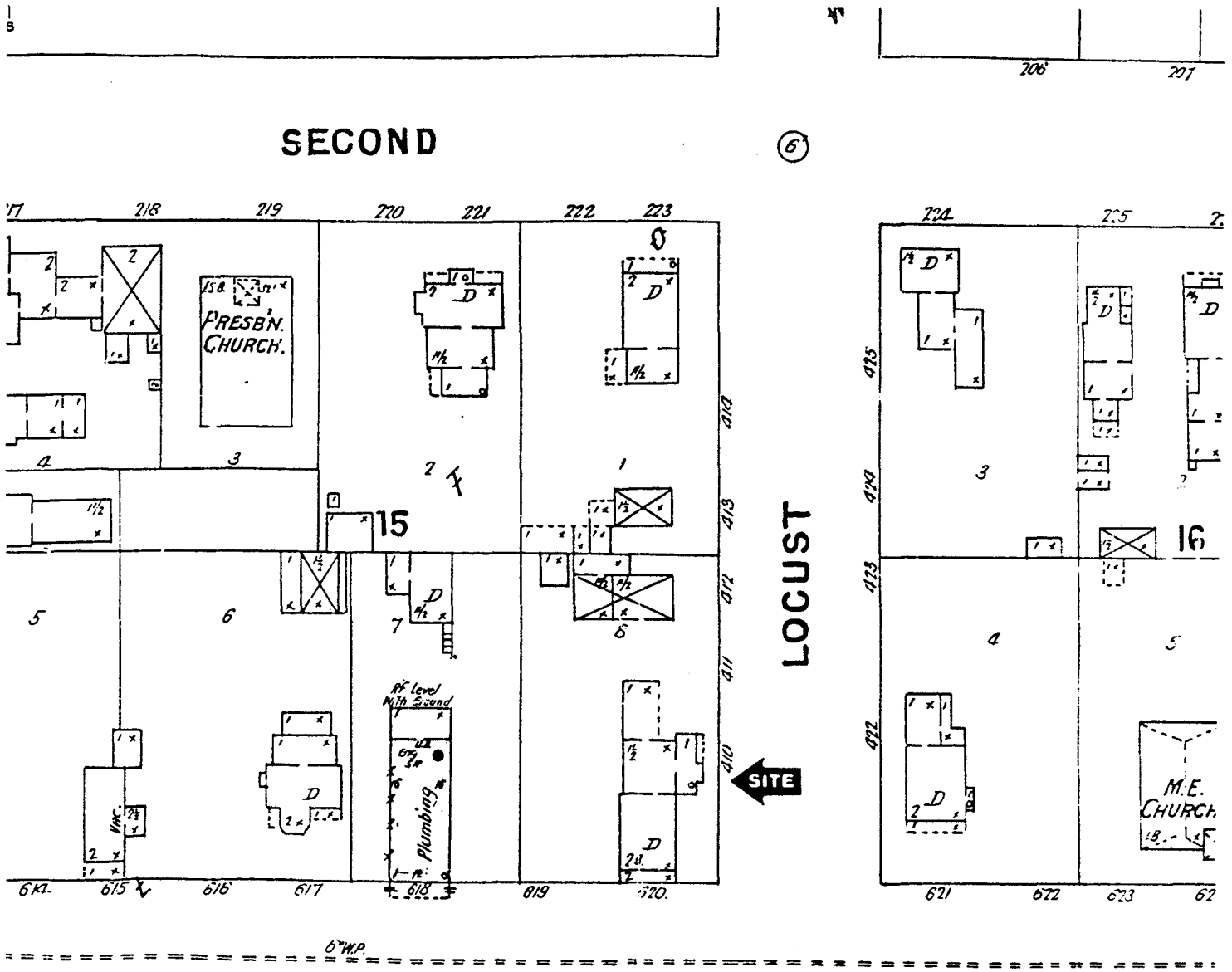
REEDSBURG CLEANERS
349 EAST MAIN STREET
REEDSBURG, WISCONSIN



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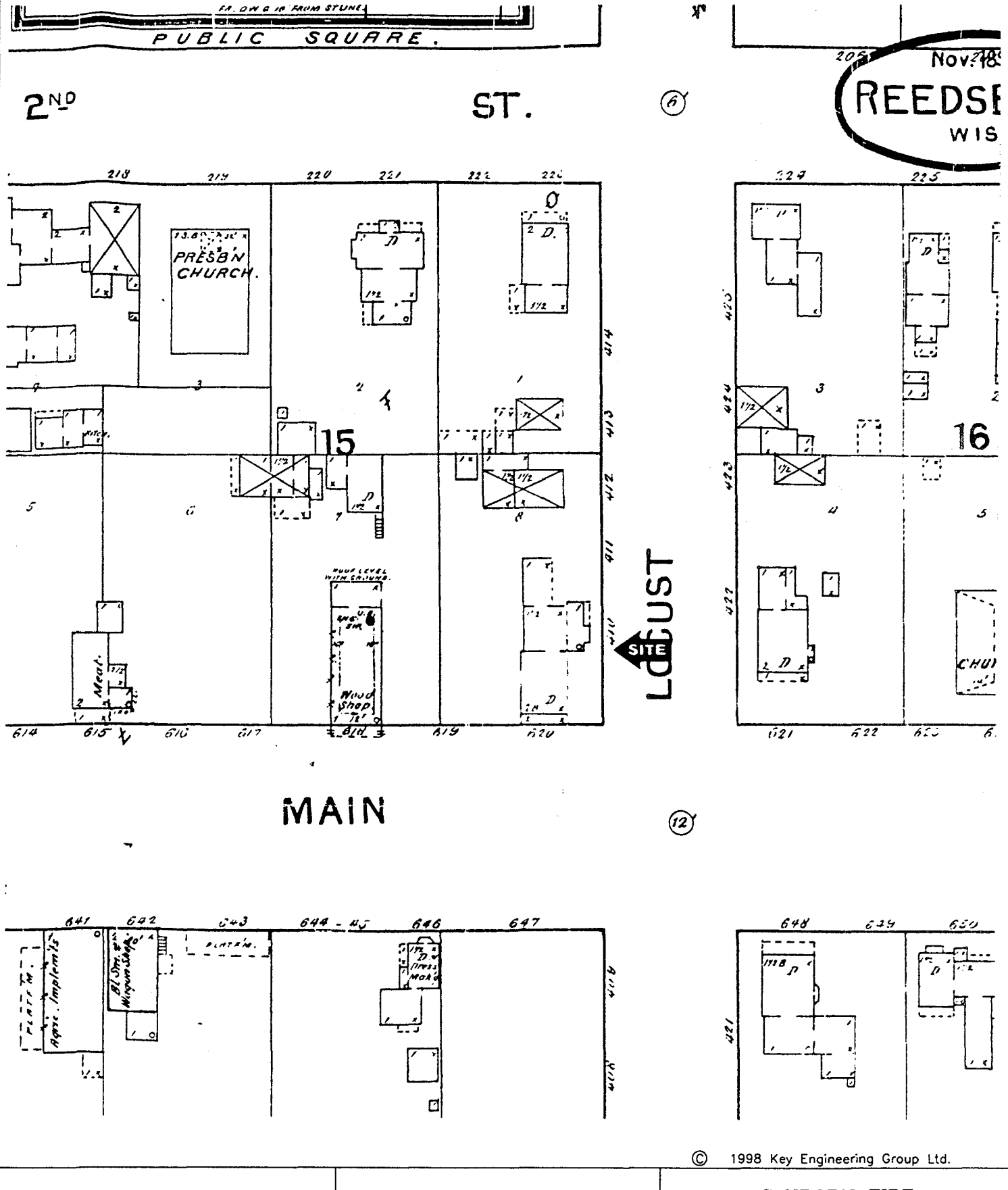
REV. BY:	G.L.J.	SHEET NO.:	1

KEY ENGINEERING GROUP LTD.

SANBORN FIRE INSURANCE MAP 1898

SITE INVESTIGATION WORK PLAN
REEDSBURG CLEANERS
349 EAST MAIN STREET
REEDSBURG, WISCONSIN



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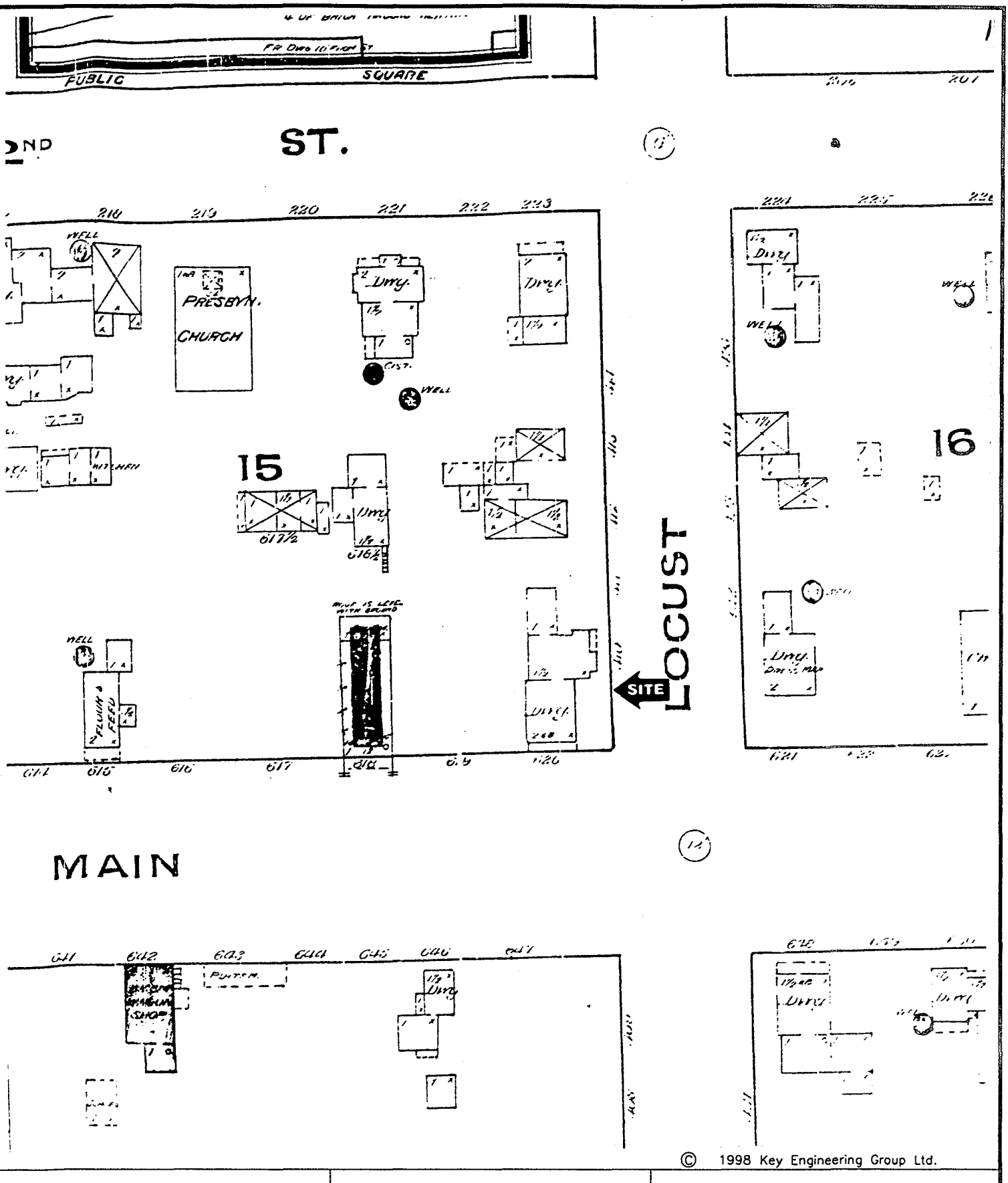
REV. BY:	G.L.J.	SHEET NO.:	1

KEY ENGINEERING GROUP LTD.

SANBORN FIRE INSURANCE MAP 1892

SITE INVESTIGATION WORK PLAN
REEDSBURG CLEANERS
349 EAST MAIN STREET
REEDSBURG, WISCONSIN



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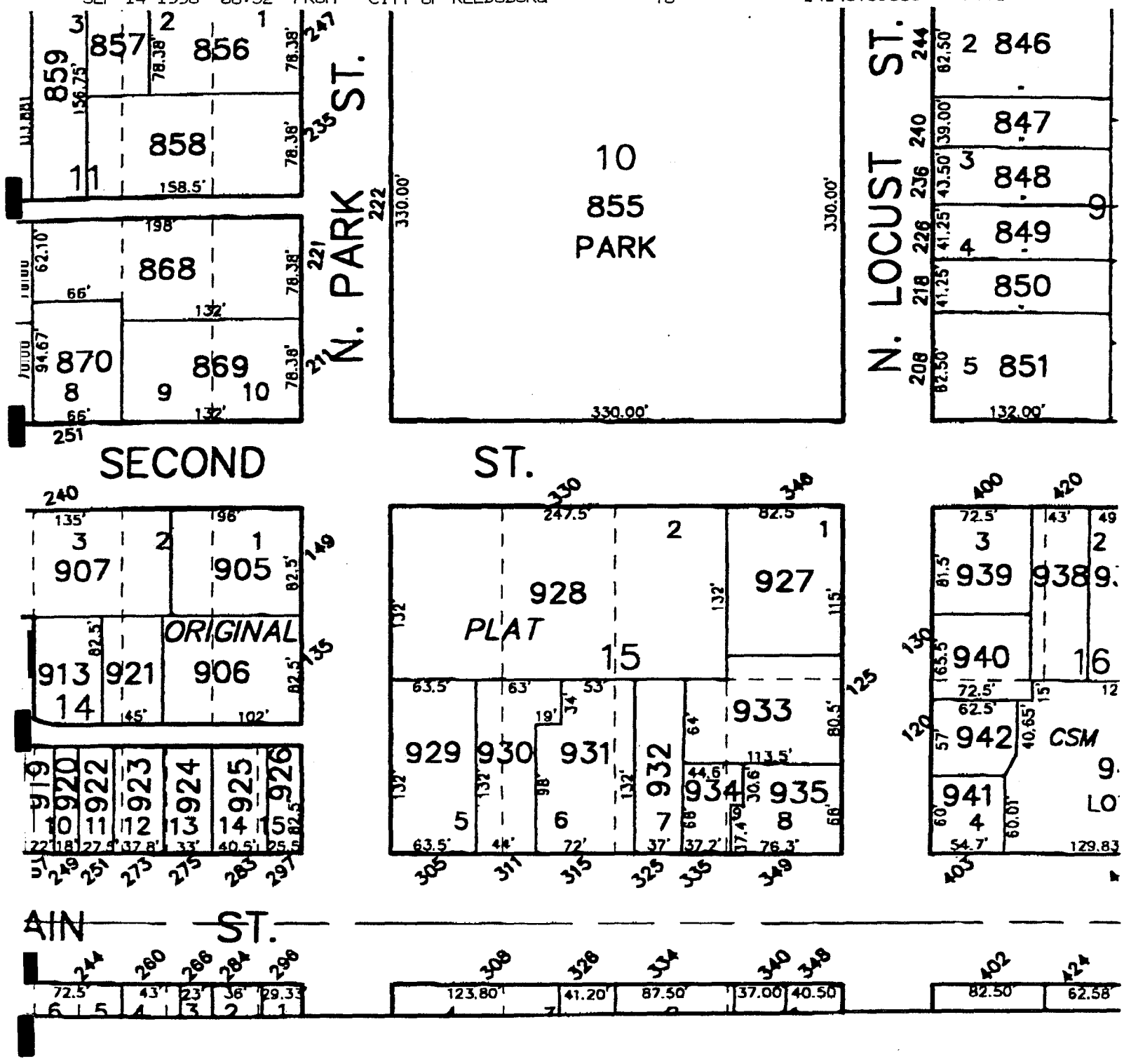
REV. BY:	G.L.J.	SHEET NO.:	1

KEY ENGINEERING GROUP LTD.

SANBORN FIRE INSURANCE MAP 1885

SITE INVESTIGATION WORK PLAN
REEDSBURG CLEANERS
349 EAST MAIN STREET
REEDSBURG, WISCONSIN



CITY OF REEDSBURG

134 S. LOCUST ST. P.O. BOX 490
REEDSBURG, WISCONSIN 53959
PH. 608-524-6468 FAX 608-524-8458

SAUK COUNTY, WISCONSIN

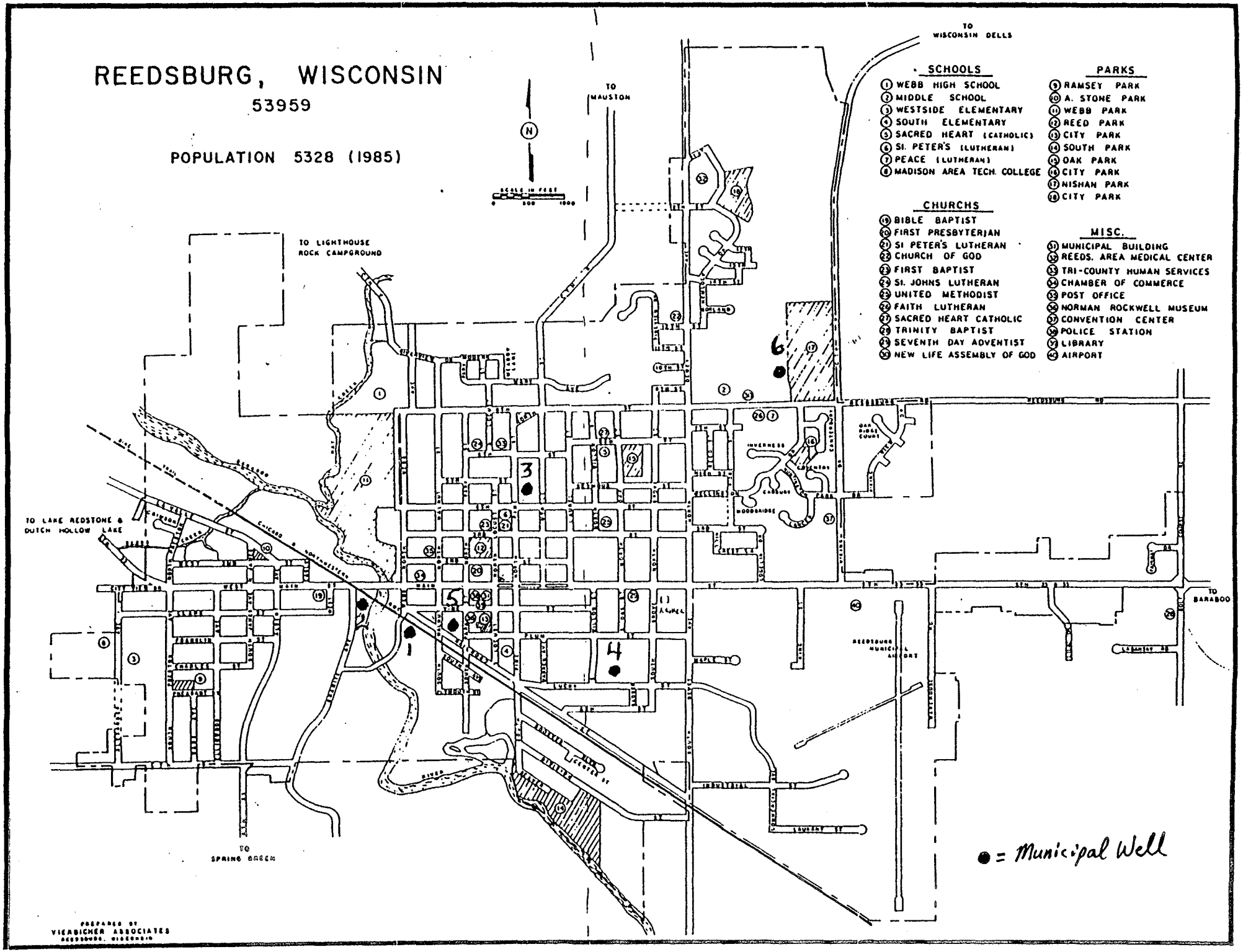
SUBDIVISION BOUNDARY

CITY LIMITS

REEDSBURG, WISCONSIN

53959

POPULATION 5328 (1985)



SCHOOLS

1. WEBB HIGH SCHOOL
2. MIDDLE SCHOOL
3. WESTSIDE ELEMENTARY
4. SOUTH ELEMENTARY
5. SACRED HEART (CATHOLIC)
6. ST. PETER'S (LUTHERAN)
7. PEACE (LUTHERAN)
8. MADISON AREA TECH. COLLEGE

PARKS

9. RAMSEY PARK
10. A. STONE PARK
11. WEBB PARK
12. REED PARK
13. CITY PARK
14. SOUTH PARK
15. OAK PARK
16. CITY PARK
17. NISHAN PARK
18. CITY PARK

CHURCHS

19. BIBLE BAPTIST
20. FIRST PRESBYTERIAN
21. ST PETER'S LUTHERAN
22. CHURCH OF GOD
23. FIRST BAPTIST
24. ST. JOHNS LUTHERAN
25. UNITED METHODIST
26. FAITH LUTHERAN
27. SACRED HEART CATHOLIC
28. TRINITY BAPTIST
29. SEVENTH DAY ADVENTIST
30. NEW LIFE ASSEMBLY OF GOD

MISC.

31. MUNICIPAL BUILDING
32. REEDS. AREA MEDICAL CENTER
33. TRI-COUNTY HUMAN SERVICES
34. CHAMBER OF COMMERCE
35. POST OFFICE
36. NORMAN ROCKWELL MUSEUM
37. CONVENTION CENTER
38. POLICE STATION
39. LIBRARY
40. AIRPORT

PREPARED BY
VIERBICHER ASSOCIATES
REEDSBURG, WISCONSIN

UNIVERSITY OF WISCONSIN GEOLOGICAL & NATURAL HISTORY SURVEY
1815 University Avenue, Madison, Wisconsin 53706 Sample Nos. 264908 - 264987

County: Sauk

Well name Reedsburg City Well #4
Lucky Street
Owner.... City of Reedsburg
Address.. c/o Clerk, City Hall
Reedsburg, Wisconsin
Driller.. Layne-Northwest Co.
Engineer. Mid-State Assoc.
Baraboo, Wisc.

Completed...11/65
Field check.
Altitude....896' ETM
Use..... Municipal
Static w. l. -- 9'
Spec. cap... -- 18.1

R. 4E
T. 12 N.
Sec.14

Location: SW¼,SW¼,NE¼,NW¼,NW¼,SE¼,SE¼,Sec. 10, T12N, R4E Quad. Wis. Dells15'

Drill Hole						Casing & Liner Pipe or Curbing							
Dia.	from	to	Dia.	from	to	Dia.	Wgt.& Kind	from	to	Dia.	Wgt.& Kind	from	to
26"	0	20'	17"	50'	400'	26"	steel	+1'	20'				
24"	20'	50'				18"	steel	+1'9"	50'				

Grout: Kind	from	to
Neat cement	+1'	50'

Samples from 0 to 400' Date received: 3/8/66 Issued: 12/68
Examined by: J. Warren Date: 4/17/67

Formations: Surface, Elk Mound

Remarks: Well test for 8 hours at 1200 gpm with 66 feet of drawdown.
DNR Permanent Well #85915 & Sauk Co. #8.

LOG OF WELL:

S		0-5	5	NO SAMPLE
	15'	5-10	5	G Snd,dk yl or,fn,Srnd&Sang,P srtg,mch M,ltl C,tr V fn&VC;tr st,gl
		10-15	5	Sr,pl yl bn,P srtg,mch V fn snd,ltl fn
		15-20	5	G Ss,V pl yl or,M&fn,Sang,F srtg,ltl C&V fn,tr glauc
		20-35	15	G Ss,V pl yl or,M,Sang,F srtg,mch C&fn,tr V fn,tr glauc
		35-40	5	NO SAMPLE
		40-45	5	G Ss,V pl yl or,M&fn,Sang,F srtg,tr C;tr glauc&lim-cem
		45-60	15	G Ss,V pl yl or,M&C,Srnd,F srtg,ltl VC,tr fn;tr glauc&lim-cem
		60-65	5	G Ss,V pl yl or,M&C,Srnd,F srtg,tr VC,V fn;tr glauc,lim-cem&sts
E		65-70	5	G Ss,V pl yl or,M&C,Sang,F srtg,ltl fn,V fn,tr glauc&lim-cem
L		70-75	5	Ss,V pl yl or,M&C,Srnd,F srtg,tr fn;tr Fe stn&lim-cem
K		75-90	15	Ss,V pl yl or,M&C,Srnd,F srtg,tr fn,ltl V fn;tr Fe stn&st
M		90-100	10	Ss,V pl yl or,M&C,Srnd,F srtg,tr F dol-cem,ltl fn&V fn;tr Fe stn
O		100-110	10	NO SAMPLES
U		110-120	10	Ss,pl yl or,M&C,Srnd,P srtg,ltl P sft dol-cem,ltl fn&V fn
N		120-125	5	NO SAMPLE
D		125-145	20	Ss,pl yl or,M&C,Sang,P srtg,ltl P sft dol-cem,ltl fn,tr V fn&VC
		145-150	5	Ss,V pl yl or,M&C,Srnd,P srtg,ltl fn,tr V fn&VC
		150-155	5	Ss,pl yl or,M,Srnd,P srtg,mch fn&C,tr V fn
		155-160	5	Ss,pl yl or,M&C,Srnd,P srtg,mch fn,tr V fn&VC
		160-165	5	Ss,pl yl or,M,Srnd,P srtg,mch fn&C,tr V fn
		165-170	5	NO SAMPLE
		170-190	20	Ss,pl yl or,M,Srnd,P srtg,mch fn&C,tr V fn&VC

Well name Reedsburg City Well #4
Sample Nos. 264908 to 264987

ELK MOUND

	190-195	5		NO SAMPLE
	195-200	5		Ss,V pl or,M,Srnd,P srtg,mch fn&C,tr V fn&VC
	200-205	5		Ss,V pl or,M&fn,Sang,P srtg,ltl C,tr V fn&VC
	205-215	10		Ss,V pl or,M,Sang,P srtg,mch fn&C,tr V fn&VC
	215-225	10		Ss,V pl or,M&C,Srnd,P srtg,mch fn,tr VC&V fn,tr lim
	225-230	5		Ss,V pl or,C,rnd,P srtg,mch M&VC,ltl fn,tr V fn
	230-240	10		Ss,V pl yl or,M,Srnd,P srtg,mch C&fn,tr V fn&VC
	240-255	15		Ss,V pl yl or,M&C,Srnd,P srtg,ltl fn,tr VC
	255-260	5		Ss,V pl or,M&C,Srnd,P srtg,ltl fn&VC
	260-270	10		Ss,V pl gry or,M,Srnd,P srtg,mch fn&C,tr V fn&VC
	270-275	5		Ss,V pl gr or,M&C,rnd,P srtg,ltl fn&V fn,tr VC,tr lim&fn xln do
	275-285	10		Ss,V pl gr or,M,Srnd,P srtg,tr P lim-cem,mch C,ltl fn,tr V fn
	285-295	10		Ss,V pl gr or,M,Srnd,P srtg,ltl C&fn,tr V fn&VC,tr lim-cem&Fe st
	295-300	5		Ss,V pl gr or,M,Srnd,P srtg,tr P lim-cem,mch C,ltl fn,tr VC&V fn
	300-305	5		Ss,V pl gr or,M,Srnd,P srtg,tr P lim-cem,mch C&fn,tr V fn,tr Fe s
	305-310	5		Ss,V pl gr or,M&C,rnd,P srtg,tr P lim-cem,ltl fn&VC,tr V fn;
	310-315	5		Ss,V pl gr or,M&C,rnd,P srtg,tr P lim-cem,ltl VC,tr V fn&fn;tr p
	315-320	5		Ss,V pl gr or,M&C,rnd,P srtg,tr P lim-cem,tr VC,fn&V fn \or
	320-325	5		Ss,V pl gr or,C,rnd,F srtg,tr P lim-cem,mch M&VC,tr fn
	325-330	5		Ss,V pl gr or,M&C,rnd,P srtg,tr P lim-cem,ltl fn,tr VC&V fn
	330-335	5		Ss,gry or,M&C,rnd,P srtg,tr P lim-cem,mch fn,ltl V fn
	335-345	10		Ss,V pl or,C,rnd,F srtg,tr P lim-cem,mch M&VC,tr fn&V fn
	345-350	5		Ss,V pl or,M&C,Srnd,F srtg,ltl fn,tr V fn&VC,tr lim-cem
	350-355	5		Ss,V pl or,M&C,Srnd,F srtg,ltl fn&VC,tr V fn;tr lim-cem
	355-360	5		Ss,V pl or,M&C,Srnd,F srtg,mch fn,tr V fn,tr lim-cem
	360-365	5		Ss,V pl or,M&fn,Sang,P srtg,ltl C&V fn,tr VC,tr lim-cem
	365-370	5		Ss,V pl or,M&fn,Sang,P srtg,mch C,tr V fn;tr lim-cem
	370-375	5		Ss,gry or,M&C,Srnd,ltl P lim-cem,ltl fn,tr V fn&VC
380	375-400	25		Ss,gry or,M&C,Srnd,P srtg,ltl P lim-cem,mch fn,tr V fn&VC

END OF WELL

REEDSBURG CITY WELL #3

NW¼, NW¼, NE¼, NW¼, SE¼, NE¼ Sec. 10, T. 12 N., R. 4 E. ELEVATION: 920' ETT.

Layne-Northwest Co., Contractors, 1956 Amundson Einginsering Co.

Samples examined by F.T. Thwaites and J. B. Steuerwald, Nos. 18833-188424

		Depth	Thickness	Description
S	5	0-5	5	Sand, fine to medium, gray
		5-25	20	Sandstone, fine to medium, light gray
		25-30	5	Sandstone, fine to coarse, light gray
DRESBACH		30-165	135	Sandstone, fine to medium, light gray
		165-170	5	Sandstone, medium to fine, very light gray
		170-205	35	Sandstone, fine to medium, very light gray
		205-210	5	Sandstone, medium to fine, very light gray
		210-245	35	Sandstone, fine to medium, very light gray
		245-265	20	Sandstone, medium to fine, very light gray
		265-275	10	Sandstone, fine to coarse, very light gray
		275-325	50	Sandstone, fine to medium, very light gray
		325-330	5	Sandstone, very fine to fine, very light gray
		330-360	30	Sandstone, fine to medium, very light gray
		360-370	10	Sandstone, medium to fine, very light gray
		370-375	5	Sandstone, coarse to fine, very light gray
		375-455	80	Sandstone, fine to medium, light gray
		455-480	25	Sandstone, medium to fine, very light gray some coarse at bottom
	485	480-490	10	Sandstone, medium to fine, very light gray

24" pipe
16" pipe
25 cem
23" hole
40 water
48
53

Formations: Surface; Dresbach not subdivisible.
Tested 6¼ hours up to 602 g.p.m. specific capacity = 20.0 g.p.m./ft.
Additional copies may be secured from Wisconsin Geological Survey, Science Hall, Madison 6, Wis

DNR PERMANENT WELL #35914 — SAUK CO. = 8.

SK-30

APPLETON WOOLEN MILLS CO. WELL, REEDSBURG, WIS.

SW¼, NE¼, NW¼, NE¼, NW¼, SW¼ Sec. 10, T. 12 N., R. 4 E.

Rufus Mather Bagg, Geologist; M. F. Baley, Driller, 1944

Samples examined by F. T. Thwaites, Nos. 121523-121605

ELEVATION: 820' ETM

S	15	0-5	5	Fill, no Sample	18" pipe
		5-15	10	Silt, dark gray; sand, silty to fine, lt.gy.	10" pipe cemented
		15-25	10	Sand and sandstone, silty to medium, lt.gy.	
		25-30	5	Sandstone, fine, light gray	40
		30-55	25	Sandstone, medium to fine, light gray	
		55-65	10	Sandstone, fine to medium, light gray	
		65-85	20	Sandstone, medium to fine, light gray	
		85-90	5	Sandstone, silty to medium, light gray	
		90-125	35	Sandstone, fine to medium, light gray	
		125-135	10	Sandstone, silty to medium, light gray	10" hole
		135-160	25	Sandstone, medium to fine, light gray	
		160-205	45	Sandstone, fine to medium, white	
		205-280	75	Sandstone, medium to fine, white	
		280-285	5	Sandstone, fine to medium, white	
		285-360	75	Sandstone, medium to fine, white	
		360-385	25	Sandstone, fine to medium, light gray	
		385-390	5	Sandstone, medium to fine, light gray	
		390-405	15	Sandstone, fine to medium, light gray	
	405	405-420	15	Sandstone, medium to fine, white	

DRESBACH

Note: Formation here called Dresbach probably includes some rock of same age as is called Eau Claire farther west.

Well flows.

WELL CONSTRUCTOR'S REPORT — WISCONSIN STATE BOARD OF HEALTH — Wel

1. COUNTY: Sauk | CHECK ONE: ☐ Town ☐ Village ☒ City | NAME: Reedsburg

2. LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available): Lucky Street. ~~NW¼; NW¼; NW¼;~~ Section 14; T12N; R4E. NE¼, SW¼, SE¼ sec. 10,

RECEIVED MAR - 8 1966

3. OWNER AT TIME OF DRILLING: CITY of REEDSBURG

4. OWNER'S COMPLETE MAIL ADDRESS: Reedsburg, Wisconsin

5. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE

6. OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

7. Well is intended to supply water for: municipality. Well #4

8. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
26"	Surface	20	17"	50	400
24"	20	50			

9. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
26"	Steel	Surface 1'+	20
18"	Steel	1'9"+	50

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Dirty sand	Surface	20
Sandstone	20	400

11. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Neat cement	Surface 1'+	50

12. MISCELLANEOUS DATA

Yield test: 8 Hrs. at 1200 GPM

Depth from surface to normal water level: 9 ft.

Depth to water level when pumping: 75 ft.

Well construction completed on: November 19 65

Well is terminated 21 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to (upon installation of permanent pump) laboratory on: 19

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, surface pumprooms, access pits, etc., should be given on reverse side.

TEL/s 3/7/

SIGNATURE: W. E. Lenhart

Field Mgr. & Geologist — Registered Well Driller

COMPLETE MAIL ADDRESS: LAYNE-NORTHWEST COMPANY, 6005 W. Martin Drive, Milwaukee, Wis.

Please do not write in space below

COLIFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS
Cc. 50% Jubilee Dist #1 File 3				

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County [redacted] Sauk — Town ☐ Village ☑ City ☐ Reedsburg (Check one and give name)

2. Location 548 South Park Street Reedsburg Wis.
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☑ or Agent ☐ Elmer Radkie — T12N R4E SW Sec 10
Name of individual, partnership or firm

4. Mail Address Reedsburg Wisconsin
Complete address required

5. From well to nearest: Building 4 ft; sewer ____ ft; drain ____ ft; septic tank ____ ft; dry well or filter bed ____ ft; abandoned well ____ ft.

6. Well is intended to supply water for: Swimming Pool

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	8	6	8	108

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Wrought Iron	0	85½
6"	Drive Shoe		

9. GROUT:

Kind	From (ft.)	To (ft.)

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Sand	0	51
Black Muck	51	62
Sand	62	85½
Sand Rock	85½	108

RECEIVED
AUG 8 1958
ENVIRONMENTAL SANITATION

Construction of the well was completed on: June 28 1958

The well is terminated 48 inches ☐ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes ✓ No ____

Was the well sealed watertight upon completion? Yes ✓ No ____

11. MISCELLANEOUS DATA:

Yield test: ____ Hrs. at ____ GPM.

Depth from surface to water-level: 10 ft.

Water-level when pumping: ____ ft.

Water sample was sent to the state laboratory at: Madison (City) on July 28 1958

Signature John Packhurst Jr (Registered Well Driller) Elroy Wis (Complete Mail Address)

Please do not write in space below

Rec'd JUL 30 1958 No. 23631

Ans'd ____

Interpretation Because of the presence of B. Coli in one of the 10 cc portions of this sample another examination is advisable.

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.	+				
48 hrs.		+	+		
Confirm		+	+		
B. Coli	1/5				

Examiner ____

State of Wisconsin
Department of Natural Resources
Box 7921
Madison, Wisconsin 53707

NOTE:
White Copy – Division's Copy
Green Copy – Driller's Copy
Yellow Copy – Owner's Copy

WELL CONSTRUCTOR'S REPORT
Form 3300-15 Rev. 12-76

APR 1982
APR 16 1982

1. COUNTY: SAUK
CHECK (✓) ONE: ☐ Town ☐ Village ☒ City
Name: REEDSBURG

2. LOCATION: ¼ Section ✓ NWSW | Section 10 | Township T12N | Range 4E
OR – Grid or Street No. | Street Name: S. Webb Street
AND – If available subdivision name, lot & block No.: Webb Street

3. NAME ☐ OWNER ☐ AGENT AT TIME OF DRILLING CHECK (✓) ONE: City of Reedsburg
ADDRESS:
POST OFFICE: Reedsburg, WI 53959

4. Distance in feet from well to nearest: (Record answer in appropriate block)

Building	Sanitary Bldg. Drain		Sanitary Bldg. Sewer		Floor Drain Connected To:		Storm Bldg. Drain		Storm Bldg. Sewer	
	C.I.	Other	C.I.	Other	C.I. Sewer	Other Sewer	C.I.	Other	C.I.	Other

Street Sewer		Other Sewers		Foundation Drain Connected to:				Sewage Sump		Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit	
San.	Storm	C.I.	Other	Sewer		Sewage Sump		C.I.	Other				Seepage Pit	
				Clearwater Dr.		Clearwater Sump							Seepage Bed	
													Seepage Trench	

Privy	Pet Waste Pit	Pit: Nonconforming Existing		Subsurface Pumproom Nonconforming Existing	Barn Gutter	Animal Barn Pen	Animal Yard	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Silage Storage Trench Or Pit
		Well									
		Pump									
		Tank									

Temporary Manure Stack	Watertight Liquid Manure Tank	Solid Manure Storage Structure	Subsurface Gasoline or Oil Tank	Waste Pond or Land Disposal Unit (Specify Type)	Other (Give Description)

5. Well is intended to supply water for: Well No. 1 Reconstruction

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8"	Surface	260			

7. CASING, LINER, CURBING AND SCREEN

Dia. (in.)	Material, Weight, Specification & Method of Assembly	From (ft.)	To (ft.)
6"	Bl. P.E. New steel welded 191B	Surface	60'
	Depth of existing 8" casing unknown		

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Neat cement	Surface	60

9. FORMATIONS

Kind	From (ft.)	To (ft.)
unknown	Surface	260

10. TYPE OF DRILLING MACHINE USED
☒ Cable Tool ☐ Rotary-air w/drilling mud ☐ Rotary-w/drilling mud
☐ Rotary-hammer w/drilling mud & air ☐ Rotary-hammer & air ☐ Reverse Rotary
☐ Jetting with ☐ Air ☐ Water

Well construction completed on 6-2 19 81

11. MISCELLANEOUS DATA
Yield Test: 24 Hrs. at 345 GPM
Depth from surface to normal water level 5 Ft.
Depth of water level when pumping 15 Ft. Stabilized ☒ Yes ☐ No
Well is terminated 10 inches ☒ above ☐ below final grade
Well disinfected upon completion ☒ Yes ☐ No
Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to Sp. cap = 345 / 15-5 = 34.5 gpm/ft. laboratory on 19

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.

Signature: LAYNE-NORTHWEST
W. A. Majeskie
W. A. Majeskie
Registered Well Driller

cc's S.D.
SCS
WELL LOG BOOK

Complete Mail Address: 6005 W. Martin Drive
Milwaukee, WI 53213

State of Wisconsin
Department of Natural Resources
Private Water Supply
Box 7921
Madison, Wisconsin 53707

NOTE:
White Copy – Division's Copy
Green Copy – Driller's Copy
Yellow Copy – Owner's Copy

WELL CONSTRUCTOR'S REPORT
Form 3300-15 Rev. 2-79

Well #2 JAN 4 1984

1. COUNTY: SAUK
CHECK (✓) ONE: ☐ Town ☐ Village ☒ City
Name: Reedsburg

2. LOCATION: ¼ Section or Gov't. Lot: NW. SW ✓ | Section: 10 | Township: 12N | Range: 4E
OR – Grid or Street No. | Street or Road Name: Granite Avenue
AND – If available subdivision name, lot & block No.

3. NAME ☐ OWNER ☐ AGENT AT TIME OF DRILLING CHECK (✓ ONE): City of Reedsburg
ADDRESS: City Hall
POST OFFICE: Reedsburg, WI
ZIP CODE: 53959

4. Distance in feet from well to nearest: (Record answer in appropriate block)

Building	Sanitary Bldg. Drain		Sanitary Bldg. Sewer		Floor Drain Connected To:		Storm Bldg. Drain		Storm Bldg. Sewer	
	C.I.	Other	C.I.	Other	C.I. Sewer	Other Sewer	C.I.	Other	C.I.	Other

Street Sewer		Other Sewers		Foundation Drain Connected to:		Sewage Sump		Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit:	Manure Hopper or Retention or Pneumatic Tank
San.	Storm	C.I.	Other	Sewer	Sewage Sump	C.I.	Other				Seepage Pit	
				Clearwater Dr.	Clearwater Sump						Seepage Bed	
											Seepage Trench	

Privy	Pet Waste Pit	Pit: Nonconforming Existing		Subsurface Pumproom	Barn Gutter	Animal Barn Pen	Animal Yard	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Silage Storage Trench Or Pit	Earthen Manure Basin
		Well		Nonconforming Existing								
		Pump										
		Tank										

Temporary Manure Stack or Platform	Watertight Liquid Manure Tank or Basin	Manure Pressure Pipe	Subsurface Gasoline or Oil Tank	Waste Pond or Land Disposal Unit (Specify Type)	Manure Storage Basin	Other (Describe)
					Concrete Floor Only	
					Concrete Floor and Partial Concrete Walls	

5. Well is intended to supply water for: City of Reedsburg Well No. 2 Reconstruction

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8"	Surface	25.5	8.5"	31	370
10"	25.5	31	This information from Wierbicher & Assoc., Inc.		

7. CASING, LINER, CURBING AND SCREEN

Dia. (in.)	Material, Weight, Specification Mfg. & Method of Assembly	From (ft.)	To (ft.)
6	B1 P.E. new steel 18.97 lb. welded	Surface	61
8"	existing	Surface	25.5
10"	existing	25.5	31

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Neat Cement	Surface	6
Existing Grout	Surface	31

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Existing Well	Surface	370

There is conflicting data on the existing casings & drill holes. Bill Majeske of LNW claims 2" casing to 45' and a 8.5" drillhole from 45' to 370'

10. TYPE OF DRILLING MACHINE USED
☒ Cable Tool ☐ Rotary-air w/drilling mud ☐ Rotary-w/drilling mud ☐ Rotary-hammer w/drilling mud & air ☐ Rotary-hammer & air ☐ Reverse Rotary ☐ Jetting with ☐ Air ☐ Water

Well construction completed on 12-7 19 82

11. MISCELLANEOUS DATA
Yield Test: 3 Hrs. at 349 GPM
Depth from surface to normal water level 10 Ft.
Depth of water level when pumping 15 Ft. Stabilized ☒ Yes ☐ No

Well is terminated 12 inches ☐ above ☐ below final grade
Well disinfected upon completion ☒ Yes ☐ No
Well sealed watertight upon completion ☐ Yes ☐ No

Water sample sent to SP cap=69.8 9pm/et laboratory on 19

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.

Signature: LAYNE-NORTHWEST Div. of Layne-Western Co., Inc.
J.A. Majeskie (Jm Majeske) Registered Well Driller

Business Name and Complete Mailing Address
6005 W. Martin Drive
Milwaukee, WI 53213

W½, NE¼, sec. 10, T12N, R4E

Wel. 6

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Sauk — Town ☐ Village ☐ City ☒ Reedsburg (Check one and give name)

2. Location Between Myrtle and Pine in alley north of Fourth St.
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ City of Reedsburg's Utility
Name of individual, partnership or firm

4. Mail Address Reedsburg, Wisconsin
Complete address required

RECEIVED APR 23 1956 ENVIRONMENTAL SANITATION

5. From well to nearest: Building ____ ft; sewer ____ ft; drain ____ ft; septic tank ____ ft; dry well or filter bed ____ ft; abandoned well ____ ft.

6. Well is intended to supply water for: Municipality

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
24	0	18	16	48	54
23	18	48	15¼ 12	54 150	150 490

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
24	O.D. steel	Above 1'8"	Below 18"
16	steel	2'2"	54'

9. GROUT:

Kind	From (ft.)	To (ft.)
Neat cement	0	54'

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Sand	0	6
Sandstone, pink	6	210
White sandstone	210	340
Yellow sandstone	340	380
White sandstone	380	490

Construction of the well was completed on in: March 1956

The well is terminated 2'2" inches ☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes x No

Was the well sealed watertight upon completion? Yes x No

11. MISCELLANEOUS DATA:

Yield test: 6 Hrs. at 608 GPM.

Depth from surface to water-level: 40 ft.

Water-level when pumping: 70 ft.

Water sample was sent to the state laboratory at: Will be sent in on permanent pump setting on ____ 19____

LAYNE-NORTHWEST COMPANY

Signature R. E. Locht Geologist, 6005 W. Martin Dr., Milwaukee 13, Wis.
Registered Well Driller — Complete Mail Address

TEL: eb

Please do not write in space below

Rec'd ____ No ____

Ans'd ____

Interpretation ____

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

03-57-001103
Spellman Monument

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DEVELOPMENT • ENVIRONMENTAL

RECEIVED
JUL 16 1998
SO. DIST. HDQTRS

July 14, 1998

Ms. Jennifer Tobias
Department Of Natural Resources
3911 Fish Hatchery Road
Fitchburg, WI 53711

Re: Status Report, Spellman Monument, Reedsburg
WDNR File Ref #03-57-001103

Dear Jennifer:

A summary of the groundwater monitoring data is enclosed. Also, free product is being removed on a regular basis. Table 1 present the groundwater elevation data. Figure 1 shows the groundwater flow in January 1998 to the southwest. Groundwater flow has been consistently to the southwest throughout the project.

Table 2 summarizes the groundwater chemistry data. Concentrations of PVOCs at wells MW3, MW5 and MW9 have decreased, however concentrations at wells MW1, MW7 and MW8 remain relatively stable. Figure 2 shows the benzene iso-concentrations on January 28, 1997. Analysis of natural attenuation parameters shows a decrease in concentrations of electron acceptors within and downgradient of the contaminant plume. Increased concentrations of metabolic byproducts of biodegradation were also detected within and downgradient of the contaminant plume.

Free petroleum product is being removed on a regular basis from wells MW2 and MW4. Table 3 summarizes the cumulative volume of free product removed from the wells. Currently there is approximately 0.01 ft of free product at well MW2 and 0.4 ft at well MW4.

Spellman Monument has begun to evaluate the intrinsic bioremediation of the groundwater plume which was identified as a component of the remediation action plan. The plume appears to be stable based on early groundwater monitoring results. Spellman Monument is reluctant to authorized implementation of the full remedial action until the abandoned USTs present on Reedsburg Cleaners property are investigated. We will assume semi-annual groundwater monitoring is an acceptable course of action at this time unless you direct otherwise. Please call if you have questions.

Sincerely,

Kenneth S. Gradall
Hydrogeologist
KSG:vjk
Enc:
cc: Paul Miller, Spellman Monument Co.
Dwight Pulsfus, Quall, Hartman, Bohl, Reynolds, and Pulsfus
Paul McGinley

1230 South Boulevard • Baraboo, WI 53913-2791
608-356-2771 • 1-800-362-4505 • Fax: 608-356-2770 G:\WORDPROC DATA\20219260\WP LTR\KSG.WPD
Web Address: www.msa-ps.com

TABLE 1
GROUNDWATER ELEVATIONS
SPELLMAN MONUMENT COMPANY, INC.
REEDSBURG, WISCONSIN

Monitoring Wells	TOC	8/26/93 Elevation	11/2/93 Elevation	1/28/94 Elevation	2/22/94 Elevation	3/18/94 Elevation	4/8/94 Elevation	1/24/95 Elevation	07/07/95 Elevation	04/29/97 Elevation	10/08/97 Elevation	01/28/98 Elevation
MW1	901.30	884.18	883.82	883.28	882.74	883.21	883.11	--	18.19	882.79	881.37	881.48
MW2	901.87	883.33	**882.50**	**882.66**	**882.01**	**882.49**	**882.42**	**881.20**	19.45	**881.97**	**880.48**	**880.81**
MW3	902.81	884.55	884.06	883.53	882.97	883.43	883.33	881.92	19.48	883.04	881.57	881.69
MW4	902.03	**880.28**	**882.03**	**881.19**	**881.67**	**882.35**	**882.05**	**881.72**	**19.98**	**881.47**	**879.17**	
MW5	901.75							880.63	901.75	883.92	882.97	880.71
MW6	900.85							881.57	900.85	881.80	880.39	880.99
MW7	896.65							880.40	896.65	881.01	879.48	879.95
MW8	896.58								896.58	880.95	879.34	879.72
P8	896.67								896.67	880.12	878.93	879.62
MW9	892.79								892.79	880.24	873.48	879.18
City MW3	888.54								888.54		878.27	878.74
City MW7	883.55								883.55	877.87	877.47	877.93
City MW9	892.32								892.32		878.97	879.45

Notes: TOC = top of casing
Elevations are in feet above mean sea level (MSL)
Bold numbers indicate the presence on free product in the wells.

TABLE 2
GROUNDWATER MONITORING RESULTS
SPELLMAN MONUMENTS, REEDSBURG, WISCONSIN

	SAMPLIN DATE	Benzene	Ethyl benzene	Toluene	Xylenes	1,3,5-TMB	1,2,4-TMB	MTBE	Naph-thalene	Methane	Dissolved Oxygen	Nitrate + Nitrite	Total Sulfate	Dissolved Iron
ES		5	700	343	620			60	40					
PAL		0.5	140	68.6	124			12	8					
MW1	08/26/93	227	894	5210	4262	211	758	nd	nd					
	11/02/93	750	1400	3900	6300	280	1200	nd						
	12/12/94	390	1100	3300	5000	300	1200	140						
	07/10/95	222	654	2790	3246	218	752	nd						
	04/29/97	260	450	900	1920	260	850	<10	65		100	<140	<6000	2670
	10/08/97	340	1400	6800	7200	380	1200	<40	400		400	140	10400	3200
	01/28/98	200	1400	5300	6500	340	1200	50	390					
MW2	08/26/93	25600	3680	50400	16900	nd	1910	nd	nd					
	11/02/93	22000	4500	24000	20000	2400	920	nd						
	07/10/95	4960	3240	24000	11980	nd	1660	nd						
	10/08/97	Free Product present										<140	8940	2400
	01/28/98	9700	2800	22000	11600	460	1800	100	<220					
MW3	08/26/93	3420	2640	17900	12600	445	1680	nd	299					
	11/02/93	4300	2500	9400	11000	430	2100	nd						
	12/12/94	1000	2200	7300	10300	430	1800	550						
	07/10/95	1280	2170	8890	11740	359	1610	nd	348					
	04/29/97	1500	2600	11000	13200	200	1800	<100	<400		100	<140	10600	453
	10/08/97	490	290	3500	7400	460	1200	<20	160		800	<140	13900	600
	01/28/98	150	290	1100	2840	230	710	<20	<110					
MW4	08/26/93	23000	7160	65500	36800	2050	7580	nd	1020					
	11/02/93	29000	4300	35000	21000	1100	6100	nd						
	07/10/95	8530	23800	80200	137700	16400	62400	nd						
MW5	12/12/94	nd	830	780	3940	330	1400	nd	98					
	07/10/95	nd	572	661	2683	154	679	nd	74.2					
	04/29/97	<0.4	<0.40	<0.40	<1.2	<0.80	<1.4	<0.40	<1.6		200	3970	55300	34
	10/08/97	<3.0	100	120	760	73	250	<2.0	29		300	5980	64700	0
	01/28/98	<15	180	290	2150	170	650	25	95					
MW6	12/12/94	nd	nd	nd	nd	nd	nd	nd	nd					
	07/10/95	nd	nd	nd	nd	1.38	nd	nd						
	04/29/97	<0.20	<0.20	<0.20	<0.60	<0.40	<0.70	<0.20	<0.80		7700	1390	13300	101
	10/08/97	<0.3	<0.2	<0.2	<0.8	<0.3	<0.6	<0.2	<1.1	<1.8	7000	2230	15800	0
	01/28/98	<0.3	<0.2	<0.2	<0.8	<0.3	<0.6	<0.2	<1.1					

TABLE 2 (continued)
GROUNDWATER MONITORING RESULTS
SPELLMAN MONUMENTS, REEDSBURG, WISCONSIN

	SAMPLIN DATE	Benzene	Ethyl benzene	Toluene	Xylenes	1,3,5-TMB	1,2,4-TMB	MTBE	Naph-thalene	Methane	Dissolved Oxygen	Nitrate + Nitrite	Total Sulfate	Dissolved Iron
ES		5	700	343	620			60	40					
PAL		0.5	140	68.6	124			12	8					
MW7	12/12/94	**2800**	**1600**	**15000**	**7500**	360	1300	nd	**220**					
	07/10/95	**2410**	**1310**	**11000**	**6950**	186	794	nd	**167**					
	04/29/97	**1600**	**1000**	**7500**	**5400**	160	700	<10	**150**		3000	1410	18200	6980
	10/08/97	**2200**	**1000**	**10000**	**5800**	200	650	<100	<550	4.3	0.7	1480	32300	0
	01/28/98	**2100**	**1400**	**12000**	**7200**	250	980	<20	<110					
MW8	07/10/95	**5800**	**514**	**8590**	**2370**	nd	278	nd	nd					
	04/29/97	**14000**	**1100**	**16000**	**4500**	<200	450	<100	<400		100	150	6400	9710
	10/08/97	**3200**	**360**	**3800**	**1680**	80	300	<40	**220**	63	400	780	32100	0
	01/28/98	**2900**	**480**	**3400**	**1640**	90	350	<20	<110					
P8	07/10/95	**1.4**	nd	6.98	3.35	nd	nd	nd	nd					
	04/29/97	<0.20	<0.20	<0.20	<0.60	<0.40	<0.70	<0.20	<1.6		7600	3890	18500	<30
	10/08/97	<0.3	<0.2	<0.2	<0.8	<0.3	<0.6	<0.2	<1.1		400	3330	20800	0
	01/28/98	<0.3	<0.2	<0.2	<0.8	<0.3	<0.6	<0.2	<1.1					
MW9	07/10/95	**19.7**	30.3	12.9	48.8	7.63	12.2	nd	**33**		6300			
	04/29/97	<0.20	<0.20	0.8	0.4	<0.40	<0.70	<0.20	2.7			1540	61300	524
	10/08/97	<0.3	<0.2	1.3	<0.8	<0.3	<0.6	<0.2	3.1		2000	850	43800	0
	01/28/98	<0.3	0.3	<0.2	<0.8	<0.3	<0.6	4.5	2.7					
City P3	04/29/97	<0.20	<0.20	<0.20	<0.60	<0.40	<0.70	<0.20	<0.80		2100	4100	24000	62
City 7	04/29/97	<0.20	<0.20	<0.20	<0.60	<0.40	<0.70	<0.20	<0.80		400	320	43200	932
	10/08/97	<0.3	<0.2	<0.2	<0.8	<0.3	<0.6	<0.2	<1.1	<1.8	100	140	36500	5600
	01/28/98	<0.3	<0.2	<0.2	<0.8	<0.3	<0.6	<0.2	<1.1					

All concentrations are in ug/L
blank = not analyzed
nd = not detected above laboratory method detection limits
TMB = trimethylbenzene
MTBE = methyltertbutyl ether
GRO = gasoline range organics
Values in BOLD exceed the Wisconsin Administrative Code NR 140 preventive action limit (PAL)
Values SHADED exceed the Wisconsin Administrative Code NR 140 enforcement standard (ES)
This table only includes compounds which are monitored quarterly at this site.
For a complete list of compounds detected, see site investigation reports.

TABLE 3
FREE PRODUCT REMOVAL
SPELLMAN MONUMENT COMPANY, INC.
REEDSBURG, WISCONSIN

DATE	MW2	MW4
09/07/93		1.5
09/08/93		1
09/10/93		2
09/16/93		2
09/24/93		2
10/01/93		2
10/08/93		2
10/15/93		1.5
11/12/93	0.2	1.5
11/19/93	0.1	1
12/02/93	0.1	1
12/17/93	0.1	1.5
Total	0.5	19

DATE	MW2	MW4
01/06/94	0.1	1.5
01/28/94	0.3	1
02/11/94	0.2	1
02/22/94	0.1	0.5
03/04/94	0.1	1
03/11/94	0.1	0.5
03/18/94	0.1	0.5
04/01/94	0.1	0.5
04/08/94	0	0.5
04/15/94	0	0.3
04/22/94	0.1	0.5
04/29/94	0.2	0.5
05/06/94	0.1	0.5
05/13/94	0.1	0.5
05/19/94	0.1	0.5
06/01/94	0.1	0.5
06/09/94	0.2	0.5
06/23/94	0.1	0.5
06/30/94	0.1	1
07/13/94	0.5	1
07/20/94	0.2	1
07/29/94	0.1	1
11/08/94	0.1	2
12/08/94	0.1	1.5
12/29/94	0.1	1.5
Total	3.3	20.3

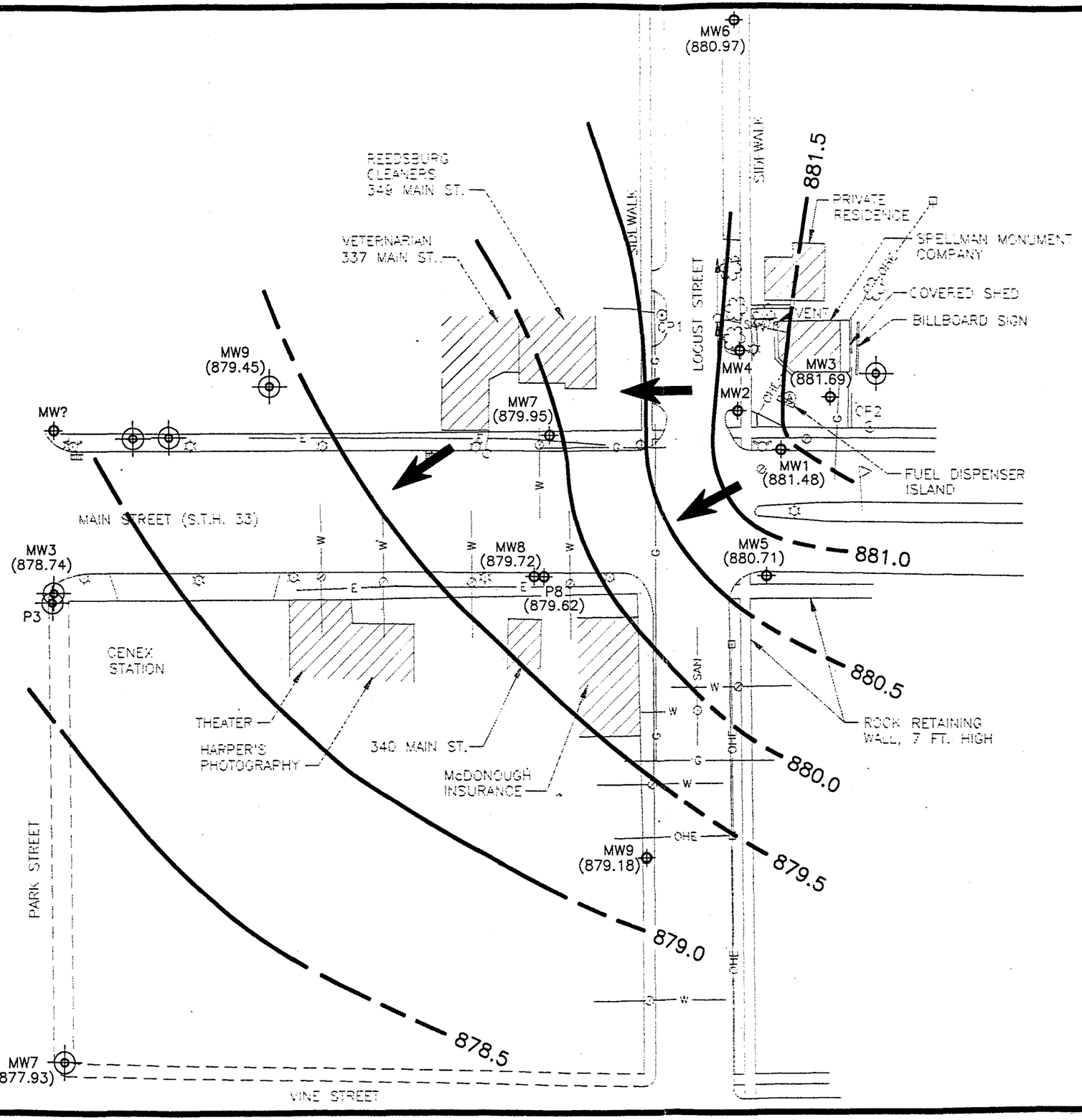
DATE	MW2	MW4
01/24/95	0.1	1
02/02/95	0.1	0.5
02/16/95	0.1	1
03/09/95	0.1	1
03/16/95	0.1	0.5
04/06/95	0.1	0.5
04/20/95	0.1	0.5
05/11/95	0.1	0.5
05/25/95	0	0.5
06/08/95	0	0.5
06/20/95	0	0.25
06/29/95	0	0.25
07/20/95	0.1	0.5
08/03/95	0	0.2
08/17/95	0.1	0.3
09/01/95	0.1	0.1
09/14/95	0.1	0.1
09/28/95	0.1	1
10/16/95	0.1	1
10/26/95	0	0.5
12/19/95	0	0.2
Total	1.4	10.9

DATE	MW2	MW4
01/05/96		0.5
01/15/96		0.5
01/31/96		0.5
02/13/96		0.5
02/28/96		0.5
03/15/96		0.5
03/25/96		0.5
04/09/96		0.5
04/26/96		0.5
05/10/96		0.75
05/23/96		0.75
06/12/96		0.25
06/21/96		0.1
06/28/96		0.1
07/12/96		0.1
07/25/96		0.1
08/08/96		0.1
08/08/96		0.07
09/04/96		0.1
09/20/96		0.07
10/04/96		0.04
Total	0	7.03

DATE	MW2	MW4
01/24/97		2
02/07/97	0.1	2.5
02/21/97	0.1	2
03/17/97		0.5
03/28/97		0.5
04/11/97		0.1
04/29/97	0.1	0.5
05/07/97		0.5
05/21/97		0.5
06/04/97		0.5
06/23/97		0.5
07/11/97		0.2
07/25/97		0.2
08/15/97		0.1
08/25/97		0.1
10/08/97	0.1	0.5
10/24/97	0.1	0.3
11/17/97	0.1	1.5
12/18/97	0.1	0.3
Total	0.7	13.3

DATE	MW2	MW4
01/08/98	0.1	0.2
01/28/98		0.1
02/19/98		0.1
05/17/98		0.5
06/11/98		0.25
Total	0.1	1.15

Notes: Total = gallons of free product removed



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1230 South Boulevard Baraboo, WI 53913
608-356-2771 1-800-362-4505 Fax 608-356-2770

LEGEND

(881.48) ⊕ MONITORING WELL WITH GROUNDWATER ELEVATION

(879.45) ⊕ MONITORING WELL BY OTHERS WITH GROUNDWATER ELEVATION

881.0 WATER TABLE CONTOUR 0.5 FT CONTOUR

INTERPRETED GROUNDWATER FLOW DIRECTION

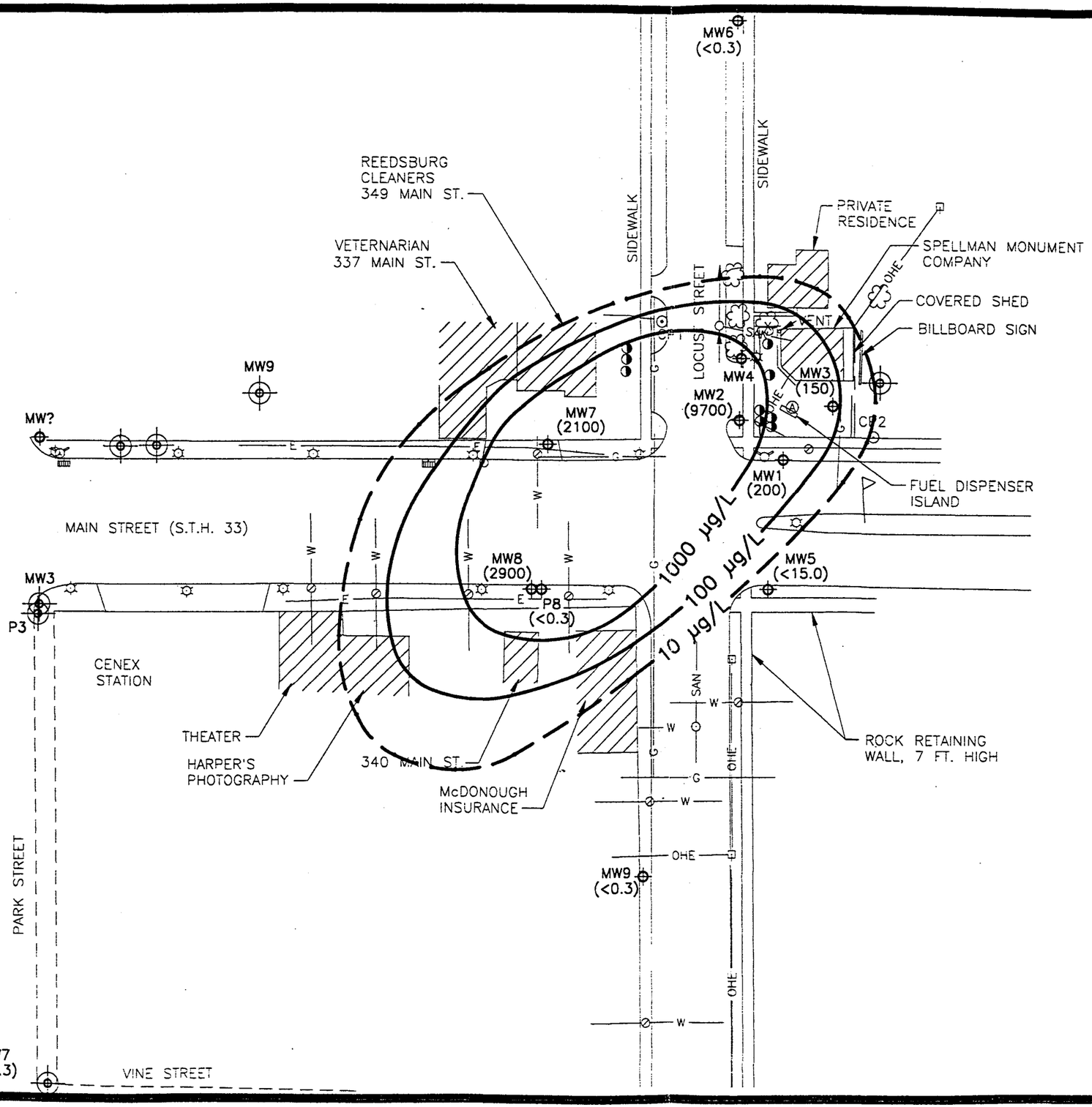
NOTE:
FREE PETROLEUM PRODUCT PRESENT IN WELLS MW2 AND MW4.

N
W E
S

60 0 60
SCALE IN FEET

FIGURE 1
WATER TABLE CONTOURS
JANUARY 28, 1998
SPELLMAN MONUMENT COMPANY
REEDSBURG, WISCONSIN

219260CA



LEGEND

(340) — MONITORING WELL WITH BENZENE CONCENTRATION

MONITORING WELL BY OTHERS

BENZENE ISOCONCENTRATION CONTOUR – DASHED WHERE INFERRED

NOTE:

1. BENZENE ISOCONCENTRATION IN ug/L.
2. PETROLEUM PRODUCT PRESENT IN WELLS MW2 AND MW4.

N W E S

60 0 60

SCALE IN FEET

FIGURE 2

BENZENE ISOCONCENTRATION CONTOURS – JANUARY 20, 1998

SPELLMAN MONUMENT COMPANY
REEDSBURG, WISCONSIN

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1230 South Boulevard Baraboo, WI 53913
608-356-2771 1-800-362-4505 Fax: 608-356-2770

DRAWN BY	RHM	DATE	7-14-98	SHEET	of
CHECKED BY		SCALE	AS NOTED	FILE NO.	219260DB

TABLE 3
CHEMICAL ANALYSIS OF GROUNDWATER SAMPLES
SPELLMAN MONUMENT COMPANY, INC.
REEDSBURG, WISCONSIN

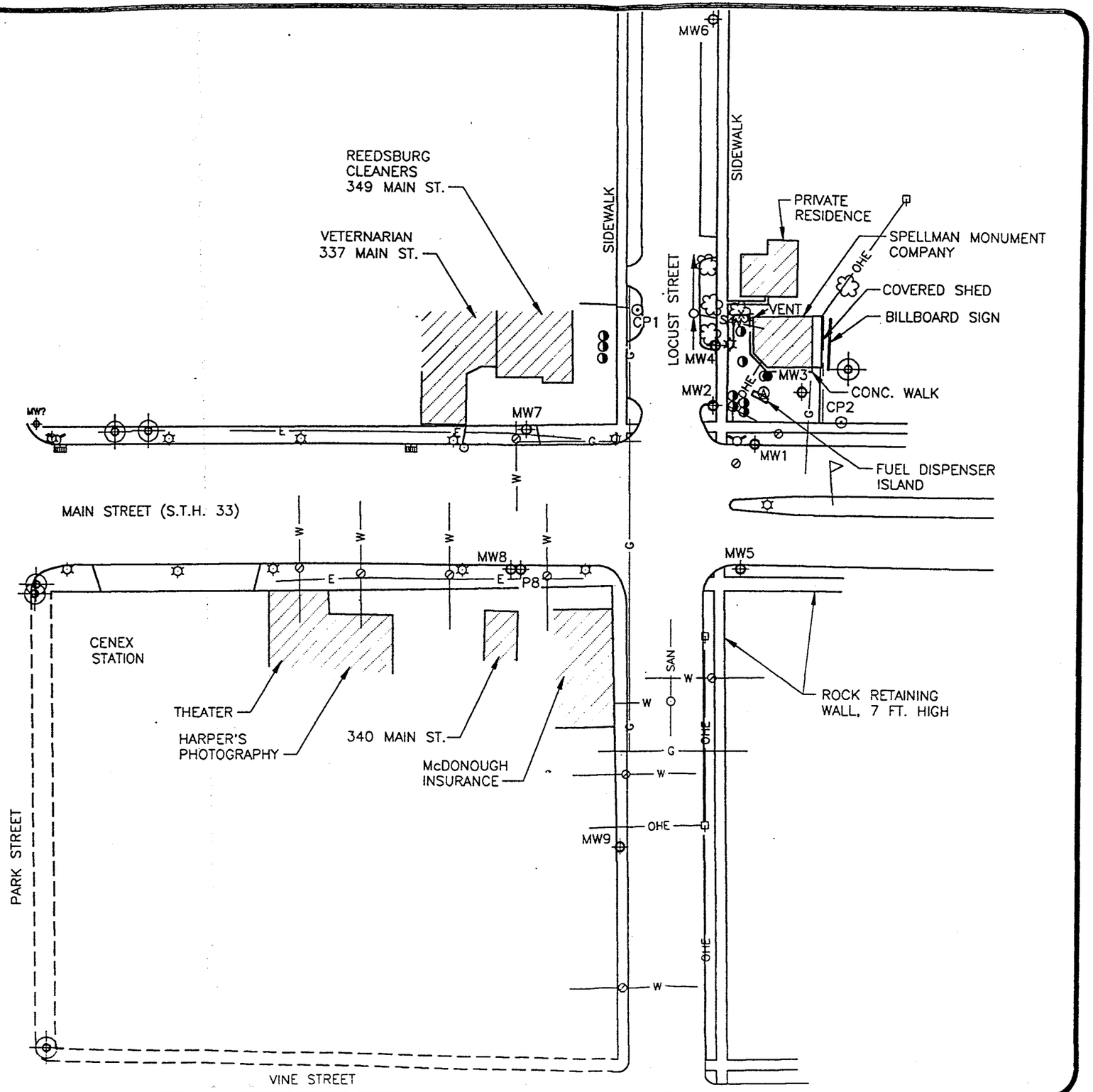
ANALYTE	MW1					MW2			MW3			
	8/26/93	11/2/93	11/2/93	12/12/94	07/10/95	8/26/93	11/2/93	07/10/95	8/26/93	11/2/93	12/12/94	07/10/95
GRO	18800	--			12200	93400		64700	>15800			29700
MTBE	nd	nd	nd	140	nd	nd	nd	nd	nd	nd	550	nd
Benzene	**227**	**590**	**750**	**390**	**222**	**25600**	**22000**	**4960**	**3420**	**4300**	**1000**	**1280**
Toluene	**5210**	**2700**	**3900**	**3300**	**2790**	**50400**	**24000**	**24000**	**17900**	**9400**	**7300**	**8890**
Ethylbenzene	894	1100	**1400**	1100	654	**3680**	**4500**	**3240**	**2640**	**2500**	**2200**	**2170**
Total Xylenes	**4262**	**4900**	**6300**	**5000**	**3246**	**16900**	**20000**	**11980**	**12600**	**11000**	**10300**	**11740**
1,3,5-TMB	211	240	280	300	218	nd	2400	nd	445	430	430	359
1,2,4-TMB	758	990	1200	1200	752	1910	920	1660	1680	2100	1800	1610
Naphthalene	nd					nd			**299**			**348**
n-Butylbenzene	nd					nd			nd			
sec-Butylbenzene	nd					nd			nd			
Isopropylbenzene	nd					nd			nd			
Isopropyl Ether	275				217	nd			282			287
p-Isopropyltoluene	nd					nd			nd			
n-Propylbenzene	nd					nd			nd			
Tetrachloroethene	nd					nd			nd			
Lead	8.9					**91.8**		**187**	**38.5**			

Notes:
Concentrations are in ug/L
GRO = gasoline range organics
MTBE = methyl tert-butyl ether
TMB = trimethylbenzene
ES = WDNR enforcement standard
nd = not detected above method detection limit
Bold numbers indicate concentrations above the WDNR ES

TABLE 3
CHEMICAL ANALYSIS OF GROUNDWATER SAMPLES
SPELLMAN MONUMENT COMPANY, INC.
REEDSBURG, WISCONSIN

ANALYTE	MW4				MW5		MW6		MW7			MW8		P8	MW9	ES
	8/26/93	8/26/93	11/2/93	07/10/95	12/12/94	07/10/95	12/12/94	07/10/95	12/12/94	12/12/94	07/10/95	07/10/95	07/10/95	07/10/95	07/10/95	
GRO	126000	160000		688000	11000	9010	nd	nd	35000	38000	26700	21400	19600	nd	452	
MTBE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	60
Benzene	**21900**	**23000**	**29000**	**8530**	nd	nd	nd	nd	**2500**	**28000**	**2410**	**5800**	**5210**	1.4	**19.7**	5
Toluene	**65500**	**63800**	**35000**	**80200**	**780**	**661**	nd	nd	**14000**	**15000**	**11000**	**8590**	**7780**	6.98	12.9	343
Ethylbenzene	**7160**	**6260**	**4300**	**23800**	830	572	nd	nd	**1400**	**1600**	**1310**	514	464	nd	30.3	1360
Total Xylenes	**36800**	**32000**	**21000**	**137700**	**3940**	**2683**	nd	nd	**7000**	**7500**	**6950**	**2370**	**2155**	3.35	48.8	620
1,3,5-TMB	2050	1010	1100	16400	330	154	nd	1.38	320	360	186	nd	nd	nd	7.63	
1,2,4-TMB	7580	4200	6100	62400	1400	679	nd	nd	1200	1300	794	278	258	nd	12.2	
Naphthalene	**1020**	nd		nd	**98**	**74.2**	nd		**220**	**220**	**167**	nd	nd	nd	33	40
n-Butylbenzene	1220	nd		21400	32	70.9	nd		nd	nd		nd	nd	nd	3.38	
sec-Butylbenzene	nd	nd			13		nd		nd	nd		nd	nd	nd	nd	
Isopropylbenzene	nd	nd			68		nd		nd	nd		nd	nd	nd	2.22	
Isopropyl Ether	nd	nd			--	134	--		--	--	128	nd	nd	nd	2.57	
p-Isopropyltoluene	nd	nd			32		nd		nd	nd		nd	nd	nd	nd	
n-Propylbenzene	nd	nd			140		nd		140	nd		nd	nd	nd	4.37	
Tetrachloroethene	nd	nd					nd		**5000**	**4700**		nd	nd	nd	nd	5
Lead				**42.8**	**16**		nd		**17**	**18**		6.33	9.61	nd	nd	15

Notes:
Concentrations are in ug/L
GRO = gasoline range organics
MTBE = methyl tert-butyl ether
TMB = trimethylbenzene
ES = WDNR enforcement standard
nd = not detected above method detection limit
Bold numbers indicate concentrations above the WDNR ES



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LEGEND

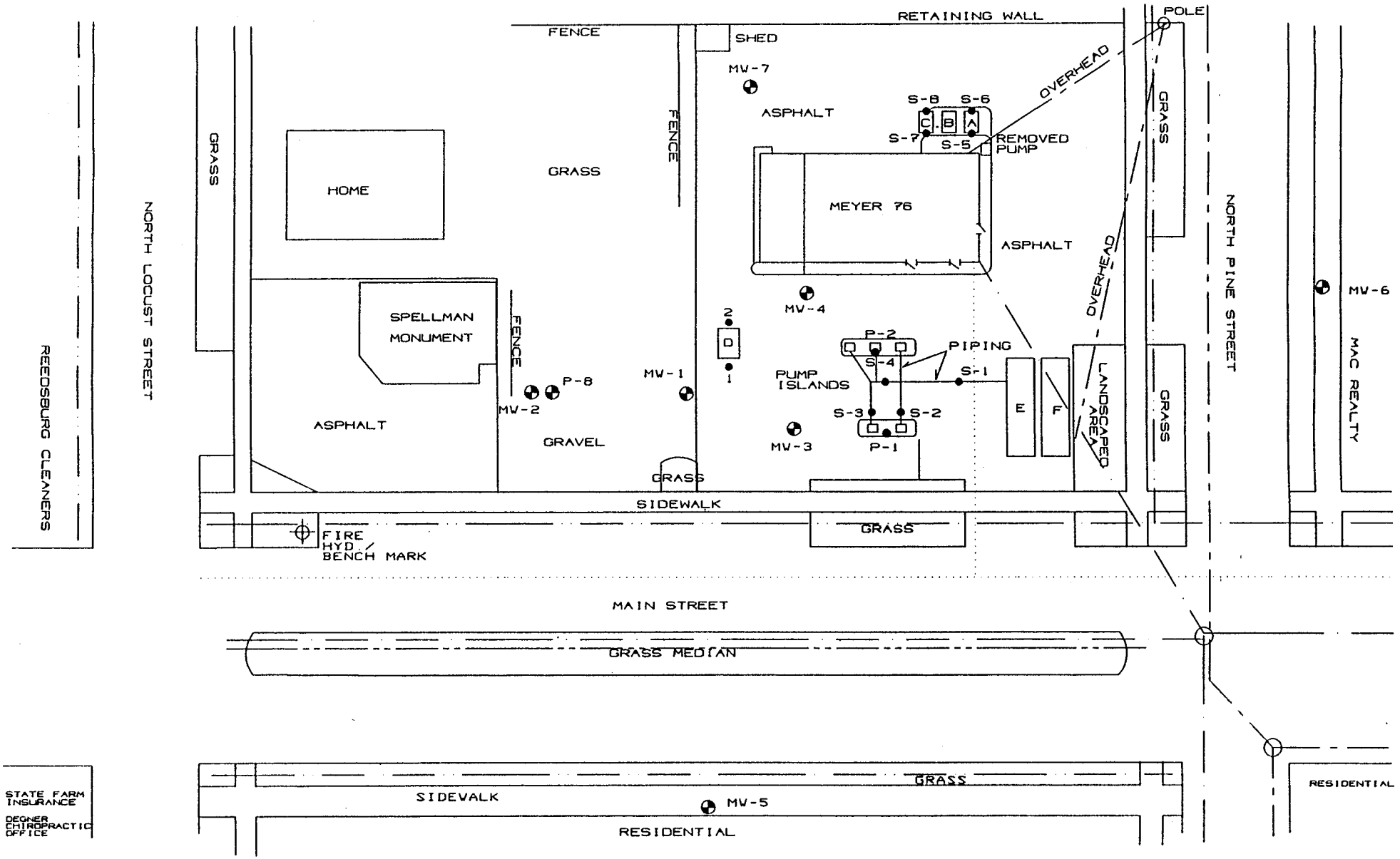
- MONITORING WELL LOCATION
- MONITORING WELL BY OTHERS
- CONTROL POINT
- AIR LINE SHUT OFF
- FILL PIPE
- LIGHT POLE
- WATER VALVE
- HYDRANT
- FLAG POLE
- OHE — OVERHEAD ELECTRIC
- E — UNDERGROUND ELECTRIC
- G — NATURAL GAS
- W — UNDERGROUND WATER
- SAN — SANITARY SEWER
- FENCE
- APPROXIMATE PROPERTY BOUNDARY

N
W E
S

60 0 60
SCALE IN FEET

FIGURE 1
MONITORING WELL LOCATIONS
SPELLMAN MONUMENT COMPANY
REEDSBURG, WISCONSIN

2192608C



LEGEND

A - 560 GALLON DIESEL TANK (REMOVED)
B - 1,000 GALLON HEATING OIL TANK (REMOVED)
C - 560 GALLON WASTE OIL TANK (REMOVED)
D - 1,000 GALLON GASOLINE TANK (REMOVED/EXISTING)
E - 10,000 GALLON GASOLINE TANK (EXISTING)
F - 10,000 GALLON GASOLINE TANK (EXISTING)

UTILITIES

ELECTRICITY
NATURAL GAS
SEWER
WATER
TELEPHONE

SITE MAP

MEYER 76
REEDSBURG, WI

METCO

SCALE: 1 IN. = 40 FT

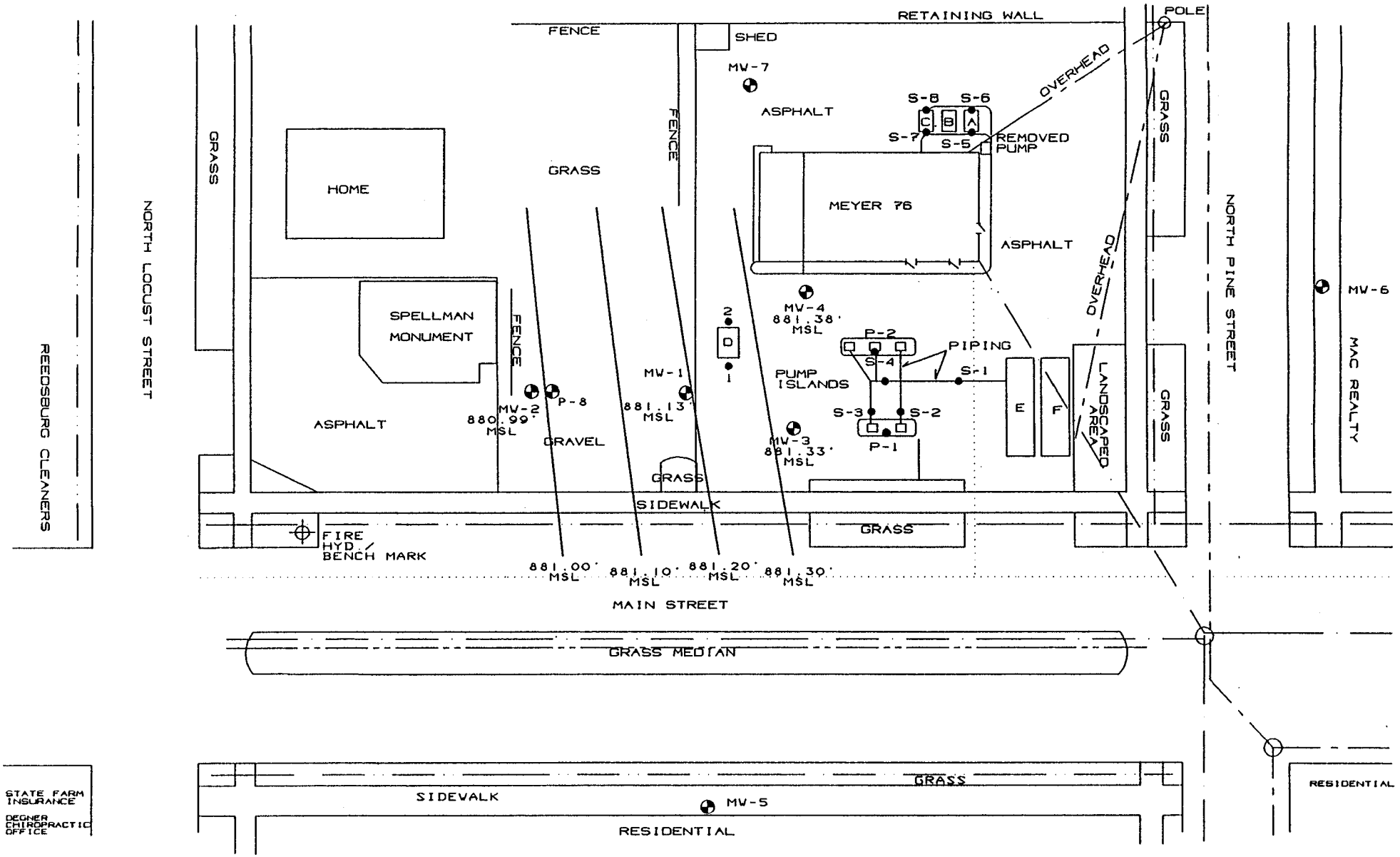
DRAWN BY: JR
DATE: 8/1/95
JOB NO.: A-93-84

● - SITE ASSESSMENT OR GEOPROBE SAMPLE

◐ - MONITORING WELL

LAB RESULTS:

S-1 = <1.0 PPM TPH AT 2 FEET
S-2 = <1.0 PPM TPH AT 2 FEET
S-3 = <1.0 PPM TPH AT 2 FEET
S-4 = <1.0 PPM TPH AT 2 FEET
S-5 = <1.0 PPM TPH AT 10 FEET
S-6 = <1.0 PPM TPH AT 10 FEET
S-7 = <1.0 PPM TPH AT 10 FEET
S-8 = <1.0 PPM TPH AT 10 FEET
1 = 96 PPM TPH AT 10 FEET
2 = 533 PPM TPH AT 10 FEET
P-1 = <1.0 PPM GRO AT 5 FEET
P-2 = <1.0 PPM GRO AT 5 FEET



NOTE: WATERTABLE MEASUREMENTS AND SAMPLES COLLECTED ON MAY 15, 1992.
NOTE: MONITORING WELLS MW-5, MW-6, MW-7, AND P-8 NOT INSTALLED AT THIS TIME.

LEGEND

A - 560 GALLON DIESEL TANK (REMOVED)
B - 1,000 GALLON HEATING OIL TANK (REMOVED)
C - 560 GALLON WASTE OIL TANK (REMOVED)
D - 1,000 GALLON GASOLINE TANK (REMOVED/EXISTING)
E - 10,000 GALLON GASOLINE TANK (EXISTING)
F - 10,000 GALLON GASOLINE TANK (EXISTING)

UTILITIES

- ELECTRICITY
- NATURAL GAS
- SEWER
- WATER
- TELEPHONE

GROUNDWATER CONTOUR MAP
ROUND 1

MEYER 76
REEDSBURG, WI.

METCO

SCALE: 1 IN. = 40 FT

DRAWN BY: JR
DATE: 5/1/92
JOB NO.: R-92-54

● - SITE ASSESSMENT OR GEOPROBE SAMPLE

⊕ - MONITORING WELL

LAB RESULTS:

S-1	<1.0 PPM TPH AT 2 FEET
S-2	<1.0 PPM TPH AT 2 FEET
S-3	<1.0 PPM TPH AT 2 FEET
S-4	<1.0 PPM TPH AT 2 FEET
S-5	<1.0 PPM TPH AT 10 FEET
S-6	<1.0 PPM TPH AT 10 FEET
S-7	<1.0 PPM TPH AT 10 FEET
S-8	<1.0 PPM TPH AT 10 FEET
1	96 PPM TPH AT 10 FEET
2	533 PPM TPH AT 10 FEET
P-1	<1.0 PPM GRO AT 5 FEET
P-2	<1.0 PPM GRO AT 5 FEET

GROUNDWATER SAMPLING DATA TABLE FOR MEYER 76 LUST INVESTIGATION
BY METCO
MAY 9, 1995

ROUND 1 WELL SAMPLING CONDUCTED ON MAY 15, 1992

Well Name	MW-1	MW-2	MW-3	MW-4	DUPLICATE	TRIP BLANK
Sampling Round	1	1	1	1	1	1
Ground Level Elevation in Feet	903.33	902.49	903.25	904.26	==	==
PVC Casing Elevation in Feet	902.82	901.83	902.64	903.67	==	==
Watertable Elevation in Feet	881.13	880.99	881.33	881.38	==	==
Depth to Groundwater in Feet	21.69	20.84	21.31	22.29	==	==
Amount Purged in Gallons	5	5	5	5	==	==
Time to Purge in Minutes	20	20	20	20	==	==
Purged Dry?	No	No	No	No	==	==
Petroleum Odors	Yes	Yes	Yes	Yes	Yes	==
Petroleum Sheens	No	No	No	No	No	==
Color	Tan	Tan	Tan	Tan	Tan	==
Turbidity (high, medium, low, clear)	Low	Low	Low	Low	Low	==
Gasoline Range Organics/ppb	1800	30000	1100	430	390	<100
Total Lead/ppb	6	69	3	5	18	==
Benzene/ppb	150	49	86	17	22	<1.0
Bromobenzene/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane/ppb	<1.0	<1.0	2.2	<1.0	<1.0	<1.0
n-Butylbenzene/ppb	5.7	170	2.4	<1.0	<1.0	<1.0
sec-Butylbenzene/ppb	<1.0	13	<1.0	<1.0	<1.0	<1.0
tert-Butylbenzene/ppb	31	1300	<1.0	<1.0	<1.0	<1.0
Carbon tetrachloride/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane/ppb	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Chloroform/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane/ppb	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
2-Chlorotoluene/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chlorotoluene/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromo-3-Chloropropane/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane(EDB)/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane/ppb	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
1,1-Dichloroethane/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichloropropane/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,2-Dichloropropane/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Diisopropyl ether/ppb	47	98	6.8	2.8	3.8	<1.0
Ethylbenzene/ppb	31	2900	3.4	3.1	4	<1.0
Hexachlorobutadiene/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Isopropylbenzene/ppb	3	24	1.1	<1.0	<1.0	<1.0
p-Isopropyltoluene/ppb	<1.0	4.1	<1.0	<1.0	<1.0	<1.0
Dichloromethane/ppb	10	5.8	9	6.3	7.1	6.8
Methyl-tert-butyl ether/ppb	48	<1.0	<1.0	2.7	4.5	<1.0
Naphthalene/ppb	<1.0	<1.0	1.7	<1.0	<1.0	<1.0
n-Propylbenzene/ppb	7.6	720	1.2	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene/ppb	160	<1.0	47	12	16	<1.0
1,2,3-Trichlorobenzene/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trichlorobenzene/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene/ppb	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane/ppb	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
1,2,4-Trimethylbenzene/ppb	<1.0	9.5	11	1.6	1.9	<1.0
1,3,5-Trimethylbenzene/ppb	5.6	<1.0	3.5	<1.0	<1.0	<1.0
Vinyl chloride/ppb	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
m&p-Xylene/ppb	38	5.1	19	3.5	4.3	<1.0
o-Xylene/ppb	36	<1.0	22	3.8	4.6	<1.0

GROUNDWATER SAMPLING DATA TABLE FOR MEYER 76 LUST INVESTIGATION
BY METCO
MAY 9, 1995

ROUND 2 WELL SAMPLING CONDUCTED ON SEPTEMBER 21, 1994

Well Name	MW-1-B	MW-2-B	MW-3-B	MW-4-B	DUPLICATE	TRIP BLANK	FIELD BLANK
Sampling Round	2	2	2	2	2	2	2
Ground Level Elevation in Feet	903.33	902.49	903.25	904.26	==	==	==
PVC Casing Elevation in Feet	902.82	901.83	902.64	903.67	==	==	==
Watertable Elevation in Feet	881.29	880.43	881.38	881.24	==	==	==
Depth to Groundwater in Feet	21.53	21.4	21.26	22.43	==	==	==
Amount Purged in Gallons	6	5.5	4	3.5	==	==	==
Time to Purge in Minutes	10	10	10	10	==	==	==
Purged Dry?	No	No	No	No	==	==	==
Petroleum Odors	Yes	Yes	Yes	Yes	==	==	==
Petroleum Sheens	No	No	No	No	==	==	==
Color	None	Tan	Tan	Tan	==	==	==
Turbidity (high, medium, low, clear)	Clear	Low	Low	Low	==	==	==
Gasoline Range Organics/ppb	1400	31000	540	<100	<100	<100	==
Total Lead/ppb	<1	8	<1	<1	<1	==	<1
Benzene/ppb	<10	1200	5.1	<1.0	<1.0	<1.0	==
Ethylbenzene/ppb	<10	1700	<2.0	<1.0	<1.0	<1.0	==
Methyl-tert-butyl ether/ppb	<10	<100	<2.0	<1.0	<1.0	<1.0	==
Toluene/ppb	18	8000	<2.0	<1.0	<1.0	<1.0	==
1,2,4-Trimethylbenzene/ppb	<10	1300	<2.0	<1.0	<1.0	<1.0	==
1,3,5-Trimethylbenzene/ppb	<10	270	<2.0	<1.0	<1.0	<1.0	==
m&p-Xylene/ppb	<10	5500	<2.0	<1.0	<1.0	<1.0	==
o-Xylene/ppb	<10	1900	<2.0	<1.0	<1.0	<1.0	==

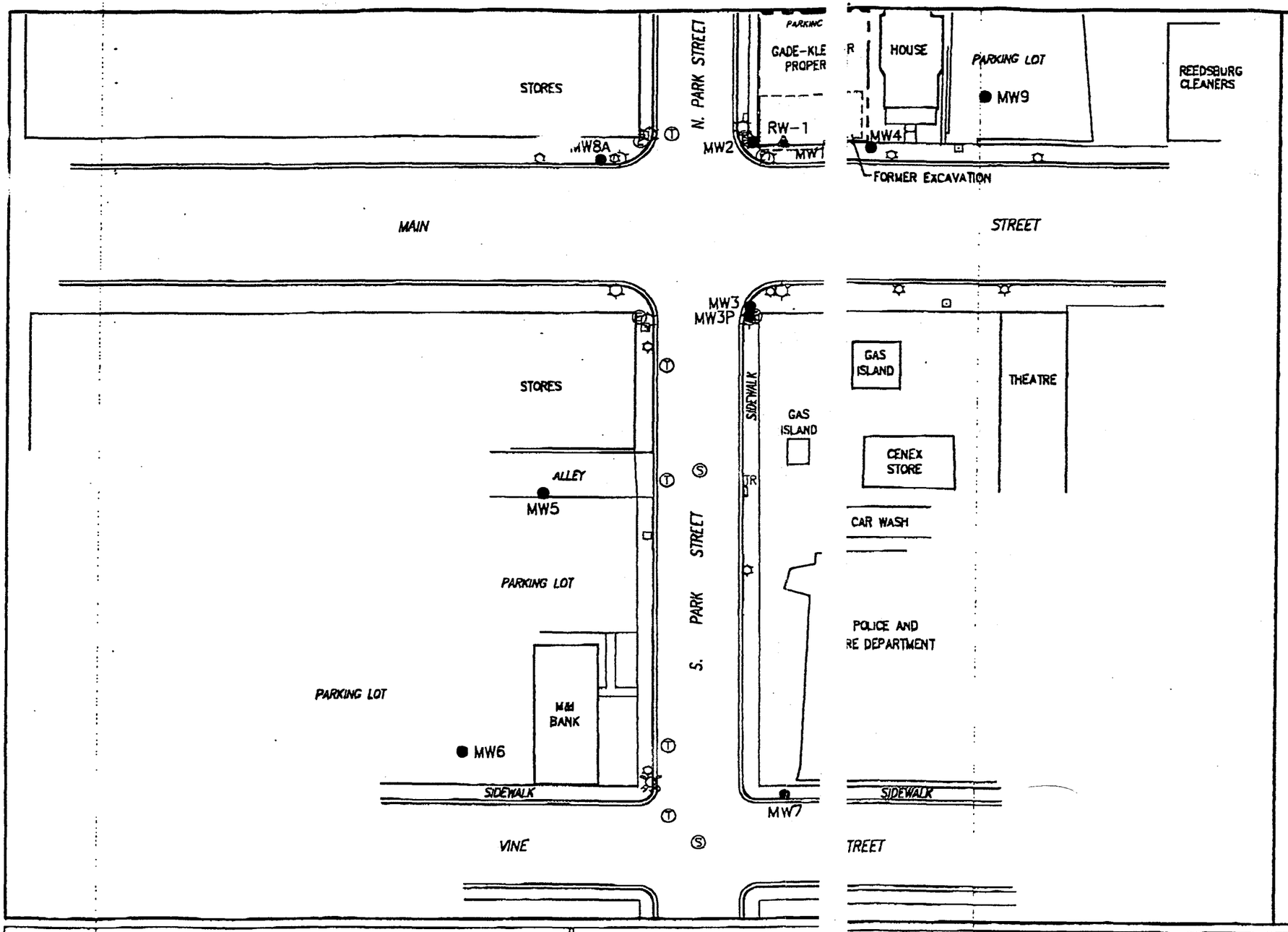
GROUNDWATER SAMPLING DATA TABLE FOR MEYER 76 LUST INVESTIGATION
BY METCO
MAY 9, 1995

ROUND 3 WELL SAMPLING CONDUCTED ON JANUARY 24, 1995

SOIL SAMPLES

Well Name	MW-1-C	MW-2-C	MW-3-C	MW-4-C	MW-5-C	MW-6-C	MW-7-C	P-8-C	TRIP BLANK	FIELD BLANK	DUPLICATE
Sampling Round	3	3	3	3	3	3	3	3	3	3	3
Ground Level Elevation in Feet	903.33	902.49	903.25	904.26	903.70	904.12	904.57	902.61	==	==	==
PVC Casing Elevation in Feet	902.82	901.85	902.64	903.73	903.21	903.55	904.05	902.27	==	==	==
Watertable Elevation in Feet	880.73	880.20	880.87	880.81	880.36	879.92	880.10	879.45	==	==	==
Depth to Groundwater in Feet	22.09	21.65	21.77	22.92	22.85	23.63	23.95	22.82	==	==	==
Amount Purged in Gallons	6	5.5	4	3.5	8	5.5	6	7	==	==	==
Time to Purge in Minutes	15	15	10	10	20	15	15	17	==	==	==
Purged Dry?	No	No	No	No	No	No	No	No	==	==	==
Petroleum Odors	Yes	Yes	Yes	Yes	None	None	None	Yes	==	==	==
Petroleum Sheens	None	None	None	None	None	None	None	None	==	==	==
Color	None	Grey	None	None	Tan	Tan	Tan	None	==	==	==
Turbidity (high, medium, low, clear)	Low	Medium	Low	Low	Medium	Medium	Low	Low	==	==	==
Gasoline Range Organics/ppb	1900	25000	230	<75	710	<75	<75	2200	<75	==	1900
Total Lead/ppb	<1	7	<1	<1	18	3	<1	2	==	1	<1
Benzene/ppb	17	1100	<0.10	<0.10	0.2	<0.10	<0.10	80	<0.10	==	16
Bromobenzene/ppb	==	==	==	==	<0.20	<0.20	<0.20	<0.20	==	==	==
Bromodichloromethane/ppb	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	==	==	==
n-Butylbenzene/ppb	==	==	==	==	<0.10	<0.10	<0.10	2.5	==	==	==
sec-Butylbenzene/ppb	==	==	==	==	<0.15	<0.15	<0.15	<1.5	==	==	==
tert-Butylbenzene/ppb	==	==	==	==	<0.10	<0.10	<0.10	12	==	==	==
Carbon tetrachloride/ppb	==	==	==	==	<0.40	<0.40	<0.40	<0.40	==	==	==
Chlorobenzene/ppb	==	==	==	==	<0.25	<0.25	<0.25	<0.25	==	==	==
Chloroethane/ppb	==	==	==	==	<0.25	<0.25	<0.25	<0.25	==	==	==
Chloroform/ppb	==	==	==	==	<0.15	<0.15	<0.15	<0.15	==	==	==
Chloromethane/ppb	==	==	==	==	<0.15	<0.15	<0.15	<0.15	==	==	==
2-Chlorotoluene/ppb	==	==	==	==	<0.30	<0.30	<0.30	<0.30	==	==	==
4-Chlorotoluene/ppb	==	==	==	==	<0.20	<0.20	<0.20	<0.20	==	==	==
Chlorodibromomethane	==	==	==	==	<0.25	<0.25	<0.25	<0.25	==	==	==
1,2-Dibromo-3-Chloropropane/ppb	==	==	==	==	<0.20	<0.20	<0.20	<0.20	==	==	==
1,2-Dibromoethane(EDB)/ppb	==	==	==	==	<0.35	<0.35	<0.35	<0.35	==	==	==
1,2-Dichlorobenzene/ppb	==	==	==	==	<0.15	<0.15	<0.15	<0.15	==	==	==
1,3-Dichlorobenzene/ppb	==	==	==	==	<0.15	<0.15	<0.15	<0.15	==	==	==
1,4-Dichlorobenzene/ppb	==	==	==	==	<0.15	<0.15	<0.15	<0.15	==	==	==
Dichlorodifluoromethane/ppb	==	==	==	==	<0.25	<0.25	<0.25	<0.25	==	==	==
1,1-Dichloroethane/ppb	==	==	==	==	<0.20	<0.20	<0.20	<0.20	==	==	==
1,2-Dichloroethane/ppb	==	==	==	==	<0.10	<0.10	<0.10	<0.10	==	==	==
1,1-Dichloroethene/ppb	==	==	==	==	<0.30	<0.30	<0.30	<0.30	==	==	==
cis-1,2-Dichloroethene/ppb	==	==	==	==	<0.15	<0.15	<0.15	<0.15	==	==	==
trans-1,2-Dichloroethene/ppb	==	==	==	==	<0.25	<0.25	<0.25	<0.25	==	==	==
1,2-Dichloropropane/ppb	==	==	==	==	<0.20	<0.20	<0.20	<0.20	==	==	==
1,3-Dichloropropane/ppb	==	==	==	==	<0.30	<0.30	<0.30	<0.30	==	==	==
2,2-Dichloropropane/ppb	==	==	==	==	<0.25	<0.25	<0.25	<0.25	==	==	==
Diisopropyl ether/ppb	==	==	==	==	4.4	<0.10	<0.10	7.5	==	==	==
Ethylbenzene/ppb	<1.0	720	<0.20	<0.20	<0.10	<0.10	<0.10	48	<0.20	==	0.5
Hexachlorobutadiene/ppb	==	==	==	==	<0.10	<0.10	<0.10	<0.10	==	==	==
Isopropylbenzene/ppb	==	==	==	==	<0.10	<0.10	<0.10	<1.0	==	==	==
p-Isopropyltoluene/ppb	==	==	==	==	<0.10	<0.10	<0.10	<1.0	==	==	==
Dichloromethane/ppb	<0.50	<0.50	<0.050	<0.50	<0.50	<0.50	<0.50	<0.50	==	==	==
Methyl-tert-butyl ether/ppb	<1.3	<2.5	7.9	<0.25	<0.30	<0.30	<0.30	<3.0	<0.25	==	<0.25
Naphthalene/ppb	==	==	==	==	<0.20	<0.20	<0.20	<2.0	==	==	==
n-Propylbenzene/ppb	==	==	==	==	<0.10	<0.10	<0.10	<1.0	==	==	==
1,1,2,2-Tetrachloroethane/ppb	==	==	==	==	<0.10	<0.10	<0.10	<0.10	==	==	==
Tetrachloroethene/ppb	==	==	==	==	<0.30	<0.30	<0.30	<0.30	==	==	==
Toluene/ppb	9.7	5900	<0.10	<0.10	0.2	<0.10	0.2	310	<0.10	==	7.5
1,2,3-Trichlorobenzene/ppb	==	==	==	==	<0.10	<0.10	<0.10	<0.10	==	==	==
1,2,4-Trichlorobenzene/ppb	==	==	==	==	<0.10	<0.10	<0.10	<0.10	==	==	==
1,1,1-Trichloroethane/ppb	==	==	==	==	<0.10	<0.10	<0.10	<0.10	==	==	==
1,1,2-Trichloroethane/ppb	==	==	==	==	<0.10	<0.10	<0.10	<0.10	==	==	==
Trichloroethene/ppb	==	==	==	==	<0.10	<0.10	<0.10	<0.10	==	==	==
Trichlorofluoromethane/ppb	==	==	==	==	<0.30	<0.30	<0.30	<0.30	==	==	==
1,2,4-Trimethylbenzene/ppb	5.8	560	<0.10	<0.10	<0.15	<0.15	<0.15	42	<0.10	==	1.5
1,3,5-Trimethylbenzene/ppb	<0.5	140	<0.10	<0.10	<0.10	<0.10	<0.10	15	<0.10	==	<0.10
Vinyl chloride/ppb	==	==	==	==	<0.15	<0.15	<0.15	<0.15	==	==	==
m&p-Xylene/ppb	<0.5	3400	<0.10	<0.10	<0.20	<0.20	<0.20	150	<0.10	==	2.9
o-Xylene/ppb	<0.8	790	<0.15	<0.15	<0.10	<0.10	<0.10	62	<0.15	==	0.4

NOTE: The PVC Elevation in feet for MW-2 and MW-4 for this round of sampling was different than sampling rounds 1 and 2.



LEGEND

Ⓔ	ELECTRIC MANHOLE
☼	TRAFFIC LIGHT
☼	LIGHT POLE
⊡	ELECTRIC BOX
TR	ELECTRIC TRANSFORMER
Ⓣ	STORM MANHOLE
Ⓢ	SANITARY MANHOLE
	FIRE HYDRANT
— — —	GADE-KLEEBER PROPERTY LINE
▭	FORMER EXCAVATION LOCATION
▲ RW-1	RECOVERY WELL
● MW8A	MONITORING WELL

NORTH

0 60 120

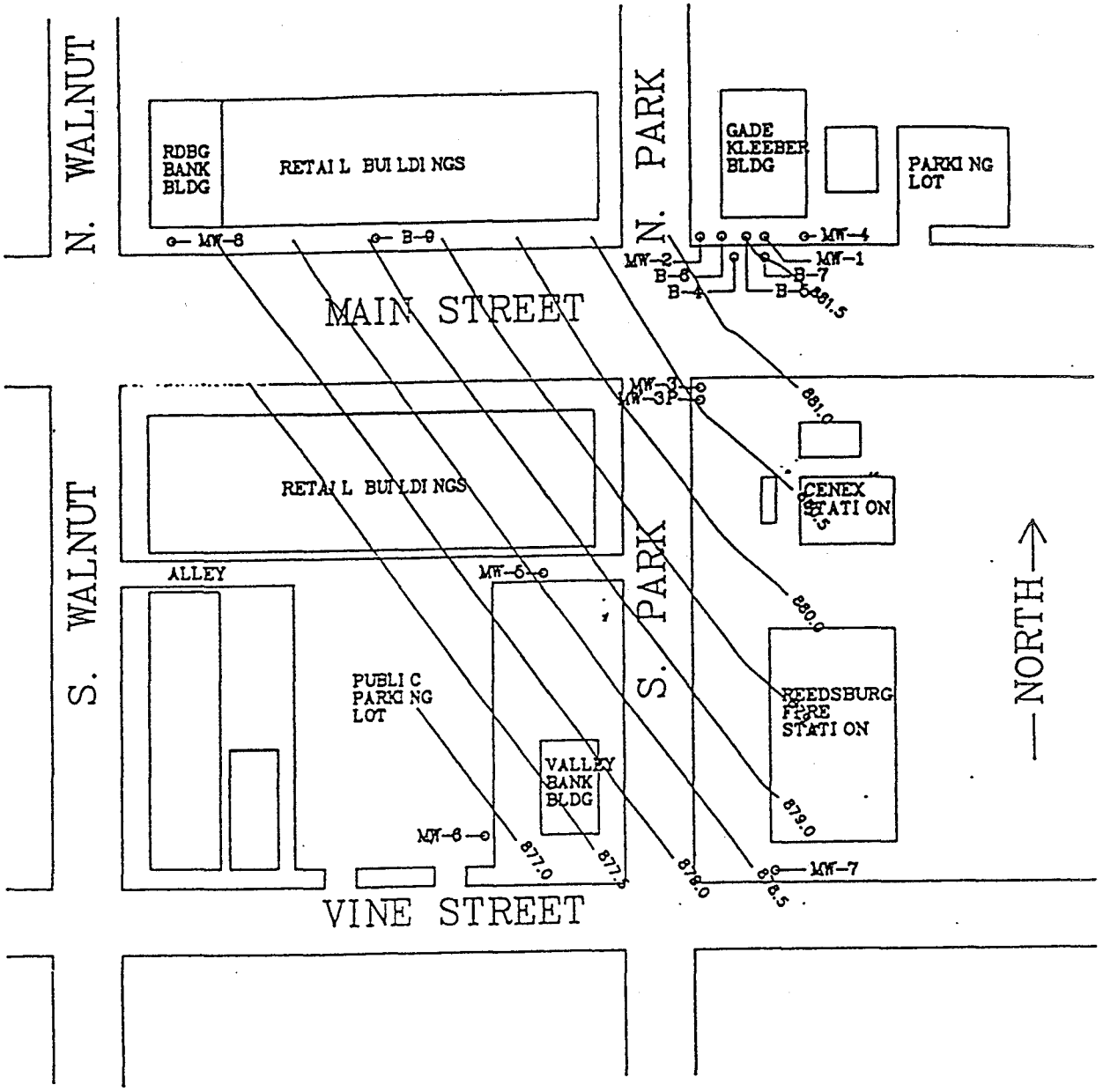
FILE: en\dwg\gade\gade-2 (2/13/97)

VIERBICHER ASSOCIATES

Groundwater Rel… d Feasibility Testing
Gade-Kl… er Property .
Reedsbu… , Wisconsin

Figure 2

Existing Site Layout



SCALE : 1" = 100' (APPROXIMATE)

VIERBICHER ASSOCIATES	REMEDIAL INVESTIGATION CITY OF REEDSBURG GADE-KLEEBER PROPERTY REEDSBURG, WISCONSIN	FIGURE 4 Watertable Contour Map July 28, 1993

TABLE 3
GROUNDWATER ANALYTICAL RESULTS
(Detectable Parameters)

PARAMETERS	Groundwater Quality Standards (ug/l)		Analytical Results (expressed as ug/l, except where noted)								
	Preventive Action Limit (PAL)	Enforcement Standard (ES)	MW-1 (round 1)	MW-1 (round 2)	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8
Diesel Range Organics (DRO)			4.6 (mg/l)	1.4 (mg/l)	5.6 (mg/l)	0.24 (mg/l)	<0.10 (mg/l)	<0.10 (mg/l)	<0.10 (mg/l)	<0.10 (mg/l)	<0.10 (mg/l)
Gasoline Range Organics (GRO)			17 (mg/l)	4.8 (mg/l)	19 (mg/l)	1.3 (mg/l)	<0.10 (mg/l)	<0.10 (mg/l)	<0.10 (mg/l)	<0.10 (mg/l)	<0.10 (mg/l)
Lead	5	50	480	< 4.0	96	< 4.0	NA	380	37	28	27
Polynuclear Aromatic Hydrocarbons (PAH)											
Naphthalene	8	40	29	7.3	48	12	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
1-methylnaphthene			34	4.2	10	4.7	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-methylnaphthene			30	4.0	17	13	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Fluorene			1.0	< 0.21	< 1.0	0.52	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21
Benzo(A)anthracene			0.20	0.044	< 0.065	< 0.013	< 0.013	0.039	< 0.013	< 0.013	< 0.013
Benzo(B)fluoranthene			< 0.090	< 0.018	< 0.090	< 0.018	< 0.018	0.043	< 0.018	< 0.018	< 0.018
Benzo(K)fluoranthene			< 0.085	< 0.017	< 0.085	< 0.017	< 0.017	0.020	< 0.017	< 0.017	< 0.017
Benzo(A)pyrene	0.0003	0.003	< 0.12	0.023	< 0.12	< 0.023	< 0.023	0.044	< 0.023	< 0.023	< 0.023
Dibenzo(AH)anthracene			< 0.15	< 0.030	< 0.15	< 0.030	< 0.030	0.031	< 0.030	< 0.030	< 0.030
Benzo(GHI)perylene			< 0.38	< 0.076	< 0.38	< 0.076	< 0.076	0.091	< 0.076	< 0.076	< 0.076
Indeno(123-CD)pyrene			< 0.22	< 0.043	< 0.22	< 0.043	< 0.043	0.045	< 0.043	< 0.043	< 0.043
Volatile Organic Compounds (VOC's)											
Benzene	0.067	5	< 20	10	< 20	2.8	< 1.0	< 1.0	< 1.0	4.1	< 1.0
Ethylbenzene	272	1360	490	48	360	43	< 1.0	< 1.0	< 1.0	1.3	< 1.0

TABLE 3 (con't)

PARAMETERS	Groundwater Quality Standards (ug/l)		Analytical Results (expressed as ug/l, except where noted)								
	Preventive Action Limit (PAL)	Enforcement Standard (ES)	MW-1 (round 1)	MW-1 (round 2)	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8
Tetrachloroethylene	0.1	1	< 20	< 1.0	< 20	3.2	< 1.0	< 1.0	< 1.0	13	< 1.0
Toluene	68.6	343	330	32	1600	18	< 1.0	1.0	< 1.0	< 1.0	< 1.0
Trichloroethylene	0.18	5	32	< 1.0	< 20	< 1.0	< 1.0	< 1.0	< 1.0	2.6	< 1.0
Trichlorofluoromethane			26	1.4	44	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
P,M-xylene (coelute)	*124	*620	4,200	720	3,300	72	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
O-xylene			1,600	18	2,400	26	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene			32	9.3	< 20	4.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-propylbenzene			84	2.5	< 20	9.9	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-trimethylbenzene			720	380	320	32	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-trimethylbenzene			1,800	540	840	58	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-butylbenzene			< 20	7.6	< 20	1.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
P-isopropyltoluene			< 20	7.0	< 20	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-butylbenzene			230	8.8	94	32	< 1.0	1.0	< 1.0	1.0	< 1.0
Naphthalene	8	40	<20	< 1.0	68	13	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

ug/l = micrograms-per-liter * = total combined xylenes
mg/l = milligrams-per-liter

KEY ENVIRONMENTAL SERVICES, INC.
W66 N215 Commerce Court
Cedarburg, Wisconsin 53012
Phone No. (414) 375-4750
Fax No. (414) 375-9680

FIELD NOTES

Page ____ of ____

Date:_____ KEY Job No.:_____

Project Manager:_____ Field Personnel:_____

Subcontractor/Other Personnel On-Site: _____

Drilling Firm and Crew Chief: _____

Weather Conditions: _____

Arrived: _____ ☐ am ☐ pm Departed: _____ ☐ am ☐ pm

Description of Field Activities:

State of Wisconsin
Department of Natural Resources

Route To:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Page of

Facility/Project Name	License/Permit/Monitoring Number	Boring Number

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
— — —	— — — — — —		Feet	Feet	Inches

Boring Location
State Plane N, E S/C/N
1/4 of 1/4 of Section T N,R

Lat ° ' "
Long ° ' "

Local Grid Location (If applicable)
Feet ☐ N ☐ S Feet ☐ E ☐ W

County	DNR County Code	Civil Town/City/ or Village

Sample Number	Sample Length (in) Recovered	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P200	RQD/ Comments

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
	KEY ENVIRONMENTAL SERVICES, INC. W66 N215 Commerce Court. Cedarburg. WI 53012 Tel: (414)375-4750 Fax: (414)375-9680

This form is authorized by Chapters 144, 147 and 162. Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than $10 nor more than $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06. Wis. Stats.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION SUPPLEMENT
Form 4400-122A 7-91

Boring Number

Use only as an attachment to Form 4400-122.

Page of

Sample									Soil Properties					
Number	Length (in) Recovered	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P200	RQD/ Comments

State of Wisconsin
Department of Natural Resources

Route to: Solid Waste ☐ Haz. Waste ☐ Wastewater ☐
Env. Response & Repair ☐ Underground Tanks ☐ Other ☐ _____

MONITORING WELL CONSTRUCTION

Form 4400-113A Rev. 4-90

Facility/Project Name	Local Grid Location of Well _____ ft. ☐N. ☐S. _____ ft. ☐E. ☐W.	Well Name
Facility License, Permit or Monitoring Number	Grid Origin Location Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or St. Plane _____ ft. N, _____ ft. E.	Wis. Unique Well Number DNR Well Number
Type of Well Water Table Observation Well ☐11 Piezometer ☐12	Section Location of Waste/Source ___1/4 of ___ 1/4 of Sec. ___ T. ___ N. R. ___ ☐E. ☐W.	Date Well Installed
Distance Well Is From Waste/Source Boundary _____ ft.	Location of Well Relative to Waste/Source u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Well Installed By: (Person's Name and Firm)
Is Well A Point of Enforcement Std. Application? ☐ Yes ☐ No		

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation _____ ft. MSL

D. Surface seal, bottom _____ ft. MSL or _____ ft.

12. USC classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis attached? ☐ Yes ☐ No

14. Drilling method used: Rotary ☐ 5 0
Hollow Stem Auger ☐ 4 1
_____ Other ☐ __

15. Drilling fluid used: Water ☐ 0 2 Air ☐ 0 1
Drilling Mud ☐ 0 3 None ☐ 9 9

16. Drilling additives used? ☐ Yes ☐ No
Describe _____

17. Source of water (attach analysis):
_____

E. Bentonite seal, top _____ ft. MSL or _____ ft.

F. Fine sand, top _____ ft. MSL or _____ ft.

G. Filter pack, top _____ ft. MSL or _____ ft.

H. Screen joint, top _____ ft. MSL or _____ ft.

I. Well bottom _____ ft. MSL or _____ ft.

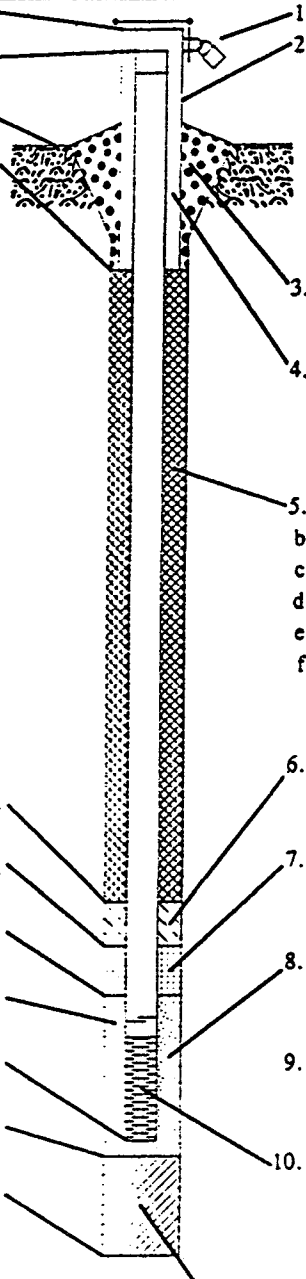
J. Filter pack, bottom _____ ft. MSL or _____ ft.

K. Borehole, bottom _____ ft. MSL or _____ ft.

L. Borehole, diameter _____ in.

M. O.D. well casing _____ in.

N. I.D. well casing _____ in.



1. Cap and lock? ☐ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: _____ in.
b. Length: _____ ft.
c. Material: Steel ☐ 0 4
_____ Other ☐ __
d. Additional protection? ☐ Yes ☐ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 3 0
Concrete ☐ 0 1
_____ Other ☐ __

4. Material between well casing and protective pipe:
Bentonite ☐ 3 0
Annular space seal ☐ __
_____ Other ☐ __

5. Annular space seal: a. Granular Bentonite ☐ 3 3
b. _____ Lbs/gal mud weight . . Bentonite-sand slurry ☐ 3 5
c. _____ Lbs/gal mud weight . . . Bentonite slurry ☐ 3 1
d. _____ % Bentonite . . . Bentonite-cement grout ☐ 5 0
e. _____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 0 1
Tremie pumped ☐ 0 2
Gravity ☐ 0 8

6. Bentonite seal: a. Bentonite granules ☐ 3 3
b. ☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite pellets ☐ 3 2
c. _____ Other ☐ __

7. Fine sand material: Manufacturer, product name and mesh size
a. _____ __
b. Volume added _____ ft^3

8. Filter pack material: Manufacturer, product name and mesh size
a. _____ __
b. Volume added _____ ft^3

9. Well casing: Flush threaded PVC schedule 40 ☐ 2 3
Flush threaded PVC schedule 80 ☐ 2 4
_____ Other ☐ __

10. Screen material: _____ __
a. Screen Type: Factory cut ☐ 1 1
Continuous slot ☐ 0 1
_____ Other ☐ __
b. Manufacturer _____
c. Slot size: _____ in.
d. Slotted length: _____ ft.

11. Backfill material (below filter pack): None ☐ 1 4
_____ Other ☐ __

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm KEY ENVIRONMENTAL SERVICES, INC.
W66 N215 Commerce Court Cedarburg, WI 53012

Tel: (414) 375-4750
Fax: (414) 375-9680

Please complete both sides of this form and return to the appropriate DNR office listed at the top of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Ad. Code. In accordance with ch. 144, Wis. Stats., failure to file this form may result in a forfeiture of not less than $10, nor more than $5000 for each day of violation. In accordance with ch. 147, Wis. Stats., failure to file this form may result in a forfeiture of not more than $10,000 for each day of violation. NOTE: Shaded areas are for DNR use only. See instructions for more information including where the completed form should be sent.

State of Wisconsin
Department of Natural Resources

MONITORING WELL DEVELOPMENT
Form 4400-113B Rev. 4-90

Route to: Solid Waste ☒ Haz. Waste ☒ Wastewater ☒
Env. Response & Repair ☒ Underground Tanks ☒ Other ☒ Main Office

Facility/Project Name	County	Well Name

Facility License, Permit or Monitoring Number	County Code	Wis. Unique Well Number	DNR Well Number

1. Can this well be purged dry? ☐ Yes ☐ No

2. Well development method:

surged with bailer and bailed	☐ 41
surged with bailer and pumped	☐ 61
surged with block and bailed	☐ 42
surged with block and pumped	☐ 62
surged with block, bailed, and pumped	☐ 70
compressed air	☐ 20
bailed only	☐ 10
pumped only	☐ 51
pumped slowly	☐ 50
other _____	☐

3. Time spent developing well min.

4. Depth of well (from top of well casing) ft.

5. Inside diameter of well in.

6. Volume of water in filter pack and well casing gal.

7. Volume of water removed from well gal.

8. Volume of water added (if any) gal.

9. Source of water added _____

10. Analysis performed on water added? ☐ Yes ☐ No
(If yes, attach results)

		Before Development	After Development
11. Depth to Water (from top of well casing)	a.	ft.	ft.
Date	b.		
Time	c.	☐ a.m. ☐ p.m.	☐ a.m. ☐ p.m.
12. Sediment in well bottom		inches	inches
13. Water clarity		Clear ☐ 10 Turbid ☐ 15 (Describe)	Clear ☐ 20 Turbid ☐ 25 (Describe)
Fill in if drilling fluids were used and well is at solid waste facility:			
14. Total suspended solids		mg/l	mg/l
15. COD		mg/l	mg/l

16. Additional comments on development:

Well developed by: Person's Name and Firm

Name: _____

Firm: _____

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: _____

Print Initials: ___ ___ ___

Firm: KEY ENVIRONMENTAL SERVICES, INC.

NOTE: Shaded areas are for DNR use only. See instructions for more information including a list of county codes.

KEY ENVIRONMENTAL SERVICES, INC.

W66 N215 Commerce Court
Cedarburg, Wisconsin 53012
Phone No. (414) 375-4750
Fax No. (414) 375-9680

SURVEY FORM

Site Name:_____ Instrument Man:_____

Site Location:_____ Rod Man:_____

Date:_____ Weather Conditions:_____

Number of Turning Points:_____ Error of Closure:_____(feet)

Station No.	Rod Location (i.e. MW-1, B-1, GP-1)	Rod Reading (B.S.) (feet)			H.I. (feet)	Elevations (F.S.) (feet)			Comments
		Grade	Cover	PVC		Grade	Cover	PVC	
1	Benchmark								

All leveling theory and applications can be expressed by two equations, which are repeated over and over: Rod Reading + BS=HI HI - FS=Elev

Notes: B.S. = Back Shot H.I. = Height of Instrument F.S. Fore Shot

KEY ENVIRONMENTAL SERVICES, INC.
W66 N215 Commerce Court
Cedarburg, Wisconsin 53012
Phone No. (414) 375-4750
Fax No. (414) 375-9680

GROUNDWATER MONITORING FORM

Project Name:_____ KEY Project No.:_____

Project Location.:_____ Weather Conditions:_____

Date: _____ ☐ M ☐T ☐W ☐TH ☐F Sampling Method: ☐ Pumped ☐ Bailed Other_____

Pump: _____ Bailer: _____

Well ID								
Depth to Bottom (feet)								
Depth to Water (feet)								
Water Column Height (feet)								
Volume to be Removed (gallons)								
4 x the Volume to be Removed (gallons)								
Actual Volume Removed (gallons)								
Temperature (°F)								
Dissolved O_2 (% sat)								
Dissolved O_2 (mg/L)								
Sp. Cond. (µS/cm)								
Resistivity (kΩ/cm)								
Salinity (ppt)								
Depth (feet)								
pH (s.u.)								
ORP (mV)								
Odor (Y/N)								
Turbidity								

Quality Control Samples:

Field Duplicate ☐ No ☐ Yes Well No. _____

Field Blank ☐ No ☐ Yes Time _____

Trip Blank ☐ No ☐ Yes Time _____

Additional Comments:_____

_____

_____

Signature: _____

SITE HEALTH AND SAFETY PLAN

REEDSBURG CLEANERS
349 EAST MAIN STREET
REEDSBURG, WISCONSIN 53959
WDNR BRRTS#: 03-57-002801 LUST
WDNR BRRTS#: 02-57-001682 ERRP
PECFA CLAIM#: 533959-1941-49

September 16, 1998

PREPARED FOR:

REEDSBURG CLEANERS
140 MAINE STREET
MAUSTON, WISCONSIN 53948

SITE HEALTH AND SAFETY PLAN

REEDSBURG CLEANERS
349 EAST MAIN STREET
REEDSBURG, WISCONSIN 53959
WDNR BRRTS#: 03-57-002801 LUST
WDNR BRRTS#: 02-57-001682 ERRP
PECFA CLAIM#: 53959-1941-49

September 16, 1998

PREPARED FOR:

REEDSBURG CLEANERS
140 MAINE STREET
MAUSTON, WISCONSIN 53948

KEY ENGINEERING GROUP, LTD.

Rachel A. Ames
Staff Hydrogeologist

Curtis M. Hoffart, CHMM
Staff Scientist

Douglas W. Graham, P.E.
Corporate Health and Safety Officer

HEALTH AND SAFETY PLAN

Site Description

The property known as Reedsburg Cleaners (hereafter referred to as the subject site) is located at 349 E. Main Street, Mauston, Wisconsin. The site contact person is Mr. Wayne Butz. The site requires site investigation (SI) due to the presence of petroleum contamination associated with three (3) gasoline underground storage tanks (USTs), one (1) fuel oil UST and potential chlorinated compounds associated with an above ground storage tank (AST) containing tetrachloroethylene (perchloroethylene (PCE)).

Project Objectives

The project objectives include advancing soil borings and collecting soil samples from the soil borings, constructing, developing and sampling groundwater monitoring wells, surveying the site and ensuring the safety of Key Engineering Group, Ltd., (KEY) employees. The *Site Health and Safety Plan* (HASP) (this document) will establish protocols for KEY employees to safely document site activities, advance soil borings, install groundwater monitoring wells, collect soil and groundwater samples, maintain site safety for KEY visitors and decontaminate KEY personnel and equipment associated with the site activities.

Project Organization

KEY representative Mr. Curtis M. Hoffart is the project manager. KEY has been retained by Reedsburg Cleaners to provide engineering services for soil sampling and, if present, groundwater sampling, site health and safety, and to provide the labor, equipment and supplies necessary to complete the scope of work for this project. KEY will provide Mr. Dave Kleber as the field technician for the SI and the remedial action (RA). Mr. Kleber will be responsible for collecting soil and groundwater samples, documenting contractor activities, decontaminating KEY's equipment, and ensuring employees and representatives of KEY read, understand and comply with this HASP.

Hazard Evaluation

Chemical Hazards

The potential contaminants (chemical hazards) for which this HASP is valid consists primarily of petroleum and the common commercial distillates of petroleum. Tetraethyl lead is a common constituent of gasoline and may be present due to the leaded gasoline formerly at the site.

Additionally, PCE has been detected adjacent to the subject site. PCE degradation daughter products include trichloroethylene (TCE), dichloroethylene (DCE) and vinyl chloride (VC). Additionally, depending upon the years of operation of the dry cleaner, carbon tetrachloride (CCL_4) may have been used at the subject site.

Petroleum products are, as a class, irritating to skin and mucous membranes. Dermatitis may result from repeated and prolonged exposure to the liquid product. Vapors from petroleum distillates are rich in organic components and, as such, exhibit a characteristic odor. These vapors,

in prolonged or over exposure conditions act as a central nervous system (CNS) depressant. Exposures to low concentrations of petroleum products may produce flushing of the face, staggering, slurred speech, headaches and mental confusion. Exposure to high concentrations of petroleum products may yield unconsciousness, coma and possibly death resulting from respiratory failure.

Benzene, toluene, ethyl benzene and xylene (BTEX.) are common volatile organic components of petroleum. Tetraethyl lead is an additive used in leaded gasoline. These compounds may be present and are noted for their toxicity or carcinogenicity. Fuel oil may be encountered at the site and may present a hazard in its pure form.

The primary routes of exposure to the potential contaminants of concern (CCS) at this site are through inhalation and absorption. Ingestion generally will not be an exposure route at project sites if gloves are used. Absorption as an exposure route will be minimized by the use of appropriate personal protective clothing and field monitors. Inhalation of volatile organic compounds (VOCs) will be minimized by monitoring the concentration of VOC in breathing zone air with a photoionization detector (PID). Additionally, if the soils are dry and wind is present, the soils may have to be wetted to minimize the potential for inhalation of particulates.

Physical Hazards

Physical hazards include slip, trip and fall, rotating equipment (drill rig during investigation), potential animal (vector) hazards and weather conditions. Slip, trip and fall hazards will be minimized by being aware of one's surroundings and walking (not running) at the job site, paying attention to one's surroundings (streets, equipment, utilities) and keeping in eye contact with all equipment operators. Overhead and rotating hazards associated with the heavy construction equipment will be minimized by general awareness, wearing a hard hat and keeping a safe distance from all moving parts, respectively. Weather hazards will be minimized by knowing the weather conditions (warm or cold) and wearing appropriate clothing (light clothing in hot weather and warm clothing in the cold). Plenty of fluids should be on-site to minimize the potential for dehydration in the summer and the winter.

<u>On-Site Control</u>

On-site control will be coordinated by KEY in conjunction with the contractor and site owner. Due to the presence of VOCs. at this site, the safe perimeter to prevent accidental exposure to potential contaminants has been established as being greater than 20 feet from the drill rig during the SI unless personnel have the appropriate training and personal protective equipment (PPE). No persons will be allowed near the work area unless they have written documentation of necessary training and medical monitoring, are notified of the potential hazards and are outfitted with proper PPE.

Personnel from KEY will not direct the subcontractor's means and methods. All work must comply with all Occupational Safety and Health Administration (OSHA) and other applicable safety regulations and rules. Daily inspections of the work area will be conducted to prevent mishaps due to vandalism or weather.

Air Monitoring and Action Levels

A PID equipped with a 11.7 electron volt (eV) lamp will be used to monitor for volatile organic vapors in the breathing zone air. The air will be monitored on a continuous basis while sampling operations occur. If volatile organic vapor concentrations exceed a concentration of five (5) instrument units (i.u.) (parts per million (ppm) equivalent) above background concentrations continuously, indicating a higher level of respiratory protection is warranted, work will stop. The corporate health and safety officer will be notified and the site activities will be evaluated to determine the appropriate respiratory protection for the activities and contaminants present. If determined to be necessary (if the work area does not clear), respiratory protection will be donned to resume work. Additionally, an explosive gas meter may be used in addition to the PID to monitor the breathing zone and the surrounding atmosphere. Work will stop if concentrations of volatile organic vapors meet or exceed 10 ppm above background concentrations continuously in the breathing zone.

Field operations will be performed initially in Level D PPE. In the event measurable organic vapor concentrations are continuously measured in the breathing zone at five (5) i.u. above background concentration (PID measurement is relative to the calibration gas), work will stop and the operations will be evaluated to determine the need for Level C PPE. If needed, Level C PPE and use of an explosive gas meter likely will be implemented. If concentrations in the breathing zone continuously exceed ten (10) i.u. above background concentrations or break-through on respirator cartridges occurs in less than 30 minutes, work will stop.

There is a potential for inhalation hazard associated in halation of particulates. If on-site personnel determine that visible emissions are present and the wind is blowing, the soils should be wetted during drilling activities. Additionally, the area of the work area may have to be increased in size from 20 feet around the work area, especially in the down wind direction.

Personal Protective Equipment

Persons outside the stated 20 foot work area radius (preferably upwind) will be permitted to observe the proceedings without PPE. Within the work area radius, Level D PPE will be required. In this context, Level D PPE consists of head protection, gloves, ear plugs (if necessary) and boots. Hard hats will be required for all on-site activities. Gloves will be required to cover hands for all on-site activities. Removal of the gloves during the on-site operations will not be allowed.

If Level C PPE and air purifying respirators are authorized, organic vapor cartridges are likely the appropriate cartridges for use with petroleum products at specified concentrations between five (5) ppm and ten (10) ppm above the background concentration in the breathing air zone. At concentrations greater than ten (10) ppm above the background concentration, work will stop.

Communications

Communications on-site will be primarily by voice and by hand signaling. The following standard hand signals will be used in case of an emergency:

Hand gripping throat	Out of air/can't breathe
Grip partner's wrist or both hands around waist	Leave area immediately

Hands on top of head	Need assistance
Thumbs up	OK
Thumbs down	No

Field personnel will be equipped with pagers, which are accessible through the voice mail system at (414) 375-4750. A phone will be available on-site.

Personnel

Personnel leaving the work area will not be required to undergo decontamination except for hand cleansing. With petroleum products and chlorinated compounds (VOC) as the expected chemicals of concern, the decontamination procedures will consist of removing the gloves and cleaning the hands. Attached or adhered soils on boots or clothing will be brushed or scraped off to minimize mobilization of contaminants off-site.

Equipment

Decontamination of soil sampling equipment between sampling locations will be a soap and water wash using a hard wire or stiff plastic bristle brush to remove soil particles and oily films. Soil particles would be the likely vehicle for contaminant migration. The equipment will be rinsed with tap water to remove the soap solution.

Final decontamination will consist of a thorough scrubbing in soap and water with a wire or stiff plastic brush to remove soil particles followed by a deionized water rinse.

Emergency Procedures

All on-site personnel will be monitored by one another to evaluate the potential for being affected by site contaminants:

Symptoms which may indicate potential exposure include irritation to the eyes, skin and respiratory tract. Changes in attitude of the workers on-site could indicate inhalation of excessive vapors. The affected person should be removed from the work site and if appropriate, transported to the hospital for observation.

Accident or Injury

In the event of an accident or injury on-site, the following procedures will be implemented:

- Injury - the nature of the injury will be assessed by other on-site personnel and if possible, the project manager. First aid will be given as appropriate. Medical attention will be summoned if required or requested by the injured person(s).

- Accident - the nature of the accident will be assessed by on-site personnel and if appropriate, the project manager. Either emergency assistance will be summoned, or the situation rectified and work continued.

The nearest hospital, Reedsburg Area Medical Center, is shown on the attached Hospital Route Map. Reedsburg Area Medical Center is located at 2000 North Dewey Avenue, Reedsburg, Wisconsin. The emergency phone number is (608) 524-6487.

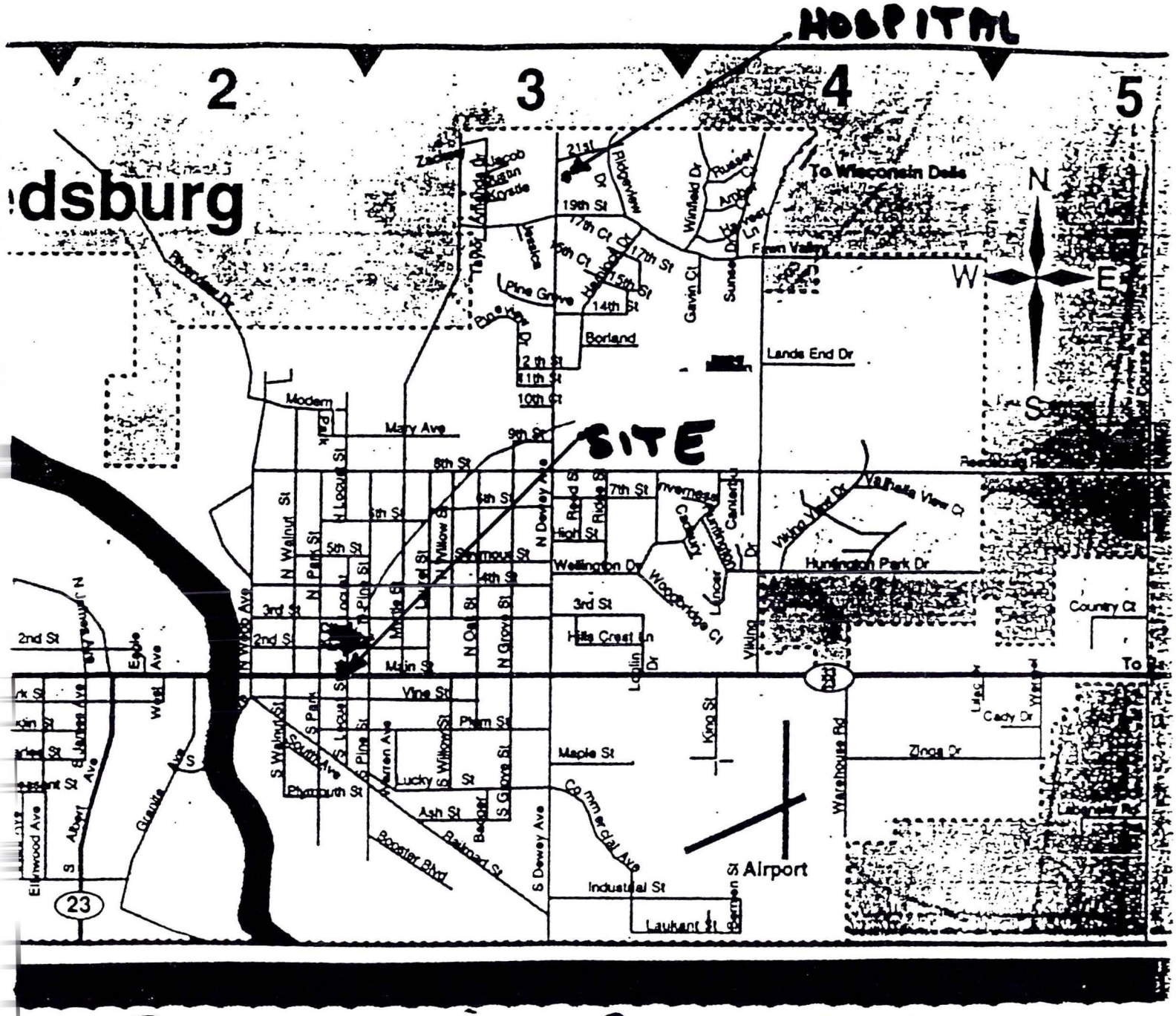
Directions to the hospital are as follows:

- Exit the subject site to the south onto East Main Street (State Highway 33).
- Turn Left onto N. Dewey Avenue
- Proceed North on N. Dewey Avenue
- The Hospital is located on the east (Right-hand side) of N. Dewey Avenue (approximately 1 ½-miles from the subject site)

Emergency Agencies	
Police	911 (non-emergency - (608) 524-2376)
Fire	911 (non-emergency - (608) 524-3174)
Hospital	(608) 524-6487
Ambulance	911 (non-emergency - (608) 524-2376)

KEY site personnel have read this HASP and are familiar with its provisions and will abide by its contents.

Name	Signature
_____	_____
_____	_____
_____	_____
_____	_____



REEDSBURG CLEANERS

HOSPITAL ROUTE MAP

CONOCO -- LEADED REGULAR GASOLINE - GASOLINE, AUTOMOTIVE
MATERIAL SAFETY DATA SHEET
NSN: 9130002646215
Manufacturer's CAGE: 15445
Part No. Indicator: B
Part Number/Trade Name: LEADED REGULAR GASOLINE

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General Information

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Item Name: GASOLINE, AUTOMOTIVE
Company's Name: CONOCO INC
Company's Street: 600 N DAIRY ASHFORD RD RM 3012
Company's P. O. Box: 4784
Company's City: HOUSTON
Company's State: TX
Company's Country: US
Company's Zip Code: 77210-4784
Company's Emerg Ph #: 800-441-3637(MED), 800-424-9300
Record No. For Safety Entry: 011
Tot Safety Entries This Stk#: 030
Status: SEU
Date MSDS Prepared: 01AUG90
Safety Data Review Date: 25SEP91
Supply Item Manager: KY
MSDS Serial Number: BKSLH
Specification Number: VV-G-1690
Hazard Characteristic Code: F2
Unit Of Issue: DR
Unit Of Issue Container Qty: 55.00 GALLONS
Type Of Container: DRUM, 18 GAGE
Net Unit Weight: 320.6 LBS

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Ingredients/Identity Information

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Proprietary: NO
Ingredient: BENZENE (SARA III)
Ingredient Sequence Number: 01
Percent: 0.1-4.9
NIOSH (RTECS) Number: CY1400000
CAS Number: 71-43-2
OSHA PEL: 1PPM/5STEL;1910.1028
ACGIH TLV: 10 PPM; A2; 9192
Other Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: ETHYL BENZENE (SARA III)
Ingredient Sequence Number: 02
Percent: 2
NIOSH (RTECS) Number: DA0700000
CAS Number: 100-41-4
OSHA PEL: 100 PPM/125 STEL
ACGIH TLV: 100 PPM/125STEL 9192
Other Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: CYCLOHEXANE (SARA III)
Ingredient Sequence Number: 03
Percent: 1
NIOSH (RTECS) Number: GU6300000
CAS Number: 110-82-7
OSHA PEL: 300 PPM

ACGIH TLV: 300 PPM, 9192
Other Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: CUMENE (SARA III)
Ingredient Sequence Number: 04
Percent: 1
NIOSH (RTECS) Number: GR8575000
CAS Number: 98-82-8
OSHA PEL: S, 50 PPM
ACGIH TLV: S, 50 PPM; 9192
Other Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: 1,2,4-TRIMETHYLBENZENE (SARA III)
Ingredient Sequence Number: 05
Percent: 2
NIOSH (RTECS) Number: DC3325000
CAS Number: 95-63-6
OSHA PEL: 25 PPM
ACGIH TLV: 25 PPM; 9192
Other Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: XYLENES (O-,M-,P- ISOMERS) (SARA III)
Ingredient Sequence Number: 06
Percent: 12
NIOSH (RTECS) Number: ZE2100000
CAS Number: 1330-20-7
OSHA PEL: 100 PPM/150 STEL
ACGIH TLV: 100 PPM/150STEL;9192
Other Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: TOLUENE (SARA III)
Ingredient Sequence Number: 07
Percent: 15
NIOSH (RTECS) Number: XS5250000
CAS Number: 108-88-3
OSHA PEL: 200 PPM/150 STEL
ACGIH TLV: 50 PPM; 9293
Other Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: METHYL TERT-BUTYL ETHER (SARA III)
Ingredient Sequence Number: 08
Percent: 0 - 15
NIOSH (RTECS) Number: KN5250000
CAS Number: 1634-04-4
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE SPECIFIED

Physical/Chemical Characteristics

Appearance And Odor: BRONZE OR RED CLEAR LIQUID. GASOLINE ODOR.
Boiling Point: 85.0F,29.4C
Vapor Pressure (MM Hg/70 F): 275 - 475
Vapor Density (Air=1): >1
Specific Gravity: 0.7 - 0.77
Decomposition Temperature: N/A

Solubility In Water: MAY BE SLIGHTLY
Percent Volatiles By Volume: 100
pH: N/A

Fire and Explosion Hazard Data

Flash Point: -50F,-46C
Flash Point Method: TCC
Lower Explosive Limit: <1
Upper Explosive Limit: 8
Extinguishing Media: USE DRY CHEMICAL, CARBON DIOXIDE OF FOAM.
Special Fire Fighting Proc: WATER MAY BE INEFFECTIVE TO EXTINGUISH, BUT CAN BE USED TO COOL CONTAINERS. USE WATER SPRAY TO DISPERSE THE VAPORS AND TO PROTECT PERSONNEL.
Unusual Fire And Expl Hazrds: HIGHLY FLAMMABLE. DO NOT ENTER AN ENCLOSED OR CONFINED SPACE WITHOUT PROPER PROTECTIVE EQUIPMENT, INCLUDING RESPIRATORY PROTECTION.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): UNDUE EXPOSURE TO AIR, HEAT, AND FLAMES.
Materials To Avoid: OXIDIZING MATERIALS.
Hazardous Decomp Products: CARBON MONOXIDE, CARBON DIOXIDE, AND OTHER TOXIC MATERIALS.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT APPLICABLE

Health Hazard Data

LD50-LC50 Mixture: UNKNOWN
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: NO
Health Haz Acute And Chronic: PETROLEUM DISTILLATES HAVE CAUSED EITHER DAMAGE OR TUMORS OF THE KIDNEYS OR TUMORS OF THE LIVER. PETROLEUM MIDDLE DISTILLATES CAN CAUSE SKIN CANCER WHEN REPEATEDLY APPLIED AND NEVER WASHED FROM THE ANIMAL'S SKIN.
Carcinogenicity - NTP: YES
Carcinogenicity - IARC: YES
Carcinogenicity - OSHA: YES
Explanation Carcinogenicity: THIS PRODUCT CONTAINS BENZENE.
Signs/Symptoms Of Overexp: THIS PRODUCT MAY CAUSE IRRITATION TO THE EYES, SKIN AND LUNGS AFTER PROLONGED OR REPEATED EXPOSURE. OVERWXPOSURE MAY CAUSE WEAKNESS, HEADACHE, NAUSEA, CONFUSION, BLURRED VISION, DROWSINESS AND OTHER NERVOUS SYSTEM EFFECTS. GREATER EXPOSURE MAY CAUSE DIZZINESS, SLURRED SPEECH, FLUSHED FACE, UNCONSCIOUSNESS.
Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.
Emergency/First Aid Proc: EYES: IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. CALL A PHYSICIAN. SKIN: IMMEDIATELY WASH SKIN WITH SOAP AND WATER. WASH CONTAMINATED CLOTHING. IF IRRITATION DEVELOPS, CALL A PHYSICIAN. INHALATION: REMOVE TO FRESH AIR. ASSIST WITH BREATHING IF NECESSARY. CALL A PHYSICIAN. INGESTION: DO NOT INDUCE VOMITING. IMMEDIATELY GIVE TWO GLASSES OF WATER. CALL A PHYSICIAN.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: DIKE SPILL. PREVENT LIQUID FROM ENTERING SEWERS, WATERWAYS, OR LOW AREAS. SOAK UP WITH SAWDUST, SAND, OIL DRY OR OTHER ABSORBENT MATERIAL. SHOVEL OR SWEEP UP. REMOVE SOURCE OF HEAT, SPARKS, FLAME, IMPACT, FRICTION, OR ELECTRICITY.

Neutralizing Agent: NONE
Waste Disposal Method: TREATMENT, STORAGE, TRANSPORTATION, AND DISPOSAL MUST BE IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS. DO NOT FLUSH TO SURFACE WATER OR SANITARY SEWER SYSTEM. BY ITSELF, LIQUID IS A RCRA-IGNITABLE HAZARDOUS WASTE.
Precautions-Handling/Storing: KEEP AWAY FROM HEAT, SPARKS, AND FLAMES. KEEP CONTAINER TIGHTLY CLOSED. USE OF NONSPARKING AND EXPLOSION-PROOF EQUIPMENT MAY BE NECESSARY.
Other Precautions: AVOID CONTACT WITH EYES, SKIN, OR CLOTHING.

Control Measures

Respiratory Protection: USE A NIOSH/MSHA APPROVED AIR PURIFYING RESPIRATOR WITH AN ORGANIC VAPOR CARTRIDGE OR CANISTER WHEN NECESSARY. FOR AN UNCONTROLLED RELEASE, USE A POSITIVE-PRESSURE, AIR-SUPPLIED RESPIRATOR.
Ventilation: USE SUFFICIENT VENTILATION TO MAINTAIN ATMOSPHERIC CONCENTRATIONS BELOW PERMISSIBLE EXPOSURE LIMITS.
Protective Gloves: USE NEOPRENE OR NBR.
Eye Protection: GOGGLES OR FACE SHIELD FOR SPRAY/MISTS
Other Protective Equipment: SUFFICIENT PROTECTIVE CLOTHING TO MINIMIZE SKIN EXPOSURE. LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.
Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING THIS MATERIAL.
Suppl. Safety & Health Data: THIS IS A FORMULATION CHANGE.

Transportation Data

Trans Data Review Date: 91268
DOT PSN Code: GTN
DOT Proper Shipping Name: GASOLINE
DOT Class: 3
DOT ID Number: UN1203
DOT Pack Group: II
DOT Label: FLAMMABLE LIQUID
IMO PSN Code: HRV
IMO Proper Shipping Name: GASOLINE
IMO Regulations Page Number: 3141
IMO UN Number: 1203
IMO UN Class: 3.1
IMO Subsidiary Risk Label: -
IATA PSN Code: RMF
IATA UN ID Number: 1203
IATA Proper Shipping Name: MOTOR SPIRIT
IATA UN Class: 3
IATA Label: FLAMMABLE LIQUID
AFI PSN Code: MUC
AFI Prop. Shipping Name: GASOLINE
AFI Class: 3
AFI ID Number: UN1203
AFI Pack Group: II
AFI Basic Pac Ref: 7-7

Disposal Data

Label Data

Label Required: YES
Technical Review Date: 25SEP91
Label Date: 25SEP91
Label Status: F
Common Name: LEADED REGULAR GASOLINE

Signal Word: DANGER!
Acute Health Hazard-Slight: X
Contact Hazard-Slight: X
Fire Hazard-Severe: X
Reactivity Hazard-None: X
Special Hazard Precautions: PETROLEUM DISTILLATES HAVE CAUSED EITHER DAMAGE OR TUMORS OF THE KIDNEYS OR TUMORS OF THE LIVER. PETROLEUM MIDDLE DISTILLATES CAN CAUSE SKIN CANCER WHEN REPEATEDLY APPLIED AND NEVER WASHED FROM THE ANIMAL'S SKIN. KEEP AWAY FROM HEAT, SPARKS, AND FLAMES. KEEP CONTAINER TIGHTLY CLOSED. USE OF NONSPARKING AND EXPLOSION-PROOF EQUIPMENT MAY BE NECESSARY. FIRST AID: EYES: IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. CALL A PHYSICIAN. SKIN: IMMEDIATELY WASH SKIN WITH SOAP AND WATER. WASH CONTAMINATED CLOTHING. IF IRRITATION DEVELOPS, CALL A PHYSICIAN. INHALATION: REMOVE TO FRESH AIR. ASSIST WITH BREATHING IF NECESSARY.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: CONOCO INC
Label Street: 600 N DAIRY ASHFORD RD RM 3012
Label P.O. Box: 4784
Label City: HOUSTON
Label State: TX
Label Zip Code: 77210-4784
Label Country: US
Label Emergency Number: 800-441-3637(MED), 800-424-9300

ARCO CHEMICAL COMPANY DIV OF ATLANTIC RICHFIE -- METHYL TERTIARY BUTYL ETHER - METHYL
MATERIAL SAFETY DATA SHEET
NSN: 681000D002894
Manufacturer's CAGE: 3D253
Part No. Indicator: A
Part Number/Trade Name: METHYL TERTIARY BUTYL ETHER

General Information

Item Name: METHYL TERTIARY BUTYL ETHER
Company's Name: ARCO CHEMICAL COMPANY, DIV OF ATLANTIC RICHFIELD
Company's Street: 1500 MARKET STREET
Company's P. O. Box: 7258
Company's City: PHILADELPHIA
Company's State: PA
Company's Country: US
Company's Zip Code: 19101
Company's Emerg Ph #: 215-353-8300
Company's Info Ph #: 800-321-7000
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SM
Date MSDS Prepared: 09DEC91
Safety Data Review Date: 14NOV92
Supply Item Manager: CX
MSDS Serial Number: BPGMN
Specification Number: UNKNOWN
Spec Type, Grade, Class: UNKNOWN
Hazard Characteristic Code: F2
Unit Of Issue Container Qty: UNKNOWN
Type Of Container: UNKNOWN
Net Unit Weight: UNKNOWN

Ingredients/Identity Information

Proprietary: NO
Ingredient: METHYL TERT-BUTYL ETHER (SARA III)
Ingredient Sequence Number: 01
Percent: >97
NIOSH (RTECS) Number: KN5250000
CAS Number: 1634-04-4
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE RECOMMENDED

Physical/Chemical Characteristics

Appearance And Odor: CLEAR, COLORLESS LIQUID WITH TURPENE ODOR
Boiling Point: 131F,55C
Melting Point: -164F,-109C
Vapor Pressure (MM Hg/70 F): >7 PSIA
Vapor Density (Air=1): UNKNOWN
Specific Gravity: 0.74
Decomposition Temperature: UNKNOWN
Evaporation Rate And Ref: UNKNOWN
Solubility In Water: MODERATE
Autoignition Temperature: 797F

Fire and Explosion Hazard Data

Flash Point: -22F,-30C

Flash Point Method: SCC
Lower Explosive Limit: 2.1%
Upper Explosive Limit: 10.5%
Extinguishing Media: DRY CHEMICAL, CARBON DIOXIDE, ALCOHOL FOAM, OR WATER FOG (FOR COOLING).
Special Fire Fighting Proc: WEAR SELF-CONTAINED BREATHING APPARATUS AND BUNKER GEAR. FIGHT FIRE FROM SAFE DISTANCE/PROTECTED AREA. USE WATER FOR COOLING FIRE EXPOSED CONTAINERS & PERSONNEL
Unusual Fire And Expl Hazrds: HEAT MAY BUILD PRESSURE/RUPTURE CLOSED CONTAINERS.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): SOURCES OF IGNITION AND CONTACT WITH INCOMPATIBLES.
Materials To Avoid: STRONG OXIDIZING AGENTS, VITON, FLOUREL
Hazardous Decomp Products: CARBON MONOXIDE AND OTHER TOXIC VAPORS
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NONE

Health Hazard Data

LD50-LC50 Mixture: ORAL LD50 (RAT) IS UNKNOWN
Route Of Entry - Inhalation: NO
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: ACUTE: CONTACT MAY CAUSE MINOR SKIN AND EYE IRRITATION. SWALLOWING LARGE AMOUNTS MAY CAUSE MILD GI TRACT IRRITATION. CHRONIC: PROLONGED OR REPEATED INHALATION OF VAPOR MAY CAUSE IRRITATION OF RESPIRATORY TRACT AND CNS EFFECTS.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NO INGREDIENT OF A CONCENTRATION OF 0.1% OR GREATER IS LISTED AS A CARCINOGEN OR SUSPECTED CARCINOGEN.
Signs/Symptoms Of Overexp: INHALED: COUGHING, SHORTNESS OF BREATH, DIZZINESS, INTOXICATION. EYES: REDNESS, TEARING, DISCOMFORT. SKIN: RASH, ITCHING. INGESTED: NAUSEA, VOMITING.
Med Cond Aggravated By Exp: MEDICAL INFORMATION REGARDING SPECIAL HEALTH EFFECTS IS NOT CONCLUSIVE.
Emergency/First Aid Proc: INHALED: REMOVE PERSON TO FRESH AIR. GIVE RESPIRATORY SUPPORT IF NEEDED. GET MEDICAL ATTENTION. EYES: FLUSH WITH LOTS REMOVE CONTAMINATED CLOTHES. WASH WITH SOAP AND WATER. INGESTED: DO NOT INDUCE VOMITING. IF CONSCIOUS, GIVE LUKEWARM WATER. GET IMMEDIATE MEDICAL ATTENTION.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: ELIMINATE ALL SOURCES OF IGNITION. CONTAIN SPILL. WEAR PROPER PROTECTIVE EQUIPMENT. ISOLATE AND DENY ENTRY. PUMP LARGE SPILL TO SALVAGE TRUCK OR CONTAINERS. ABSORB SMALL SPILL WITH INERT MATERIALS AND PLACE IN A CONTAINER FOR LATER DISPOSAL.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Method: DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.
Precautions-Handling/Storing: STORE IN TIGHTLY CLOSED CONTAINERS, AWAY FROM SOURCES OF IGNITION AND STRONG OXIDIZING AGENTS. USE NON-SPARKING TOOLS.
Other Precautions: USE PROPER BONDING AND GROUNDING TECHNIQUES DURING TRANSFER OPERATIONS/SPILL RECOVERY. HANDLE EMPTY CONTAINERS WITH CAUTION;

MAY CONTAIN VAPOR RESIDUE WHICH IS FLAMMABLE.

Control Measures

Respiratory Protection: NONE NORMALLY REQUIRED. USE OF NIOSH/MSHA APPROVED AIR-SUPPLIED RESPIRATOR OR SCBA IN CONFINED SPACE OR EMERGENCY SITUATIONS IS RECOMMENDED. USE IN ACCORDANCE WITH 29 CFR 1910.134.
Ventilation: USE ADEQUATE MECHANICAL VENTILATION.
Protective Gloves: PVA OR BUTYL
Eye Protection: SAFETY GLASSES/CHEMICAL SPLASH GOGGLES
Other Protective Equipment: EYE WASH STATION & SAFETY SHOWER. BOOTS, APRON SHOULD BE WORN.
Work Hygienic Practices: WASH HANDS AFTER USE AND BEFORE EATING, DRINKING, OR SMOKING. LAUNDER CONTAMINATED CLOTHES BEFORE REUSE.

Transportation Data

Trans Data Review Date: 92319
DOT PSN Code: GJF
DOT Proper Shipping Name: FLAMMABLE LIQUIDS, N.O.S.
DOT Class: 3
DOT ID Number: UN1993
DOT Pack Group: I
DOT Label: FLAMMABLE LIQUID
IMO PSN Code: HIM
IMO Proper Shipping Name: FLAMMABLE LIQUID, N.O.S. o *
IMO Regulations Page Number: 3126
IMO UN Number: 1993
IMO UN Class: 3.1
IMO Subsidiary Risk Label: - *
IATA PSN Code: MBQ
IATA UN ID Number: 1993
IATA Proper Shipping Name: FLAMMABLE LIQUID, N.O.S. *
IATA UN Class: 3
IATA Label: FLAMMABLE LIQUID
AFI PSN Code: MBQ
AFI Prop. Shipping Name: FLAMMABLE LIQUIDS, N.O.S.
AFI Class: 3
AFI ID Number: UN1993
AFI Pack Group: I
AFI Basic Pac Ref: 7-6
N.O.S. Shipping Name: METHYL TERTIARY BUTYL ETHER

Disposal Data

Label Data

Label Required: YES
Technical Review Date: 14NOV92
Label Date: 09DEC91
MFR Label Number: HCR000127
Label Status: G
Common Name: METHYL TERTIARY BUTYL ETHER
Chronic Hazard: NO
Signal Word: DANGER!
Acute Health Hazard-Slight: X
Contact Hazard-Slight: X
Fire Hazard-Severe: X
Reactivity Hazard-None: X
Special Hazard Precautions: EXTREMELY FLAMMABLE. CONTACT MAY CAUSE MINOR

SKIN AND EYE IRRITATION. SWALLOWING LARGE AMOUNTS MAY CAUSE MILD GI TRACT IRRITATION. PROLONGED OR REPEATED INHALATION OF VAPOR MAY CAUSE IRRITATION OF RESPIRATORY TRACT AND CNS EFFECTS. FIRST AID: INHALED: REMOVE PERSON TO FLUSH WITH LOTS OF WATER FOR 15 MINUTES WHILE HOLDING EYELIDS OPEN. SEE DOCTOR. SKIN: REMOVE CONTAMINATED CLOTHES. WASH WITH SOAP AND WATER. INGESTED: DO NOT INDUCE VOMITING. IF CONSCIOUS, GIVE LUKEWARM WATER. GET IMMEDIATE MEDICAL ATTENTION.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: ARCO CHEMICAL COMPANY, DIV OF ATLANTIC RICHFIELD
Label Street: 1500 MARKET STREET
Label P.O. Box: 7258
Label City: PHILADELPHIA
Label State: PA
Label Zip Code: 19101
Label Country: US
Label Emergency Number: 215-353-8300

International Chemical Safety Cards

TETRAETHYL LEAD

ICSC: 0008

TETRAETHYL LEAD
Tetraethyl plumbane
Lead tetraethyl
TEL
$Pb(C_2H_5)_4$
Molecular mass: 323.45

CAS # 78-00-2
RTECS # TP4550000
ICSC # 0008
UN # 1649
EC # 082-002-00-1

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Powder, water spray, foam, carbon dioxide.
EXPLOSION	Above 77°C explosive vapour/air mixtures may be formed.	Above 77°C closed system, ventilation, and explosion-proof electrical equipment.	In case of fire: keep drums, etc., cool by spraying with water. Combat fire out of sheltered position.
EXPOSURE		PREVENT GENERATION OF MISTS! STRICT HYGIENE! AVOID EXPOSURE OF (PREGNANT) WOMEN! AVOID EXPOSURE OF ADOLESCENTS AND CHILDREN!	IN ALL CASES CONSULT A DOCTOR!
INHALATION	Convulsions. Dizziness. Headache. Unconsciousness. Vomiting. Weakness.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Artificial respiration if indicated. Refer for medical attention.
SKIN	MAY BE ABSORBED! Redness. (further see Inhalation).	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention.
EYES	Pain. Blurred vision.	Face shield, or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
INGESTION	Convulsions. Diarrhoea. Dizziness. Headache. Unconsciousness. Vomiting. Weakness.	Do not eat, drink, or smoke during work.	Rinse mouth. Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Give plenty of water to drink. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Evacuate danger area! Consult an expert! Ventilation. Collect leaking liquid in sealable containers. Absorb remaining liquid in sand or inert absorbent and remove to safe place. (extra personal protection: complete protective clothing including self-contained breathing apparatus).	Fireproof. Separated from strong oxidants, acids. Keep in the dark. Ventilation along the floor.	Unbreakable packaging; put breakable packaging into closed unbreakable container. T+ symbol R: 26/27/28-33 S: 13-26-36/37-45 UN Haz Class: 6.1 UN Pack Group: I (M)

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0008

International Chemical Safety Cards

TETRAETHYL LEAD

ICSC: 0008

IMPORTANT DATA

PHYSICAL STATE; APPEARANCE:
COLOURLESS VISCOUS LIQUID , WITH CHARACTERISTIC ODOUR.

PHYSICAL DANGERS:
The vapour is heavier than air

CHEMICAL DANGERS:
The substance decomposes on heating above 110°C and under influence of light producing toxic fumes: carbon monoxide, lead. Reacts violently with strong oxidants, acids, halogens, oils and fats causing fire and explosion hazard. Attacks rubber and some plastics and coatings.

OCCUPATIONAL EXPOSURE LIMITS (OELs):
TLV (as Pb): ppm; 0.1 mg/m^3 (skin) (ACGIH 1991-1992)
PDK (as Pb): 0.005 mg/m^3 P (USSR 1987)

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation, through the skin, by ingestion.

INHALATION RISK:
A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20°C.

EFFECTS OF SHORT-TERM EXPOSURE:
The substance irritates the eyes, the skin, the respiratory tract. The substance may cause effects on the central nervous system , resulting in irritability, insomnia, cardiac disorders. Exposure could cause lowering of consciousness. Exposure to high level may result in death. Medical observation is indicated.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
May cause reproductive toxicity in humans.

PHYSICAL PROPERTIES

Boiling point (decomposes): 200°C
Melting point: -136.8°C
Relative density (water = 1): 1.7
Solubility in water: None
Vapour pressure, kPa at 20°C: 0.027
Relative density of the vapour/air-mixture at 20°C (air = 1): 1.00
Flash point: 77°C
Auto-ignition temperature: Above 110°C
Explosive limits, vol% in air: 1.8

ENVIRONMENTAL DATA

It is strongly advised not to let the chemical enter into the environment.

NOTES

Depending on the degree of exposure, periodic medical examination is indicated. The relation between odour and the occupational exposure limit cannot be indicated. Do NOT take working clothes home. Tetraethyl lead used as an anti-knock compound in gasoline also contains ethylene dibromide and ethylene dichloride as impurities. Also consult ICSC #0052.

Transport Emergency Card: TEC (R)-157
NFPA Code: H3; F2; R3;

ADDITIONAL INFORMATION

ICSC: 0008 **TETRAETHYL LEAD**

IMPORTANT LEGAL NOTICE:

MATERIAL SAFETY DATA SHEET

Toluene, 99%
96584

**** SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ****

MSDS Name: Toluene, 99%

Methacide, methylbenzene, methylbenzol, phenylmethane, toluol.
Company Identification: Acros Organics N.V.
One Reagent Lane
Fairlawn, NJ 07410
For information in North America, call: 800-ACROS-01
For emergencies in the US, call CHEMTREC: 800-424-9300

**** SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS ****

CAS#	Chemical Name	%	EINECS#
108-88-3	Benzene, methyl-	>99	203-625-9

Hazard Symbols: XN F
Risk Phrases: 11 20

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW

Appearance: clear. Flash Point: 4 deg C.
Danger! Flammable liquid. May cause skin irritation. This substance has caused adverse reproductive and fetal effects in animals. May cause central nervous system depression. Aspiration hazard. Poison! May cause cardiac disturbances. May cause liver and kidney damage. Causes digestive and respiratory tract irritation. May cause eye irritation and transient injury. Harmful or fatal if swallowed. Vapor harmful.
Target Organs: Kidneys, heart, central nervous system, liver.

Potential Health Effects

Eye:
Causes eye irritation. May result in corneal injury. Vapors may cause eye irritation.

Skin:
May cause skin irritation. Prolonged and/or repeated contact may cause irritation and/or dermatitis.

Ingestion:
Aspiration hazard. May cause irritation of the digestive tract. May

Aspiration hazard. May cause irritation of the digestive tract. May cause effects similar to those for inhalation exposure. Aspiration of material into the lungs may cause chemical pneumonitis, which may be fatal.

Inhalation:

Inhalation of high concentrations may cause central nervous system effects characterized by headache, dizziness, unconsciousness and coma. Inhalation of vapor may cause respiratory tract irritation. May cause heart disturbances, possibly leading to cardiac arrest and death.

Chronic:

Prolonged or repeated skin contact may cause dermatitis. May cause cardiac sensitization and severe heart abnormalities. May cause liver and kidney damage.

**** SECTION 4 - FIRST AID MEASURES ****

Eyes:

Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Get medical aid immediately. Do NOT allow victim to rub or keep eyes closed.

Skin:

Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists.

Ingestion:

Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Possible aspiration hazard. Get medical aid immediately.

Inhalation:

Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician:

Causes cardiac sensitization to endogenous catelcholamines which may lead to cardiac arrhythmias. Do NOT use adrenergic agents such as epinephrine or pseudoepinephrine.

Antidote:

No specific antidote exists.

**** SECTION 5 - FIRE FIGHTING MEASURES ****

General Information:

Containers can build up pressure if exposed to heat and/or fire. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Water runoff can cause environmental damage. Dike and collect water used to fight fire. Vapors can travel to a source of ignition and flash back. Flammable Liquid. Can release vapors that form explosive mixtures at temperatures above the flashpoint. Use water spray to keep fire-exposed containers cool. Water may be ineffective. Material is lighter than water and a fire may be spread by the use of water.

Extinguishing Media:

Use dry chemical, carbon dioxide, or alcohol-resistant foam.

Autoignition Temperature: 535 deg C (995.00 deg F)
Flash Point: 4 deg C (39.20 deg F)
NFPA Rating: health-2; flammability-3; reactivity-0
Explosion Limits, Lower: 1.20 vol %
Upper: 7.00 vol %

**** SECTION 6 - ACCIDENTAL RELEASE MEASURES ****

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:

Avoid runoff into storm sewers and ditches which lead to waterways. Scoop up with a nonsparking tool, then place into a suitable container for disposal. Use water spray to disperse the gas/vapor. Remove all sources of ignition. Absorb spill using an absorbent, non-combustible material such as earth, sand, or vermiculite.

**** SECTION 7 - HANDLING and STORAGE ****

Handling:

Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Do not get on skin or in eyes. Do not ingest or inhale. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

Storage:

Keep away from sources of ignition. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area.

**** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION ****

Engineering Controls:

Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Benzene, methyl-	50 ppm ; 188 mg/m3	100 ppm TWA; 375 mg/m3 TWA 500 ppm IDLH	200 ppm TWA; C 300 ppm; C 300 ppm

OSHA Vacated PELs:

Benzene, methyl-:
100 ppm TWA; 375 mg/m3 TWA

Personal Protective Equipment

Eyes:

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133.

Skin:

Wear appropriate protective gloves to prevent skin exposure.

Clothing:

Wear appropriate protective clothing to prevent skin exposure.

Respirators:

Follow the OSHA respirator regulations found in 29CFR 1910.134. Always use a NIOSH-approved respirator when necessary.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State:	Liquid
Appearance:	clear
Odor:	Aromatic, sweet.
pH:	Not available.
Vapor Pressure:	10 mm Hg
Vapor Density:	3.1 (Air=1)
Evaporation Rate:	2.4 (Butyl acetate=1)
Viscosity:	059 cP 20 deg C
Boiling Point:	110.6 deg C @ 760.00mm Hg
Freezing/Melting Point:	-95 deg C
Decomposition Temperature:	Not available.
Solubility:	0.05 G/100ML WATER (20°C)
Specific Gravity/Density:	.8650g/cm3
Molecular Formula:	C7H8
Molecular Weight:	92.14

**** SECTION 10 - STABILITY AND REACTIVITY ****

Chemical Stability:
Stable at room temperature in closed containers under normal storage and handling conditions.
Conditions to Avoid:
Incompatible materials, ignition sources, excess heat.
Incompatibilities with Other Materials:
Bromine trifluoride, 1,3-dichloro-5,5-dimethyl-2,4-imidazolididione, dintrogen tetroxide, concentrated nitric acid, nitric acid + sulfuric acid, silver perchlorate, strong oxidizers.
Hazardous Decomposition Products:
Carbon monoxide, carbon dioxide.
Hazardous Polymerization: Has not been reported.

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#:
CAS# 108-88-3: XS5250000
LD50/LC50:
CAS# 108-88-3: Inhalation, mouse: LC50 =400 ppm/24H; Inhalation, rat: LC50 =49 gm/m3/4H; Oral, rat: LD50 = 636 mg/kg; Skin, rabbit: LD50 = 12124 mg/kg.
Carcinogenicity:
Benzene, methyl- -
ACGIH: A4 - Not Classifiable as a Human Carcinogen
IARC: Group 3 carcinogen
Epidemiology:
No information available.
Teratogenicity:
Specific developmental abnormalities included craniofacial effects involving the nose and tongue, musculoskeletal effects, urogenital and metabolic effects in studies on mice and rats by the inhalation and oral routes of exposure. Some evidence of fetotoxicity with reduced fetal weight and retarded skeletal development has been reported in mice and rats.
Reproductive Effects:
Effects on fertility such as abortion were reported in rabbits by inhalation. Paternal effects were noted in rats by inhalation. These effects involved the testes, sperm duct and epididymis.
Neurotoxicity:
No information available.
Mutagenicity:
No information available.

Other Studies:
None.

**** SECTION 12 - ECOLOGICAL INFORMATION ****

Ecotoxicity:
Bluegill LC50=17 mg/L/24H Shrimp LC50=4.3 ppm/96H Fathead minnow LC50=36.2 mg/L/96H Sunfish (fresh water) TLm=1180 mg/L/96H
Environmental Fate:
From soil, substance evaporates and is microbially biodegraded. In water, substance volatilizes and biodegrades.
Physical/Chemical:
Photochemically produced hydroxyl radicals degrade substance.
Other:
None.

**** SECTION 13 - DISPOSAL CONSIDERATIONS ****

Dispose of in a manner consistent with federal, state, and local regulations.
RCRA D-Series Maximum Concentration of Contaminants:
None listed.
RCRA D-Series Chronic Toxicity Reference Levels: None listed.
RCRA F-Series: None listed.
RCRA P-Series: None listed.
RCRA U-Series: CAS# 108-88-3: waste number U220.
CAS# 108-88-3 is banned from land disposal according to RCRA.

**** SECTION 14 - TRANSPORT INFORMATION ****

US DOT
Shipping Name: TOLUENE
Hazard Class: 3
UN Number: UN1294
Packing Group: II
IMO
Shipping Name: TOLUENE
Hazard Class: 3.2
UN Number: 1294
Packing Group: II
IATA
Shipping Name: TOLUENE
Hazard Class: 3
UN Number: 1294
Packing Group: II
RID/ADR
Shipping Name: TOLUENE
Dangerous Goods Code: 3(3B)
UN Number: 1294
Canadian TDG
Shipping Name: TOLUENE
Hazard Class: 3(9.2)
UN Number: UN1294

**** SECTION 15 - REGULATORY INFORMATION ****

US FEDERAL
TSCA
CAS# 108-88-3 is listed on the TSCA inventory.
Health & Safety Reporting List

CAS# 108-88-3: Effective Date: October 4, 1982; Sunset Date: October 4

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

SARA

Section 302 (RQ)

final RQ = 1000 pounds (454 kg)

Section 302 (TPQ)

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 108-88-3: acute, flammable.

Section 313

This material contains Benzene, methyl- (CAS# 108-88-3, >99%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:

CAS# 108-88-3 is listed as a hazardous air pollutant (HAP).

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

CAS# 108-88-3 is listed as a Hazardous Substance under the CWA.

CAS# 108-88-3 is listed as a Priority Pollutant under the Clean Water Act.

CAS# 108-88-3 is listed as a Toxic Pollutant under the Clean Water Act.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

Benzene, methyl- can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.

WARNING: This product contains Benzene, methyl-, a chemical known to the state of California to cause birth defects or other reproductive harm.

California No Significant Risk Level:

None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: XN F

Risk Phrases:

R 11 Highly flammable.

R 20 Harmful by inhalation.

Safety Phrases:

S 16 Keep away from sources of ignition - No smoking.

S 25 Avoid contact with eyes.

S 29 Do not empty into drains.

S 33 Take precautionary measures against static discharges.

WGK (Water Danger/Protection)

CAS# 108-88-3: 2

Canada

CAS# 108-88-3 is listed on Canada's DSL/NDSL List.

This product does not have a WHMIS classification.

CAS# 108-88-3 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits

CAS# 108-88-3:. OEL-AUSTRALIA:TWA 100 ppm (375 mg/m3);STEL 150 ppm (5

60 mg/m3). OEL-BELGIUM:TWA 100 ppm (377 mg/m3);STEL 150 ppm (565 mg/m3). OEL-CZECHOSLOVAKIA:TWA 200 mg/m3;STEL 1000 mg/m3. OEL-DENMARK:TWA 5 0 ppm (190 mg/m3);Skin. OEL-FINLAND:TWA 100 ppm (375 mg/m3);STEL 150 p pm;Skin. OEL-FRANCE:TWA 100 ppm (375 mg/m3);STEL 150 ppm (560 mg/m3). OEL-GERMANY:TWA 100 ppm (380 mg/m3). OEL-HUNGARY:TWA 100 mg/m3;STEL 30 0 mg/m3;Skin. OEL-JAPAN:TWA 100 ppm (380 mg/m3). OEL-THE NETHERLANDS:T WA 100 ppm (375 mg/m3);Skin. OEL-THE PHILIPPINES:TWA 100 ppm (375 mg/m 3). OEL-POLAND:TWA 100 mg/m3. OEL-RUSSIA:TWA 100 ppm;STEL 50 mg/m3 L-SWEDEN:TWA 50 ppm (200 mg/m3);STEL 100 ppm (400 mg/m3);Skin. OEL-SWI TZERLAND:TWA 100 ppm (380 mg/m3);STEL 500 ppm. OEL-THAILAND:TWA 200 pp m;STEL 300 ppm. OEL-TURKEY:TWA 200 ppm (750 mg/m3). OEL-UNITED KINGDOM :TWA 100 ppm (375 mg/m3);STEL 150 ppm;Skin. OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV. OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 2/01/1996 Revision #3 Date: 9/02/1997

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

Back to product information.

MATERIAL SAFETY DATA SHEET

1,2,4-Trimethylbenzene, 98%
73581

**** SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ****

MSDS Name: 1,2,4-Trimethylbenzene, 98%

Pseudocumene, Pseudocumol, 1,2,4-TMB
Company Identification: Acros Organics N.V.
One Reagent Lane
Fairlawn, NJ 07410
For information in North America, call: 800-ACROS-01
For emergencies in the US, call CHEMTREC: 800-424-9300

**** SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS ****

CAS#	Chemical Name	%	EINECS#
95-63-6	1,2,4-TRIMETHYLBENZENE	98%	202-436-9

Hazard Symbols: XN XI
Risk Phrases: 10 36/37/38 20

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW

Appearance: clear, colorless. Flash Point: 48 deg C.
Warning! Flammable liquid. May cause central nervous system depression. Aspiration hazard. May be absorbed through the skin. Causes eye and skin irritation. Causes digestive and respiratory tract irritation.
Target Organs: Central nervous system, lungs.

Potential Health Effects

Eye:

Causes eye irritation. Causes redness and pain.

Skin:

Causes skin irritation. May be absorbed through the skin. Causes redness and pain.

Ingestion:

May cause gastrointestinal irritation with nausea, vomiting and diarrhea. Aspiration of material into the lungs may cause chemical pneumonitis, which may be fatal. May cause central nervous system depression.

Inhalation:
Causes respiratory tract irritation. May cause drowsiness, unconsciousness, and central nervous system depression.
Chronic:
Prolonged or repeated skin contact may cause dermatitis. Repeated inhalation may cause chronic bronchitis. May cause anemia and other blood cell abnormalities. Prolonged exposure may produce a narcotic effect. Prolonged or repeated exposure may cause nausea, dizziness, and headache.

**** SECTION 4 - FIRST AID MEASURES ****

Eyes:
Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Get medical aid immediately.
Skin:
Get medical aid immediately. Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes.
Ingestion:
If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Possible aspiration hazard. Do NOT induce vomiting and seek IMMEDIATE MEDICAL ADVICE.
Inhalation:
Get medical aid immediately. Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.
Notes to Physician:
Treat symptomatically and supportively.

**** SECTION 5 - FIRE FIGHTING MEASURES ****

General Information:
As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Will burn if involved in a fire. Flammable Liquid. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas.
Extinguishing Media:
Use water spray to cool fire-exposed containers. In case of fire, use water fog, dry chemical, carbon dioxide, or regular foam.
Autoignition Temperature: 500 deg C (932.00 deg F)
Flash Point: 48 deg C (118.40 deg F)
NFPA Rating: health-0; flammability-2; reactivity-0
Explosion Limits, Lower: .90 vol %
Upper: 6.40 vol %

**** SECTION 6 - ACCIDENTAL RELEASE MEASURES ****

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks:
Absorb spill with inert material, (e.g., dry sand or earth), then place into a chemical waste container. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation.

**** SECTION 7 - HANDLING and STORAGE ****

Handling:

Wash thoroughly after handling. Use only in a well ventilated area. Use spark-proof tools and explosion proof equipment. Avoid contact with skin and eyes. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Take precautionary measures against static discharges. Do not ingest or inhale.

Storage:

Keep away from sources of ignition. Store in a cool, dry place. Store in a tightly closed container. Flammables-area.

**** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION ****

Engineering Controls:

Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
1,2,4-TRIMETHYLBENZENE	none listed	25 ppm TWA; 125 mg/m3 TWA	none listed

OSHA Vacated PELs:

1,2,4-TRIMETHYLBENZENE:

No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes:

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133.

Skin:

Wear appropriate protective gloves to prevent skin exposure.

Clothing:

Wear appropriate protective clothing to prevent skin exposure.

Respirators:

Follow the OSHA respirator regulations found in 29CFR 1910.134. Always use a NIOSH-approved respirator when necessary.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State:	Liquid
Appearance:	clear, colorless
Odor:	Aromatic
pH:	Not available.
Vapor Pressure:	2.1 mbar @ 20 deg C
Vapor Density:	4.15 (air=1)
Evaporation Rate:	Not available.
Viscosity:	Not available.
Boiling Point:	168 deg C @ 760.00mm Hg
Freezing/Melting Point:	-44 deg C
Decomposition Temperature:	Not available.
Solubility:	6 MG/100ML (20°C)
Specific Gravity/Density:	.8890g/cm3
Molecular Formula:	C9H12
Molecular Weight:	120.19

**** SECTION 10 - STABILITY AND REACTIVITY ****

Chemical Stability:
Stable under normal temperatures and pressures.
Conditions to Avoid:
Incompatible materials, ignition sources.
Incompatibilities with Other Materials:
Strong oxidizing agents.
Hazardous Decomposition Products:
Carbon monoxide, carbon dioxide.
Hazardous Polymerization: Has not been reported.

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#:
CAS# 95-63-6: DC3325000
LD50/LC50:
CAS# 95-63-6: Inhalation, rat: LC50 =18 gm/m3/4H; Oral, rat: LD50 = 5 gm/kg.
Carcinogenicity:
1,2,4-TRIMETHYLBENZENE -
Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Epidemiology:
No data available.
Teratogenicity:
No data available.
Reproductive Effects:
No data available.
Neurotoxicity:
No data available.
Mutagenicity:
EPA:
Other Studies:
No data available.

**** SECTION 12 - ECOLOGICAL INFORMATION ****

Ecotoxicity:
Invertebrate toxicity:
spp. 0.1 mol/m³/24H
effects" for complete information (editor : M.L. Richardson)
Environmental Fate:
See "The dictionary of substances and their effects" for complete information (editor : M.L.Richardson)
Physical/Chemical:
Not available.
Other:
Not available.

**** SECTION 13 - DISPOSAL CONSIDERATIONS ****

Dispose of in a manner consistent with federal, state, and local regulations.
RCRA D-Series Maximum Concentration of Contaminants:
None listed.
RCRA D-Series Chronic Toxicity Reference Levels: None listed.
RCRA F-Series: None listed.
RCRA P-Series: None listed.
RCRA U-Series: None listed.
Not listed as a material banned from land disposal according to RCRA.

**** SECTION 14 - TRANSPORT INFORMATION ****

US DOT
Shipping Name: FLAMMABLE LIQUIDS, N.O.S.
(1,2,4-TRIMETHYLBENZENE)
Hazard Class: 3
UN Number: UN1993
Packing Group: III
IMO
Shipping Name: FLAMMABLE LIQUID, N.O.S.
Hazard Class: 3.3
UN Number: 1993
Packing Group: III
IATA
Shipping Name: FLAMMABLE LIQUID, N.O.S.*
Hazard Class: 3
UN Number: 1993
Packing Group: III
RID/ADR
Shipping Name: FLAMMABLE LIQUID, N.O.S.
Dangerous Goods Code: 3(31C)
UN Number: 1993
Canadian TDG
Shipping Name: COMBUSTIBLE LIQUID NOS (TRIMETHYLBENZENE)
Hazard Class: 3
UN Number: UN1993
Other Information: FP 48 C

**** SECTION 15 - REGULATORY INFORMATION ****

US FEDERAL
TSCA
CAS# 95-63-6 is listed on the TSCA inventory.
Health & Safety Reporting List
CAS# 95-63-6: Effective Date: April 29, 1983; Sunset Date: April 29, 1
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
SARA
Section 302 (RQ)
None of the chemicals in this material have an RQ.
Section 302 (TPQ)
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 95-63-6: acute, chronic, flammable.
Section 313
This material contains 1,2,4-TRIMETHYLBENZENE (CAS# 95-63-6, 98%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority

Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.

STATE
1,2,4-TRIMETHYLBENZENE can be found on the following state right to know lists: New Jersey, Pennsylvania, Massachusetts.
California No Significant Risk Level:
None of the chemicals in this product are listed.

European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols: XN XI
Risk Phrases:
R 10 Flammable.
R 36/37/38 Irritating to eyes, respiratory system and skin.
R 20 Harmful by inhalation.
Safety Phrases:
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

WGK (Water Danger/Protection)
CAS# 95-63-6: 3

Canada
CAS# 95-63-6 is listed on Canada's DSL/NDSL List.
This product does not have a WHMIS classification.
CAS# 95-63-6 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 3/01/1994 Revision #2 Date: 9/02/1997

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

Back to product information.

CHEM SERVICE -- 0-771 1,3,5-TRIMETHYLBENZENE - LABORATORY STANDARD
MATERIAL SAFETY DATA SHEET
NSN: 655000F037499
Manufacturer's CAGE: 8Y898
Part No. Indicator: A
Part Number/Trade Name: 0-771 1,3,5-TRIMETHYLBENZENE

General Information

Item Name: LABORATORY STANDARD
Company's Name: CHEM SERVICE INC
Company's Street: 660 TOWER LN
Company's P. O. Box: 3108
Company's City: WEST CHESTER
Company's State: PA
Company's Country: US
Company's Zip Code: 19381-3108
Company's Emerg Ph #: 215-692-3026/800-452-9994
Company's Info Ph #: 215-692-3026/800-452-9994
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SE
Date MSDS Prepared: 02JUL90
Safety Data Review Date: 07DEC94
Preparer's Company: CHEM SERVICE INC
Preparer's St Or P. O. Box: 660 TOWER LN
Preparer's City: WEST CHESTER
Preparer's State: PA
Preparer's Zip Code: 19381-3108
MSDS Serial Number: BWJFR

Ingredients/Identity Information

Proprietary: NO
Ingredient: 1,3,5,-TRIMETHYLBENZENE
Ingredient Sequence Number: 01
NIOSH (RTECS) Number: OX6825000
CAS Number: 108-67-8
OSHA PEL: 25 PPM
ACGIH TLV: 25 PPM

Physical/Chemical Characteristics

Appearance And Odor: COLORLESS LIQUID W/CAMPHOR LIKE ODOR.
Boiling Point: 327.2F
Melting Point: -49F
Solubility In Water: INSOLUBLE

Fire and Explosion Hazard Data

Flash Point: 111.2F
Extinguishing Media: CO2, DRY CHEMICAL POWDER/SPRAY.
Unusual Fire And Expl Hazrds: COMBUSTIBLE COMPOUND. DECOMPOSITION PRODUCTS ARE CORROSIVE.

Reactivity Data

Stability: YES
Materials To Avoid: STRONG OXIDIZING AGENTS.
Hazardous Decomp Products: TOXIC FUMES.
Hazardous Poly Occur: NO

Health Hazard Data

LD50-LC50 Mixture: ORAL LD50 (RAT/MOUSE): 1303 MG/KG
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: SKIN: HARMFUL IF ABSORBED, IRRITATION. INHALATION: HARMFUL, MUCOUS MEMBRANES IRRITATION. EYES: IRRITATION, DAMAGE. INGESTION: HARMFUL. THIS COMPOUND IS CONSIDERED TO BE SLIGHTLY TOXIC.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NONE
Signs/Symptoms Of Overexp: IRRITATION, NAUSEA, HEADACHE, DIZZINESS.
Emergency/First Aid Proc: EYES: FLUSH CONTINUOUSLY W/WATER FOR 15-20 MINS. SKIN: FLUSH W/WATER FOR 15-20 MINS. IF NOT BURNED, WASH W/SOAP & WATER TO CLEANSE. INHALATION: REMOVE TO FRESH AIR. GIVE CPR/OXYGEN IF NEEDED & CONTINUE UNTIL MEDICAL ASSISTANCE ARRIVES. OBTAIN MEDICAL ATTENTION IN ALL CASES.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: EVACUATE AREA. WEAR APPRORPRIATE OSHA REGULATED EQUIPMENT. VENTILATE AREA. ABSORB ON VERMICULITE/SIMILAR MATERIAL. SWEEP UP & PLACE IN APPROPRIATE CONTAINER/HOLD FOR DISPOSAL. WASH CONTAMINATED SURFACES TO REMOVE ANY RESIDUES.
Waste Disposal Method: BURN IN A CHEMICAL INCINERATOR EQUIPPED W/AN AFTERBURNER & SCRUBBER IAW/FEDERAL, STATE & LOCAL REGULATIONS.
Precautions-Handling/Storing: STORE IN A COOL DRY PLACE ONLY W/COMPATIBLE CHEMICALS. KEEP TIGHTLY CLOSED.
Other Precautions: AVOID CONTACT W/SKIN, EYES & CLOTHING. DON'T BREATH VAPORS. CONTACT LENSES SHOULDN'T BE WORN IN THE LABORATORY. ALL CHEMICALS SHOULD BE CONSIDERED HAZARDOUS. AVOID DIRECT PHYSICAL CONTACT.

Control Measures

Respiratory Protection: WEAR APPROPRIATE OSHA/MSHA APPROVED SAFETY EQUIPMENT.
Ventilation: CHEMICAL SHOULD BE HANDLED ONLY IN A HOOD.
Eye Protection: EYE SHIELDS

Transportation Data

Disposal Data

Label Data

Label Required: YES
Label Status: G
Common Name: 0-771 1,3,5-TRIMETHYLBENZENE
Special Hazard Precautions: SKIN: HARMFUL IF ABSORBED, IRRITATION. INHALATION: HARMFUL, MUCOUS MEMBRANES IRRITATION. EYES: IRRITATION, DAMAGE. INGESTION: HARMFUL. THIS COMPOUND IS CONSIDERED TO BE SLIGHTLY TOXIC. IRRITATION, NAUSEA, HEADACHE, DIZZINESS.
Label Name: CHEM SERVICE INC
Label Street: 660 TOWER LN
Label P.O. Box: 3108
Label City: WEST CHESTER

MATERIAL SAFETY DATA SHEET

Benzene, 99%
95488

**** SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ****

MSDS Name: Benzene, 99%

Benzol, coal naphtha, cyclohexatriene, phenyl hydride, pyrobenzol.
Company Identification: Acros Organics N.V.
One Reagent Lane
Fairlawn, NJ 07410
For information in North America, call: 800-ACROS-01
For emergencies in the US, call CHEMTREC: 800-424-9300

**** SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS ****

CAS#	Chemical Name	%	EINECS#
71-43-2	Benzene, 99%	99%	200-753-7

Hazard Symbols: T F
Risk Phrases: 11 23/24/25 45 48 48/23/24/25

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW

Appearance: colourless. Flash Point: 12 deg F.
Danger! Extremely flammable liquid. May be harmful if absorbed through the skin. May cause central nervous system depression. Aspiration hazard. Poison! May cause central nervous system effects. May cause respiratory and digestive tract irritation. Causes eye and skin irritation. May cause reproductive and fetal effects. Cancer hazard. May cause cancer in humans. May cause blood abnormalities. Harmful or fatal if swallowed. Vapor harmful.
Target Organs: Blood, central nervous system, bone marrow, immune system.

Potential Health Effects

Eye:

Produces irritation, characterized by a burning sensation, redness, tearing, inflammation, and possible corneal injury.

Skin:

May be absorbed through the skin in harmful amounts. May cause dermatitis. Chronic exposure has been associated with an increased

incidence of leukemia and multiple myelomas. Immunodepressive effects have been reported. Animal studies have reported fetotoxicity (growth retardation) and teratogenicity (exencephaly, angulated ribs, dilated brain ventricles).

Ingestion:

Aspiration hazard. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure. May cause effects similar to those for inhalation exposure. Aspiration of material into the lungs may cause chemical pneumonitis, which may be fatal.

Inhalation:

Dust is irritating to the respiratory tract. May cause respiratory tract irritation. May cause adverse central nervous system effects including headache, convulsions, and possible death. May cause drowsiness, unconsciousness, and central nervous system depression. Central nervous system effects may include confusion, ataxia, vertigo, tinnitus, weakness, disorientation, lethargy, drowsiness, and finally coma. Exposure may lead to irreversible bone marrow injury.

Chronic:

Possible cancer hazard based on tests with laboratory animals. Prolonged or repeated exposure may cause adverse reproductive effects. May cause bone marrow abnormalities with damage to blood forming tissues. Chronic exposure has been associated with an increased incidence of leukemia and multiple myelomas. Immunodepressive effects have been reported. Animal studies have reported fetotoxicity (growth retardation) and teratogenicity (exencephaly, angulated ribs, dilated brain ventricles).

**** SECTION 4 - FIRST AID MEASURES ****

Eyes:

Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Get medical aid immediately.

Skin:

Get medical aid. Immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes.

Ingestion:

Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Possible aspiration hazard. Get medical aid immediately.

Inhalation:

Get medical aid immediately. Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Notes to Physician:

Treat symptomatically and supportively.

**** SECTION 5 - FIRE FIGHTING MEASURES ****

General Information:

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Water runoff can cause environmental damage. Dike and collect water used to fight fire. Vapors can travel to a source of ignition and flash back. Will burn if involved in a fire. Extremely flammable. Material will readily ignite at room

temperature. Use water spray to keep fire-exposed containers cool.

Extinguishing Media:

Use water spray to cool fire-exposed containers. Use water spray, dry chemical, or foam. Use carbon dioxide.

Autoignition Temperature: 928 deg F (497.78 deg C)
Flash Point: 12 deg F (-11.11 deg C)
NFPA Rating: health-2; flammability-3; reactivity-0
Explosion Limits, Lower: 1.3%
Upper: 7.1%

**** SECTION 6 - ACCIDENTAL RELEASE MEASURES ****

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:

Use water spray to dilute spill to a non-flammable mixture. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Wear a self contained breathing apparatus and appropriate Personal protection. (See Exposure Controls, Personal Protection section). Scoop up with a nonsparking tool, then place into a suitable container for disposal. Use water spray to disperse the gas/vapor. Remove all sources of ignition. Absorb spill using an absorbent, non-combustible material such as earth, sand, or vermiculite.

**** SECTION 7 - HANDLING and STORAGE ****

Handling:

Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Do not get in eyes, on skin, or on clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Do not ingest or inhale. Use only in a chemical fume hood. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

Storage:

Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area.

**** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION ****

Engineering Controls:

Use only under a chemical fume hood.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Benzene, 99%	0.5 ppm ; 1.6 mg/m3; 2.5 ppm STEL; 8 mg/m3 STEL	0.1 ppm TWA; NIOSH Potential Occupational Carcinogen - see Appendix A 500 ppm IDLH (not considering carcinogenic effects)	10 ppm TWA (apply only to exempt industry segments); 1 ppm TWA; 5 ppm STEL; 0.5 ppm TWA action limit; Cancer hazard; Flammable (see 2 9 CFR 19

			10.1028)

OSHA Vacated PELs:
Benzene, 99%:
10 ppm TWA (unless specified in 1910.1028)

Personal Protective Equipment

Eyes:
Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133.

Skin:
Wear appropriate gloves to prevent skin exposure. Wear impervious gloves.

Clothing:
Wear appropriate protective clothing to prevent skin exposure.

Respirators:
Follow the OSHA respirator regulations found in 29CFR 1910.134. Always use a NIOSH-approved respirator when necessary.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State:	Liquid
Appearance:	colourless
Odor:	Sweet, aromatic.
pH:	Not available.
Vapor Pressure:	100 mm Hg
Vapor Density:	2.7 (Air=1)
Evaporation Rate:	2.8 (Ether=1)
Viscosity:	0.647mPa at 20C
Boiling Point:	176 deg F
Freezing/Melting Point:	42 deg F
Decomposition Temperature:	Not available.
Solubility:	0.18g/100g water at 25C.
Specific Gravity/Density:	0.88
Molecular Formula:	C6H6
Molecular Weight:	78.042

**** SECTION 10 - STABILITY AND REACTIVITY ****

Chemical Stability:
Stable under normal temperatures and pressures.

Conditions to Avoid:
Mechanical shock, incompatible materials, ignition sources, excess heat.

Incompatibilities with Other Materials:
Benzene is incompatible with arsenic pentafluoride + potassium methoxide, diborane, hydrogen + raney nickel, interhalogens, oxidants, uranium hexafluoride, bromine pentafluoride, chlorine, chlorine trifluoride, chromic anhydride, nitryl perchlorate, oxygen, ozone, perchlorates, perchloryl fluoride + aluminum chloride, permanganates + sulfuric acid, potassium peroxide and silver perchlorate.

Hazardous Decomposition Products:
Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.

Hazardous Polymerization: Has not been reported.

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#:
CAS# 71-43-2: CY1400000
LD50/LC50:
CAS# 71-43-2: Inhalation, mouse: LC50 =9980 ppm; Inhalation, rat: LC50 =10000 ppm/7H; Oral, mouse: LD50 = 4700 mg/kg; Oral, rat: LD50 = 930 mg/kg; Skin, rabbit: LD50 = >9400 mg/kg.
Carcinogenicity:
Benzene, 99% -
ACGIH: A1-confirmed human carcinogen
California: carcinogen - initial date 2/27/87
NIOSH: occupational carcinogen
NTP: Known carcinogen
OSHA: Select carcinogen
IARC: Group 1 carcinogen
Epidemiology:
IARC has concluded that epidemiological studies have establi shed the relationship between benzene exposure and the dev elopment of acute myelogenous leukemia, and that there is sufficient evidence that benzene is carcinogenic to hu mans. Animal studies have demonstrated fetoxicity (growth retardation) and teratogenicity (exencephaly, angulated ribs, dilated brain ventricles).
Teratogenicity:
Experimental teratogen. Animal studies have demonstrated fetoxicity (growth retardation) and teratogenicity (exencephaly, angulated ribs, dilated brain ventricles).
Reproductive Effects:
Experimental reproductive effects have been reported.
Neurotoxicity:
No information available.
Mutagenicity:
Chromosomal aberrations have been noted in animal tests.
Other Studies:
Please refer to RTECS CY1400000 for additional data.

**** SECTION 12 - ECOLOGICAL INFORMATION ****

Ecotoxicity:
Minnow (distilled water) lethal, 5 ppm/6H. Sunfish (tap water) TLM=20 ppm/24H. Striped bass TLm96=100-10 ppm.
Environmental Fate:
No information reported.
Physical/Chemical:
No information available.
Other:
None.

**** SECTION 13 - DISPOSAL CONSIDERATIONS ****

Dispose of in a manner consistent with federal, state, and local regulations.
RCRA D-Series Maximum Concentration of Contaminants:
CAS# 71-43-2: waste number D018; regulatory level = 0.5 mg/L.
RCRA D-Series Chronic Toxicity Reference Levels: CAS# 71-43-2: chronic toxicity reference level = 0.005 mg/L.
RCRA F-Series: None listed.
RCRA P-Series: None listed.

RCRA U-Series: CAS# 71-43-2: waste number U019
(Ignitable waste; Toxic waste).
CAS# 71-43-2 is banned from land disposal according
to RCRA.

**** SECTION 14 - TRANSPORT INFORMATION ****

US DOT
Shipping Name: BENZENE
Hazard Class: 3
UN Number: UN1114
Packing Group: II

IMO
Shipping Name: BENZENE
Hazard Class: 3.2
UN Number: 1114
Packing Group: II

IATA
Shipping Name: BENZENE
Hazard Class: 3
UN Number: 1114
Packing Group: II

RID/ADR
Shipping Name: BENZENE
Dangerous Goods Code: 3(3B)
UN Number: 1114

Canadian TDG
Shipping Name: BENZENE
Hazard Class: 3(9.2)
UN Number: UN1114

**** SECTION 15 - REGULATORY INFORMATION ****

US FEDERAL

TSCA
CAS# 71-43-2 is listed on the TSCA inventory.

Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.

Section 12b
None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.

SARA

Section 302 (RQ)
final RQ = 10 pounds (4.54 kg); receives an adjustable RQ of 10 pounds

Section 302 (TPQ)
None of the chemicals in this product have a TPQ.

SARA Codes
CAS # 71-43-2: acute, chronic, flammable.

Section 313
This material contains Benzene, 99% (CAS# 71-43-2, 99%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:
CAS# 71-43-2 is listed as a hazardous air pollutant (HAP).
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.

Clean Water Act:
CAS# 71-43-2 is listed as a Hazardous Substance under the CWA.

CAS# 71-43-2 is listed as a Priority Pollutant under the Clean Water Act.
CAS# 71-43-2 is listed as a Toxic Pollutant under the Clean Water Act.

OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.

STATE
Benzene, 99% can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.
The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:
WARNING: This product contains Benzene, 99%, a chemical known to the state of California to cause cancer.
California No Significant Risk Level:
CAS# 71-43-2: no significant risk level = 7 ug/day

European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols: T F
Risk Phrases:
R 11 Highly flammable.
R 23/24/25 Toxic by inhalation, in contact with skin and if swallowed.
R 45 May cause cancer.
R 48 Danger of serious damage to health by prolonged exposure.
R 48/23/24/25 Toxic : danger of serious damage to health by prolonged exposure through inhalation, contact with skin and if swallowed.
Safety Phrases:
S 16 Keep away from sources of ignition - No smoking.
S 29 Do not empty into drains.
S 45 In case of accident of if you feel unwell, seek medical advice immediately (show the label where possible).
S 53 Avoid exposure - obtain special instructions before use.

WGK (Water Danger/Protection)
CAS# 71-43-2: 3

Canada
CAS# 71-43-2 is listed on Canada's DSL/NDSL List.
This product does not have a WHMIS classification.
CAS# 71-43-2 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits
CAS# 71-43-2:. OEL-AUSTRALIA:TWA 5 ppm (16 mg/m3);Carcinogen. OEL-BELGIUM:TWA 10 ppm (32 mg/m3);Carcinogen JAN9. OEL-CZECHOSLOVAKIA:TWA 10 mg/m3;STEL 20 mg/m3. OEL-DENMARK:TWA 5 ppm (16 mg/m3);Skin;Carcinogen

-FRANCE:TWA 5 ppm (16 mg/m3);Carcinogen. OEL-GERMANY;Skin;Carcinogen. OEL-HUNGARY:STEL 5 mg/m3;Skin;Carcinogen. OEL-INDIA:TWA 10 ppm (30 mg/m3);Carcinogen. OEL-JAPAN:TWA 10 ppm (32 mg/m3);STEL 25 ppm (80 mg/m3);CAR. OEL-THE NETHERLANDS:TWA 10 ppm (30 mg/m3);Skin. OEL-THE PHILIPPINES:TWA 25 ppm (80 mg/m3);Skin. OEL-POLAND:TWA 30 mg/m3;Skin. OEL-RUSSIA:TWA 10 ppm (5 mg/m3);STEL 25 ppm (15 mg/m3);Skin;CAR. OEL-SWEDEN:TWA 1 ppm (3 mg/m3);STEL 5 ppm (16 mg/m3);Skin;CAR. OEL-SWITZERLAND:TWA 5 ppm (16 mg/m3);Skin;Carcinogen. OEL-THAILAND:TWA 10 ppm (30 mg/m3);STEL 25 ppm (7 mg/m3). OEL-TURKEY:TWA 20 ppm (64 mg/m3);Skin. OEL-UNITED KINGDOM:TWA 10 ppm (30 mg/m3). OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV. OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI

TLV

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 10/17/1995 Revision #9 Date: 9/02/1997

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

Back to product information.

MATERIAL SAFETY DATA SHEET

Ethylbenzene, 99%
00596

**** SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ****

MSDS Name: Ethylbenzene, 99%

Ethylbenzol, phenylethane
Company Identification: Acros Organics N.V.
One Reagent Lane
Fairlawn, NJ 07410
For information in North America, call: 800-ACROS-01
For emergencies in the US, call CHEMTREC: 800-424-9300

**** SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS ****

CAS#	Chemical Name	%	EINECS#
100-41-4	Ethylbenzene	99.0	202-849-4

Hazard Symbols: XN F
Risk Phrases: 11 20

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW

Appearance: clear, colorless. Flash Point: 21 deg C.
Warning! Flammable liquid. Causes skin irritation. Causes eye irritation. May cause central nervous system depression. Aspiration hazard. May be absorbed through the skin. Causes digestive and respiratory tract irritation.
Target Organs: Central nervous system.

Potential Health Effects

Eye:
Causes moderate eye irritation. Vapors may cause eye irritation.

Skin:
Prolonged and/or repeated contact may cause irritation and/or dermatitis. May be absorbed through the skin. Contact with the liquid may cause erythema, exfoliation and vesiculation.

Ingestion:
May cause irritation of the digestive tract. May cause gastrointestinal irritation with nausea, vomiting and diarrhea. Aspiration of material into the lungs may cause chemical pneumonitis,

which may be fatal.

Inhalation:

Inhalation of high concentrations may cause central nervous system effects characterized by headache, dizziness, unconsciousness and coma. Causes respiratory tract irritation. Vapors may cause dizziness or suffocation.

Chronic:

Chronic inhalation may cause effects similar to those of acute inhalation.

**** SECTION 4 - FIRST AID MEASURES ****

Eyes:

Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Get medical aid immediately.

Skin:

Get medical aid. Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes.

Ingestion:

Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Inhalation:

Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician:

Treat symptomatically and supportively.

**** SECTION 5 - FIRE FIGHTING MEASURES ****

General Information:

Containers can build up pressure if exposed to heat and/or fire. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. Use water spray to keep fire-exposed containers cool. Flammable Liquid. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. Containers may explode when heated.

Extinguishing Media:

For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. Use water spray to cool fire-exposed containers. Water may be ineffective. For large fires, use water spray, fog or alcohol-resistant foam. Contact professional fire-fighters immediately. Cool containers with flooding quantities of water until well after fire is out.

Autoignition Temperature: 810 deg F (432.22 deg C)
Flash Point: 21 deg C (69.80 deg F)
NFPA Rating: health-2; flammability-3; reactivity-0
Explosion Limits, Lower: 0.8
Upper: 6.7

**** SECTION 6 - ACCIDENTAL RELEASE MEASURES ****

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:

Absorb spill with inert material, (e.g., dry sand or earth), then place into a chemical waste container. Remove all sources of

ignition. A vapor suppressing foam may be used to reduce vapors. Water spray may reduce vapor but may not prevent ignition in closed spaces.

**** SECTION 7 - HANDLING and STORAGE ****

Handling:

Wash thoroughly after handling. Use with adequate ventilation. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Avoid contact with heat, sparks and flame. Avoid ingestion and inhalation. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

Storage:

Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances.

**** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION ****

Engineering Controls:

Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Ethylbenzene	100 ppm ; 434 mg/m3; 125 ppm STEL; 543 mg/m3 STEL	100 ppm TWA; 435 mg/m3 TWA 800 ppm IDLH	100 ppm TWA; 435 mg/m3 TWA

OSHA Vacated PELs:

Ethylbenzene:

100 ppm TWA; 435 mg/m3 TWA

Personal Protective Equipment

Eyes:

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133.

Skin:

Wear appropriate protective gloves and clothing to prevent skin exposure.

Clothing:

Wear appropriate protective gloves and clothing to prevent skin exposure.

Respirators:

Follow the OSHA respirator regulations found in 29CFR 1910.134. Always use a NIOSH-approved respirator when necessary.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State: Liquid

Appearance:	clear, colorless
Odor:	aromatic odor
pH:	Not available.
Vapor Pressure:	7.1 mm Hg @ 20 C
Vapor Density:	3.7
Evaporation Rate:	<1 (butyl acetate=1)
Viscosity:	0.63 mPa s 20 C
Boiling Point:	277 deg F
Freezing/Melting Point:	-139 deg F
Decomposition Temperature:	Not available.
Solubility:	Insoluble.
Specific Gravity/Density:	0.9
Molecular Formula:	C8H10
Molecular Weight:	106.07

**** SECTION 10 - STABILITY AND REACTIVITY ****

Chemical Stability:
Stable under normal temperatures and pressures.
Conditions to Avoid:
Incompatible materials, ignition sources, excess heat.
Incompatibilities with Other Materials:
Oxidizing agents.
Hazardous Decomposition Products:
Carbon monoxide, carbon dioxide.
Hazardous Polymerization: Has not been reported.

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#:
CAS# 100-41-4: DA0700000
LD50/LC50:
CAS# 100-41-4: Oral, rat: LD50 = 3500 mg/kg; Skin, rabbit: LD50 = 17800 mg/kg.
Carcinogenicity:
Ethylbenzene -
Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Epidemiology:
No data available.
Teratogenicity:
No data available.
Reproductive Effects:
No data available.
Neurotoxicity:
No data available.
Mutagenicity:
No data available.
Other Studies:
No data available.

**** SECTION 12 - ECOLOGICAL INFORMATION ****

Ecotoxicity:
Shrimp (mysidoposis bahia), LC50=87.6 mg/L/96hr. Sheepshead minnow LC50=275 mg/L/96hr. Fathead minnow LC50=42.3 mg/L/96hr in hard water and 48.5 mg/L/96hr in softwater.
Environmental Fate:
Substance may absorb to sediment and bioconcentrate in fish.
Physical/Chemical:
Not available.
Other:

Not available.

**** SECTION 13 - DISPOSAL CONSIDERATIONS ****

Dispose of in a manner consistent with federal, state, and local regulations.
RCRA D-Series Maximum Concentration of Contaminants:
None listed.
RCRA D-Series Chronic Toxicity Reference Levels: None
listed.
RCRA F-Series: None listed.
RCRA P-Series: None listed.
RCRA U-Series: None listed.
Not listed as a material banned from land disposal
according to RCRA.

**** SECTION 14 - TRANSPORT INFORMATION ****

US DOT
Shipping Name: ETHYLBENZENE
Hazard Class: 3
UN Number: UN1175
Packing Group: II
IMO
Shipping Name: ETHYLBENZENE
Hazard Class: 3.2
UN Number: 1175
Packing Group: II
IATA
Shipping Name: ETHYLBENZENE
Hazard Class: 3
UN Number: 1175
Packing Group: II
RID/ADR
Shipping Name: ETHYLBENZENE
Dangerous Goods Code: 3(3B)
UN Number: 1175
Canadian TDG
Shipping Name: ETHYLBENZENE
Hazard Class: 3(9.2)
UN Number: UN1175
Other Information: FLASHPOINT 15 C

**** SECTION 15 - REGULATORY INFORMATION ****

US FEDERAL
TSCA
CAS# 100-41-4 is listed on the TSCA inventory.
Health & Safety Reporting List
CAS# 100-41-4: Effective Date: June 19, 1987; Sunset Date: June 19, 19
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
SARA
Section 302 (RQ)
final RQ = 1000 pounds (454 kg)
Section 302 (TPQ)
None of the chemicals in this product have a TPQ.
SARA Codes

CAS # 100-41-4: acute, chronic, flammable.

Section 313

This material contains Ethylbenzene (CAS# 100-41-4, 99.0%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:

CAS# 100-41-4 is listed as a hazardous air pollutant (HAP).
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

CAS# 100-41-4 is listed as a Hazardous Substance under the CWA.
CAS# 100-41-4 is listed as a Priority Pollutant under the Clean Water Act.
CAS# 100-41-4 is listed as a Toxic Pollutant under the Clean Water Act.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

Ethylbenzene can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.

California No Significant Risk Level:

None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: XN F

Risk Phrases:

R 11 Highly flammable.
R 20 Harmful by inhalation.

Safety Phrases:

S 16 Keep away from sources of ignition - No smoking.
S 24/25 Avoid contact with skin and eyes.
S 29 Do not empty into drains.

WGK (Water Danger/Protection)

CAS# 100-41-4: 1

Canada

CAS# 100-41-4 is listed on Canada's DSL/NDSL List.
This product has a WHMIS classification of B2, D2B.
CAS# 100-41-4 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits

CAS# 100-41-4:. OEL-AUSTRALIA:TWA 100 ppm (435 mg/m3);STEL 125 ppm (545 mg/m3). OEL-BELGIUM:TWA 100 ppm (434 mg/m3);STEL 125 ppm (543 mg/m3). OEL-CZECHOSLOVAKIA:TWA 200 mg/m3;STEL 1000 mg/m3. OEL-DENMARK:TWA 50 ppm (217 mg/m3). OEL-FINLAND:TWA 100 ppm (435 mg/m3);STEL 150 ppm (655 mg/m3). OEL-FRANCE:TWA 100 ppm (435 mg/m3). OEL-GERMANY:TWA 100 ppm (440 mg/m3);Skin. OEL-HUNGARY:TWA 100 mg/m3;STEL 200 mg/m3;Skin. OEL-JAPAN:TWA 100 ppm (430 mg/m3). OEL-THE NETHERLANDS:TWA 100 ppm (435 mg/m3). OEL-THE PHILIPPINES:TWA 100 ppm (435 mg/m3). OEL-POLAND:TWA 100 mg/m3. OEL-RUSSIA:TWA 100 ppm;STEL 50 mg/m3. OEL-SWEDEN:TWA 50 ppm (200 mg/m3);STEL 100 ppm (450 mg/m3). OEL-SWITZERLAND:TWA 100 ppm (435 mg/m3);STEL 500 ppm. OEL-TURKEY:TWA 100 ppm (435 mg/m3). OEL-UNITED KINGDOM:TWA 100 ppm (435 mg/m3);STEL 125 ppm. OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV. OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 10/22/1997 Revision #0 Date: Original.

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

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the skin.

Ingestion:

Harmful if swallowed. Aspiration hazard. Symptoms may include: headache, excitement, fatigue, nausea, vomiting, stupor, and coma. Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May cause liver and kidney damage. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure.

Inhalation:

Harmful if inhaled. Causes respiratory tract irritation. Prolonged exposure may result in dizziness and general weakness. Irritation may lead to chemical pneumonitis and pulmonary edema. May cause narcotic effects. Exposure produces central nervous system depression. Central nervous system effects may include confusion, ataxia, vertigo, tinnitus, weakness, disorientation, lethargy, drowsiness, and finally coma. Exposure may give rise to flushing of face, skin rash, an increase in heart and respiration rates, headaches, giddiness, nausea, and vomiting.

Chronic:

Chronic inhalation may cause effects similar to those of acute inhalation. Prolonged or repeated skin contact may cause defatting and dermatitis. Prolonged or repeated exposure may cause permanent eye damage.

**** SECTION 4 - FIRST AID MEASURES ****

Eyes:

Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Get medical aid immediately.

Skin:

Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists.

Ingestion:

Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Inhalation:

Get medical aid immediately. Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Notes to Physician:

Treat symptomatically and supportively.

**** SECTION 5 - FIRE FIGHTING MEASURES ****

General Information:

Containers can build up pressure if exposed to heat and/or fire. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors can travel to a source of ignition and flash back. Flammable Liquid. Can release vapors that form explosive mixtures at temperatures above the flashpoint. Use water spray to keep fire-exposed containers cool. Water may be ineffective. Material is lighter than water and a fire may be spread by the use of water.

Extinguishing Media:

Use water spray to cool fire-exposed containers. In case of fire use water spray, dry chemical, carbon dioxide, or chemical foam.

Autoignition Temperature: 465 deg C (869.00 deg F)
Flash Point: 25 deg C (77.00 deg F)
NFPA Rating: health-2; flammability-3; reactivity-0
Explosion Limits, Lower: 1.00 vol %
Upper: 7.60 vol %

**** SECTION 6 - ACCIDENTAL RELEASE MEASURES ****

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:

Absorb spill with inert material, (e.g., dry sand or earth), then place into a chemical waste container. Remove all sources of ignition.

**** SECTION 7 - HANDLING and STORAGE ****

Handling:

Wash thoroughly after handling. Use only in a well ventilated area. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Avoid contact with heat, sparks and flame. Do not ingest or inhale. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

Storage:

Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area.

**** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION ****

Engineering Controls:

Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
m-Xylene, 99+%	100 ppm ; 434 mg/m3; 150 ppm STEL; 651 mg/m3 STEL	100 ppm TWA; 435 mg/m3 TWA900 ppm IDLH (listed under XYLENES (O-, M-, P- ISOMERS)).	100 ppm TWA; 435 mg/m3 TWA (listed under XYLENES (O-, M-, P- ISOMERS)).

OSHA Vacated PELs:

m-Xylene, 99+%:
100 ppm TWA; 435 mg/m3 TWA (listed under XYLENES (O-, M-, P- ISOMERS)

Personal Protective Equipment

Eyes:

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133.

Skin:

Wear appropriate protective gloves to prevent skin

exposure.

Clothing:

Wear appropriate protective clothing to prevent skin exposure.

Respirators:

Follow the OSHA respirator regulations found in 29CFR 1910.134. Always use a NIOSH-approved respirator when necessary.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State:	Liquid
Appearance:	clear, colorless
Odor:	Not available.
pH:	Not available.
Vapor Pressure:	10 mm Hg @28.3
Vapor Density:	3.66
Evaporation Rate:	Not available.
Viscosity:	Not available.
Boiling Point:	139.0 - 139.0 deg C @ 760mmHg
Freezing/Melting Point:	-48.00 - - 0.00 deg C
Decomposition Temperature:	Not available.
Solubility:	insoluble
Specific Gravity/Density:	.8680g/cm3
Molecular Formula:	C8H10
Molecular Weight:	106.17

**** SECTION 10 - STABILITY AND REACTIVITY ****

Chemical Stability:
Stable under normal temperatures and pressures.
Conditions to Avoid:
Incompatible materials, ignition sources, excess heat, strong oxidants.
Incompatibilities with Other Materials:
Oxidizing agents.
Hazardous Decomposition Products:
Carbon monoxide, carbon dioxide.
Hazardous Polymerization: Will not occur.

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#:
CAS# 108-38-3: ZE2275000
LD50/LC50:
CAS# 108-38-3: Oral, rat: LD50 = 5 gm/kg; Skin, rabbit: LD50 = 14100 mg/kg.
Carcinogenicity:
m-Xylene, 99+% -
ACGIH: A4 - Not Classifiable as a Human Carcinogen
IARC: Group 3 carcinogen (listed as XYLENES (O-, M-, P- ISOMERS)
Epidemiology:
No data available.
Teratogenicity:
It is an experimental teratogen.
Reproductive Effects:
Experimental reproductive effects have been observed.
Neurotoxicity:
No data available.
Mutagenicity:
No data available.

Other Studies:
No data available.

**** SECTION 12 - ECOLOGICAL INFORMATION ****

Ecotoxicity:
Fish: LC50 (24hr) goldfish 18mg/l (Shell ind.chem. gids 1975); LC50 (96hr) fathead minnow, bluegill sunfish, goldfish, guppy 24-37mg/l (Pickering,Q.H. J.Water Pollut.Control Fed.1966); LC50 (7 day) guppy 35 mg/l (Koeremann, W.H. Quantitative Struct.-Act. Relationships for kinetics and toxicity of aquatic Poll. and their mixtures to Fish 1979); Invertebrate toxicity :EC50 (30min)Photobact. phosphoreum 5.7ppm Microtox test (Kaiser,K.L.E. Water Pollut.Res.J.1991); EC50(48hr)Daphnia Magna 3.2mg/l (Vighti,M. Chemosphere 1987); LC50 (96hr) Grangon franciscorum 2mg/l

Environmental Fate:
Degradation studies : Readily biodegraded in shallow groundwater in a sand aquifer. As the available oxygen was consumed, the rate of degradation decreased (Barker,J.F. Groundwater Monit.Rev. 1987) Abiotic removal : Moderately reactive under photochemical smog conditions; reported loss rates of 4-25%/hr, which are typical of the reaction with hydroxyl radicals (Howard,P.H. Handbook of environmental fate and exposure data for organic chemicals 1991; Doyle,G.J. Environ.Sci.technol.1978)

Physical/Chemical:
Not available.

Other:
Not available.

**** SECTION 13 - DISPOSAL CONSIDERATIONS ****

Dispose of in a manner consistent with federal, state, and local regulations.
RCRA D-Series Maximum Concentration of Contaminants:
None listed.
RCRA D-Series Chronic Toxicity Reference Levels: None listed.
RCRA F-Series: None listed.
RCRA P-Series: None listed.
RCRA U-Series: None listed.
Not listed as a material banned from land disposal according to RCRA.

**** SECTION 14 - TRANSPORT INFORMATION ****

US DOT
Shipping Name: XYLENES
Hazard Class: 3
UN Number: UN1307
Packing Group: III

IMO
Shipping Name: XYLENES
Hazard Class: 3.3
UN Number: 1307
Packing Group: III

IATA
Shipping Name: XYLENES
Hazard Class: 3
UN Number: 1307
Packing Group: III

RID/ADR
Shipping Name: XYLENES

Dangerous Goods Code: 3(31C)
UN Number: 1307
Canadian TDG
Shipping Name: XYLENES
Hazard Class: 3(9.2)
UN Number: UN1307

**** SECTION 15 - REGULATORY INFORMATION ****

US FEDERAL
TSCA
CAS# 108-38-3 is listed on the TSCA inventory.
Health & Safety Reporting List
CAS# 108-38-3: Effective Date: October 4, 1982; Sunset Date: October 4
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
SARA
Section 302 (RQ)
final RQ = 1000 pounds (454 kg) (Listed under 'Xylene (mixed)')
Section 302 (TPQ)
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 108-38-3: acute, chronic, flammable.
Section 313
This material contains m-Xylene, 99+% (CAS# 108-38-3, 99+%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.
Clean Air Act:
CAS# 108-38-3 is listed as a hazardous air pollutant (HAP).
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
CAS# 108-38-3 is listed as a Hazardous Substance under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
m-Xylene, 99+% can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, (listed as XYLENES (O-, M-, P- ISOMERS)), Massachusetts.
California No Significant Risk Level:
None of the chemicals in this product are listed.
European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols: XN
Risk Phrases:
R 10 Flammable.
R 20/21 Harmful by inhalation and in contact with skin.
R 38 Irritating to skin.
Safety Phrases:
S 25 Avoid contact with eyes.
WGK (Water Danger/Protection)

CAS# 108-38-3:

Canada

CAS# 108-38-3 is listed on Canada's DSL/NDSL List.
This product does not have a WHMIS classification.
CAS# 108-38-3 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 1/04/1996 Revision #9 Date: 12/09/1997

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

Back to product information.

MATERIAL SAFETY DATA SHEET

o-Xylene, 99%
01967

**** SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ****

MSDS Name: o-Xylene, 99%

1,2-Dimethylbenzene
Company Identification: Acros Organics N.V.
One Reagent Lane
Fairlawn, NJ 07410
For information in North America, call: 800-ACROS-01
For emergencies in the US, call CHEMTREC: 800-424-9300

**** SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS ****

CAS#	Chemical Name	%	EINECS#
95-47-6	o-Xylene	99%	202-422-2

Hazard Symbols: XN
Risk Phrases: 10 20/21 38

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW

Appearance: clear, colorless. Flash Point: 32 deg C.
Danger! Flammable liquid. Harmful if inhaled. This substance has caused adverse reproductive and fetal effects in animals. May cause central nervous system depression. Aspiration hazard. May be absorbed through the skin. Poison! May cause liver and kidney damage. Causes eye and skin irritation. Causes digestive and respiratory tract irritation. Harmful or fatal if swallowed.
Target Organs: Kidneys, central nervous system, liver.

Potential Health Effects

Eye:

Causes severe eye irritation. Prolonged or repeated exposure may cause conjunctivitis.

Skin:

May cause skin irritation. May be absorbed through the skin in harmful amounts. Prolonged and/or repeated contact may cause defatting of the skin and dermatitis. Causes blistering of the skin.

Ingestion:

Harmful if swallowed. Aspiration hazard. Symptoms may include: headache, excitement, fatigue, nausea, vomiting, stupor, and coma. Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May cause liver and kidney damage. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure.

Inhalation:

Harmful if inhaled. Prolonged exposure may result in dizziness and general weakness. Irritation may lead to chemical pneumonitis and pulmonary edema. Exposure produces central nervous system depression. Central nervous system effects may include confusion, ataxia, vertigo, tinnitus, weakness, disorientation, lethargy, drowsiness, and finally coma. Exposure may give rise to flushing of face, skin rash, an increase in heart and respiration rates, headaches, giddiness, nausea, and vomiting.

Chronic:

Chronic inhalation may cause effects similar to those of acute inhalation. Prolonged or repeated skin contact may cause defatting and dermatitis. Prolonged or repeated exposure may cause permanent eye damage.

**** SECTION 4 - FIRST AID MEASURES ****

Eyes:

Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Get medical aid immediately.

Skin:

Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists.

Ingestion:

Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Inhalation:

Get medical aid immediately. Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Notes to Physician:

Treat symptomatically and supportively.

**** SECTION 5 - FIRE FIGHTING MEASURES ****

General Information:

Containers can build up pressure if exposed to heat and/or fire. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors can travel to a source of ignition and flash back. Flammable Liquid. Can release vapors that form explosive mixtures at temperatures above the flashpoint. Use water spray to keep fire-exposed containers cool. Water may be ineffective. Material is lighter than water and a fire may be spread by the use of water.

Extinguishing Media:

Use water spray to cool fire-exposed containers. In case of fire use water spray, dry chemical, carbon dioxide, or chemical foam.

Autoignition Temperature: 465 deg C (869.00 deg F)

Flash Point: 32 deg C (89.60 deg F)

NFPA Rating: health-2; flammability-3; reactivity-0

Explosion Limits, Lower: 1.00 vol %
Upper: 7.60 vol %

**** SECTION 6 - ACCIDENTAL RELEASE MEASURES ****

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:

Absorb spill with inert material, (e.g., dry sand or earth), then place into a chemical waste container. Remove all sources of ignition.

**** SECTION 7 - HANDLING and STORAGE ****

Handling:

Wash thoroughly after handling. Use only in a well ventilated area. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Avoid contact with heat, sparks and flame. Do not ingest or inhale. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

Storage:

Keep away from heat and flame. Keep away from sources of ignition. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area.

**** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION ****

Engineering Controls:

Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
o-Xylene	100 ppm ; 434 mg/m3; 150 ppm STEL; 651 mg/m3 STEL	100 ppm TWA; 435 mg/m3 TWA900 ppm IDLH (listed under XYLENES (O-, M-, P- ISOMERS)).	100 ppm TWA; 435 mg/m3 TWA (listed under XYLENES (O-, M-, P- ISOMERS)).

OSHA Vacated PELs:

o-Xylene:

100 ppm TWA; 435 mg/m3 TWA (listed under XYLENES (O-, M-, P- ISOMERS)

Personal Protective Equipment

Eyes:

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133.

Skin:

Wear appropriate protective gloves to prevent skin exposure.

Clothing:

Wear appropriate protective clothing to prevent skin

exposure.

Respirators:

Follow the OSHA respirator regulations found in 29CFR 1910.134. Always use a NIOSH-approved respirator when necessary.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State:	Liquid
Appearance:	clear, colorless
Odor:	Sweet aromatic
pH:	Not available.
Vapor Pressure:	6.8 mm Hg @ 21 deg C
Vapor Density:	3.7
Evaporation Rate:	Not available.
Viscosity:	0.81 mPas 20 de
Boiling Point:	143 - 145 deg C @ 760.00mm Hg
Freezing/Melting Point:	-23 - -25 deg C
Decomposition Temperature:	Not available.
Solubility:	0.2 G/L (20°C)
Specific Gravity/Density:	.8800g/cm3
Molecular Formula:	C8H10
Molecular Weight:	106.17

**** SECTION 10 - STABILITY AND REACTIVITY ****

Chemical Stability:
Stable under normal temperatures and pressures.
Conditions to Avoid:
High temperatures, incompatible materials, ignition sources, excess heat.
Incompatibilities with Other Materials:
Strong oxidizing agents.
Hazardous Decomposition Products:
Carbon monoxide, carbon dioxide.
Hazardous Polymerization: Has not been reported

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#:
CAS# 95-47-6: ZE2450000
LD50/LC50:
Not available.
Carcinogenicity:
o-Xylene -
ACGIH: A4 - Not Classifiable as a Human Carcinogen
IARC: Group 3 carcinogen (listed as XYLENES (O-, M-, P- ISOMERS)
Epidemiology:
No data available.
Teratogenicity:
Is an experimental teratogen.
Reproductive Effects:
No data available.
Neurotoxicity:
No data available.
Mutagenicity:
No data available.
Other Studies:
No data available.

**** SECTION 12 - ECOLOGICAL INFORMATION ****

Ecotoxicity:
LC50 (24hr) goldfish 13 mg/l (Shell ind.chem.gids 1975), LC50 (96hr) rainbow trout, fathead minnow, goldfish, bass 11-42 mg/l (Grenimann ,G. Water Res.1976, Walsh, D.F. Report n°REC-ERC-77-11 1977, eng and research center, Denver, CO), LC50(7day) guppy 35mg/l (Koenemann,W.H. Quant.struct.-act. relationships for kinetics and toxicity of aquatic poll. and their Mixt. in Fish 1979)
Inv.toxicity:EC50(15min)
(Kaiser,K.L.E. Water poll.res.J.Can.1991)EC50 (48hr)Daphnia magna 8.5mg/l(Vighi,M. Chemosphere 1987).
Environmental Fate:
Anaerobic effects : degradaded under anaerobic conditions, but only under denitrifying conditions and only after the removal of other . xylene isomers (Kuhn,E.P. Environ.Sci.Technol.1985).
Physical/Chemical:
Not available.
Other:
Not available.

**** SECTION 13 - DISPOSAL CONSIDERATIONS ****

Dispose of in a manner consistent with federal, state, and local regulations.
RCRA D-Series Maximum Concentration of Contaminants:
None listed.
RCRA D-Series Chronic Toxicity Reference Levels: None listed.
RCRA F-Series: None listed.
RCRA P-Series: None listed.
RCRA U-Series: None listed.
Not listed as a material banned from land disposal according to RCRA.

**** SECTION 14 - TRANSPORT INFORMATION ****

US DOT
Shipping Name: XYLENES
Hazard Class: 3
UN Number: UN1307
Packing Group: II
IMO
Shipping Name: XYLENES
Hazard Class: 3.2
UN Number: 1307
Packing Group: II
IATA
Shipping Name: XYLENES
Hazard Class: 3
UN Number: 1307
Packing Group: II
RID/ADR
Shipping Name: XYLENES
Dangerous Goods Code: 3(3B)
UN Number: 1307
Canadian TDG
Shipping Name: XYLENES
Hazard Class: 3(9.2)
UN Number: UN1307

**** SECTION 15 - REGULATORY INFORMATION ****

US FEDERAL

TSCA

CAS# 95-47-6 is listed on the TSCA inventory.

Health & Safety Reporting List

CAS# 95-47-6: Effective Date: October 4, 1982; Sunset Date: October 4,

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

SARA

Section 302 (RQ)

final RQ = 1000 pounds (454 kg) (Listed under 'Xylene (mixed)')

Section 302 (TPQ)

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 95-47-6: acute, chronic, flammable.

Section 313

This material contains o-Xylene (CAS# 95-47-6, 99%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:

CAS# 95-47-6 is listed as a hazardous air pollutant (HAP).
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

CAS# 95-47-6 is listed as a Hazardous Substance under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

o-Xylene can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, (listed as XYLENES (O-, M-, P- ISOMERS)), Massachusetts.

California No Significant Risk Level:

None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: XN

Risk Phrases:

R 10 Flammable.
R 20/21 Harmful by inhalation and in contact with skin.
R 38 Irritating to skin.

Safety Phrases:

S 25 Avoid contact with eyes.

WGK (Water Danger/Protection)

CAS# 95-47-6: 2

Canada

CAS# 95-47-6 is listed on Canada's DSL/NDSL List.
This product has a WHMIS classification of B2, D2B.
CAS# 95-47-6 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 2/09/1996 Revision #4 Date: 9/02/1997

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

Back to product information.

MATERIAL SAFETY DATA SHEET

p-Xylene, 99%
95257

**** SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ****

MSDS Name: p-Xylene, 99%

1,4-Dimethylbenzene
Company Identification: Acros Organics N.V.
One Reagent Lane
Fairlawn, NJ 07410
For information in North America, call: 800-ACROS-01
For emergencies in the US, call CHEMTREC: 800-424-9300

**** SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS ****

CAS#	Chemical Name	%	EINECS#
106-42-3	p-Xylene, 99%	99%	203-396-5

Hazard Symbols: XN
Risk Phrases: 10 20/21 38

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW

Appearance: clear, colorless. Flash Point: 27 deg C.
Danger! Flammable liquid. Harmful if inhaled. This substance has caused adverse reproductive and fetal effects in animals. May cause central nervous system depression. Aspiration hazard. May be absorbed through the skin. Poison! May cause liver and kidney damage. Causes eye and skin irritation. Causes digestive and respiratory tract irritation. Harmful or fatal if swallowed.
Target Organs: Kidneys, central nervous system, liver.

Potential Health Effects

Eye:

Causes severe eye irritation. Prolonged or repeated exposure may cause conjunctivitis.

Skin:

May cause skin irritation. May be absorbed through the skin in harmful amounts. Exposure may cause irritation characterized by redness, dryness, and inflammation. Prolonged and/or repeated contact may cause defatting of the skin and dermatitis. Causes blistering of

the skin.

Ingestion:

Harmful if swallowed. Aspiration hazard. May cause central nervous system depression, kidney damage, and liver damage. Symptoms may include: headache, excitement, fatigue, nausea, vomiting, stupor, and coma. Aspiration of material into the lungs may cause chemical pneumonitis, which may be fatal.

Inhalation:

Harmful if inhaled. Causes respiratory tract irritation. Prolonged exposure may result in dizziness and general weakness. May cause narcotic effects. Exposure produces central nervous system depression. Central nervous system effects may include confusion, ataxia, vertigo, tinnitus, weakness, disorientation, lethargy, drowsiness, and finally coma. Exposure may give rise to flushing of face, skin rash, an increase in heart and respiration rates, headaches, giddiness, nausea, and vomiting.

Chronic:

Chronic inhalation may cause effects similar to those of acute inhalation. Prolonged or repeated skin contact may cause defatting and dermatitis. Prolonged or repeated exposure may cause permanent eye damage.

**** SECTION 4 - FIRST AID MEASURES ****

Eyes:

Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Get medical aid immediately.

Skin:

Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists.

Ingestion:

Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Inhalation:

Get medical aid immediately. Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Notes to Physician:

Treat symptomatically and supportively.

**** SECTION 5 - FIRE FIGHTING MEASURES ****

General Information:

Containers can build up pressure if exposed to heat and/or fire. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors can travel to a source of ignition and flash back. Flammable Liquid. Can release vapors that form explosive mixtures at temperatures above the flashpoint. Use water spray to keep fire-exposed containers cool. Water may be ineffective. Material is lighter than water and a fire may be spread by the use of water.

Extinguishing Media:

Use water spray to cool fire-exposed containers. In case of fire use water spray, dry chemical, carbon dioxide, or chemical foam.

Autoignition Temperature: 525 deg C (977.00 deg F)
Flash Point: 27 deg C (80.60 deg F)
NFPA Rating: health-2; flammability-3; reactivity-0
Explosion Limits, Lower: 1.00 vol %

Upper: 7.60 vol %

**** SECTION 6 - ACCIDENTAL RELEASE MEASURES ****

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:

Absorb spill with inert material, (e.g., dry sand or earth), then place into a chemical waste container. Remove all sources of ignition.

**** SECTION 7 - HANDLING and STORAGE ****

Handling:

Wash thoroughly after handling. Use only in a well ventilated area. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Avoid contact with heat, sparks and flame. Do not ingest or inhale. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

Storage:

Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area.

**** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION ****

Engineering Controls:

Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
p-Xylene, 99%	100 ppm ; 434 mg/m3; 150 ppm STEL; 651 mg/m3 STEL	100 ppm TWA; 435 mg/m3 TWA900 ppm IDLH (listed under XYLENES (O-, M-, P- ISOMERS)).	100 ppm TWA; 435 mg/m3 TWA (listed under XYLENES (O-, M-, P- ISOMERS)).

OSHA Vacated PELs:

p-Xylene, 99%:

100 ppm TWA; 435 mg/m3 TWA (listed under XYLENES (O-, M-, P- ISOMERS)

Personal Protective Equipment

Eyes:

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133.

Skin:

Wear appropriate protective gloves to prevent skin exposure.

Clothing:

Wear appropriate protective clothing to prevent skin exposure.

Respirators:
Follow the OSHA respirator regulations found in 29CFR 1910.134. Always use a NIOSH-approved respirator when necessary.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State:	Liquid
Appearance:	clear, colorless
Odor:	Not available.
pH:	Not available.
Vapor Pressure:	10 mm Hg @27.3
Vapor Density:	3.66
Evaporation Rate:	Not available.
Viscosity:	Not available.
Boiling Point:	138 deg C @ 760.00mm Hg
Freezing/Melting Point:	13 deg C
Decomposition Temperature:	Not available.
Solubility:	0.002 g/l
Specific Gravity/Density:	.8660g/cm3
Molecular Formula:	C8H10
Molecular Weight:	106.17

**** SECTION 10 - STABILITY AND REACTIVITY ****

Chemical Stability:
Stable under normal temperatures and pressures.
Conditions to Avoid:
Incompatible materials, ignition sources, excess heat, strong oxidants.
Incompatibilities with Other Materials:
Oxidizing agents, acetic acid + air, nitric acid + pressure, 1,3-dichloro-5,5-dimethyl-2,4-imidazolidindione
Hazardous Decomposition Products:
Carbon monoxide, carbon dioxide.
Hazardous Polymerization: Will not occur.

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#:
CAS# 106-42-3: ZE2625000
LD50/LC50:
CAS# 106-42-3: Inhalation, rat: LC50 =4550 ppm/4H; Oral, rat: LD50 = 5 gm/kg.
Carcinogenicity:
p-Xylene, 99% -
ACGIH: A4 - Not Classifiable as a Human Carcinogen
IARC: Group 3 carcinogen (listed as XYLENES (O-, M-, P- ISOMERS)
Epidemiology:
No data available.
Teratogenicity:
An experimental teratogen.
Reproductive Effects:
Experimental reproductive effects have been observed.
Neurotoxicity:
No data available.
Mutagenicity:
No data available.
Other Studies:
No data available.

**** SECTION 12 - ECOLOGICAL INFORMATION ****

Ecotoxicity:
Fish: LC50 (24hr) goldfish 18mg/l (Shell ind.chem. gids 1975); LC50 (96hr) fathead minnow, bluegill sunfish, goldfish, guppy 24-37mg/l (Pickering,Q.H. J.Water Pollut.Control Fed.1966); LC50 (7 day) guppy 35 mg/l (Koeremann, W.H. Quantitative Struct.-Act. Relationships for kinetics and toxicity of aquatic Poll. and their mixtures to Fish 1979); Invertebrate toxicity :EC50 (30min)Photobact. phosphoreum 5.7ppm Microtox test (Kaiser,K.L.E. Water Pollut.Res.J.1991); EC50(48hr)Daphnia Magna 3.2mg/l (Vighti,M. Chemosphere 1987); LC50 (96hr) Grangon franciscorum 2mg/l

Environmental Fate:
Degradation studies : Readily biodegraded in shallow groundwater in a sand aquifer. As the available oxygen was consumed, the rate of degradation decreased (Barker,J.F. Groundwater Monit.Rev. 1987) Abiotic removal : Moderately reactive under photochemical smog conditions; reported loss rates of 4-25%/hr, which are typical of the reaction with hydroxyl radicals (Howard,P.H. Handbook of environmental fate and exposure data for organic chemicals 1991; Doyle,G.J. Environ.Sci.technol.1978)

Physical/Chemical:
Not available.

Other:
Not available.

**** SECTION 13 - DISPOSAL CONSIDERATIONS ****

Dispose of in a manner consistent with federal, state, and local regulations.
RCRA D-Series Maximum Concentration of Contaminants:
None listed.
RCRA D-Series Chronic Toxicity Reference Levels: None listed.
RCRA F-Series: None listed.
RCRA P-Series: None listed.
RCRA U-Series: None listed.
Not listed as a material banned from land disposal according to RCRA.

**** SECTION 14 - TRANSPORT INFORMATION ****

US DOT
Shipping Name: XYLENES
Hazard Class: 3
UN Number: UN1307
Packing Group: III

IMO
Shipping Name: XYLENES
Hazard Class: 3.3
UN Number: 1307
Packing Group: III

IATA
Shipping Name: XYLENES
Hazard Class: 3
UN Number: 1307
Packing Group: III

RID/ADR
Shipping Name: XYLENES
Dangerous Goods Code: 3(31C)
UN Number: 1307

Canadian TDG

No information available.

**** SECTION 15 - REGULATORY INFORMATION ****

US FEDERAL

TSCA

CAS# 106-42-3 is listed on the TSCA inventory.

Health & Safety Reporting List

CAS# 106-42-3: Effective Date: January 26, 1994; Sunset Date: January

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

SARA

Section 302 (RQ)

final RQ = 100 pounds (45.4 kg) (Listed under 'Xylene (mixed)')

Section 302 (TPQ)

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 106-42-3: acute, chronic, flammable.

Section 313

This material contains p-Xylene, 99% (CAS# 106-42-3, 99%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:

CAS# 106-42-3 is listed as a hazardous air pollutant (HAP).
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

CAS# 106-42-3 is listed as a Hazardous Substance under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

p-Xylene, 99% can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, (listed as XYLENES (O-, M-, P- ISOMERS)), Massachusetts.

California No Significant Risk Level:

None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: XN

Risk Phrases:

R 10 Flammable.
R 20/21 Harmful by inhalation and in contact with skin.
R 38 Irritating to skin.

Safety Phrases:

S 25 Avoid contact with eyes.

WGK (Water Danger/Protection)

CAS# 106-42-3: 2

Canada

CAS# 106-42-3 is listed on Canada's DSL/NDSL List.
WHMIS: Not available.
CAS# 106-42-3 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 1/04/1996 Revision #9 Date: 9/02/1997

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

Back to product information.

SWANN OIL -- #6 FUEL OIL - FUEL OIL, BURNER
MATERIAL SAFETY DATA SHEET
NSN: 9140002474354
Manufacturer's CAGE: 8M412
Part No. Indicator: A
Part Number/Trade Name: #6 FUEL OIL

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General Information

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Item Name: FUEL OIL, BURNER
Company's Name: SWANN OIL INC
Company's Street: 67TH AND SCHUYKILL RIVER
Company's City: PHILADELPHIA
Company's State: PA
Company's Country: US
Company's Zip Code: 19153-3489
Company's Emerg Ph #: 215-492-8000
Company's Info Ph #: 215-492-8000
Record No. For Safety Entry: 013
Tot Safety Entries This Stk#: 016
Status: SM
Date MSDS Prepared: 09OCT90
Safety Data Review Date: 17OCT92
Supply Item Manager: KY
MSDS Serial Number: BPBKH
Specification Number: VV-F-815
Spec Type, Grade, Class: 6 GRADE
Hazard Characteristic Code: F4
Unit Of Issue: GL
Unit Of Issue Container Qty: BULK
Type Of Container: BULK
Net Unit Weight: UNKNOWN

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Ingredients/Identity Information

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Proprietary: NO
Ingredient: FUEL OIL, RESIDUAL
Ingredient Sequence Number: 01
Percent: 100
NIOSH (RTECS) Number: 1008625FO
CAS Number: 68553-00-4
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE RECOMMENDED

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Physical/Chemical Characteristics

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Appearance And Odor: BLACK LIQUID, STRONG ASPHALT ODOR
Boiling Point: 450F,232C
Melting Point: 75.0F,23.9C
Vapor Pressure (MM Hg/70 F): <0.1 MM HG
Vapor Density (Air=1): >3 (AIR=1)
Specific Gravity: 0.99
Decomposition Temperature: UNKNOWN
Evaporation Rate And Ref: <0.01 (N-BUTYL ACETATE=1)
Solubility In Water: NEGLIGIBLE
Percent Volatiles By Volume: NIL
Viscosity: 150 SSF
Corrosion Rate (IPY): UNKNOWN

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Fire and Explosion Hazard Data

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Flash Point: 140F,60C
Flash Point Method: PMCC
Lower Explosive Limit: 0.3%
Upper Explosive Limit: 7%
Extinguishing Media: FOAM, WATER SPRAY, DRY CHEMICAL, CARBON DIOXIDE, AND VAPORIZING LIQUID TYPE EXTINGUISHING AGENTS.
Special Fire Fighting Proc: WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING. USE WATER TO KEEP FIRE EXPOSED CONTAINERS COOL AND TO DISPERSE VAPORS.
Unusual Fire And Expl Hazrds: TOXIC FUMES OR VAPORS MAY BE PRODUCED DURING A FIRE.

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Reactivity Data

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Stability: YES
Cond To Avoid (Stability): SOURCES OF HIGH TEMPERATURES AND SOURCES OF IGNITION
Materials To Avoid: STRONG OXIDIZING AGENTS
Hazardous Decomp Products: FUMES, CARBON DIOXIDE, CARBON MONOXIDE, SMOKE, HYDROGEN SULFIDE, SULFUR OXIDES, ALDEHYDES, AND OTHER TOXIC PRODUCTS
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NONE

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Health Hazard Data

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LD50-LC50 Mixture: ORAL LD50 (RAT) IS UNKNOWN
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: NO
Route Of Entry - Ingestion: NO
Health Haz Acute And Chronic: ACUTE: MAY CAUSE SKIN AND EYE IRRITATION OR THERMAL BURNS ON CONTACT. INHALATION OF VAPORS MAY IRRITATE RESPIRATORY SYSTEM OR CAUSE CENTRAL NERVOUS SYSTEM EFFECTS. CHRONIC: SKIN IRRITATION.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: MFR: PRODUCT MAY CONTAIN COMPONENTS OR PETROLEUM FRACTIONS WHICH HAVE BEEN SHOWN TO CAUSE CANCER IN ANIMAL TESTS.
Signs/Symptoms Of Overexp: INHALED: COUGHING, WHEEZING, SNEEZING, DIZZINESS, HEADACHE, NAUSEA, NERVOUSNESS, UNCONSCIOUSNESS. EYES: TEARING, REDNESS, BURNS (THERMAL), PAIN. SKIN: REDNESS, BURNS, PAIN, ITCHING, DISCOMFORT. INGESTED: NONE SPECIFIED BY MANUFACTURER.
Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.
Emergency/First Aid Proc: INHALED: REMOVE TO FRESH AIR. IF BREATHING STOOED, GIVE ARTIFICIAL RESPIRATION. IF BREATHING DIFFICULT, GIVE OXYGEN. GET IMMEDIATE MEDICAL ATTENTION. EYES: FLUSH WITH LOTS OF WATER FOR 15 MINUTES, WHILE HOLDING EYELIDS OPEN. SEE DOCTOR. SKIN: IF BURNED, GET GET IMMEDIATE MEDICAL ATTENTION.

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Precautions for Safe Handling and Use

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Steps If Matl Released/Spill: ELIMINATE ALL SOURCES OF IGNITION. VENTILATE AREA. KEEP OUT OF SEWERS AND WATERWAYS. CONTAIN SPILL. ABSORB WITH SAND OR OTHER INERT MATERIALS. PLACE IN A CONTAINER FOR LATER DISPOSAL.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Method: DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.
Precautions-Handling/Storing: STORE AWAY FROM SOURCES OF IGNITION AND INCOMPATIBLE MATERIALS.
Other Precautions: "EMPTY" CONTAINERS MAY RETAIN RESIDUE AND CAN BE DANGEROUS. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, GRIND, OR EXPOSE

SUCH CONTAINERS TO HEAT, FLAME, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

Control Measures

Respiratory Protection: NONE NORMALLY REQUIRED. IF IN CONFINED SPACES; USE NIOSH/MSHA APPROVED SUPPLIED AIR RESPIRATOR. IF RESPIRATOR USED, A PROGRAM IN ACCORDANCE WITH 29 CFR 1910.134 MUST BE IMPLEMENTED.
Ventilation: LOCAL EXHAUST WITH > 30 CFM VELOCITY TO KEEP VAPORS BELOW REGULATORY LIMITS. USE EXPLOSION-PROOF EQUIPMENT.
Protective Gloves: PROTECT AGAINST HOT LIQUID
Eye Protection: SAFETY GLASSES
Other Protective Equipment: CHEMICAL RESISTANT APRON OR OTHER IMPERVIOUS CLOTHING TO PREVENT REPEATED OR PROLONGED CONTACT.
Work Hygienic Practices: WASH HANDS AFTER HANDLING AND BEFORE EATING, DRINKING, OR SMOKING. LAUNDER CONTAMINATED CLOTHES BEFORE REUSE.
Suppl. Safety & Health Data: MINIMIZE BREATHING VAPORS, MIST, OR FUMES. AVOID PROLONGED OR REPEATED CONTACT WITH SKIN OR CLOTHING.

Transportation Data

Trans Data Review Date: 92291
DOT PSN Code: GJL
DOT Proper Shipping Name: FLAMMABLE LIQUIDS, N.O.S.
DOT Class: 3
DOT ID Number: UN1993
DOT Pack Group: III
DOT Label: FLAMMABLE LIQUID
IMO PSN Code: HIA
IMO Proper Shipping Name: FLAMMABLE LIQUID, N.O.S. o *
IMO Regulations Page Number: 3345
IMO UN Number: 1993
IMO UN Class: 3.3
IMO Subsidiary Risk Label: - *
IATA PSN Code: MCA
IATA UN ID Number: 1993
IATA Proper Shipping Name: FLAMMABLE LIQUID, N.O.S. *
IATA UN Class: 3
IATA Label: FLAMMABLE LIQUID
AFI PSN Code: MCA
AFI Prop. Shipping Name: FLAMMABLE LIQUIDS, N.O.S.
AFI Class: 3
AFI ID Number: UN1993
AFI Pack Group: III
AFI Basic Pac Ref: 7-7
N.O.S. Shipping Name: FUEL OIL NUMBER 6
Additional Trans Data: NOT REGULATED BY DOT AND AF 71-4 (FLASH POINT >100F) BUT IS FOR IMO AND IATA (FLASH POINT < 141F). FLASH POINT IS 140F.

Disposal Data

Label Data

Label Required: YES
Technical Review Date: 17OCT92
Label Status: F
Common Name: #6 FUEL OIL
Chronic Hazard: NO
Signal Word: WARNING!
Acute Health Hazard-Slight: X

Contact Hazard-Slight: X
Fire Hazard-Moderate: X
Reactivity Hazard-None: X
Special Hazard Precautions: COMBUSTIBLE LIQUID AND VAPOR. MAY BE HARMFUL IF VAPORS INHALED. KEEP AWAY FROM HEAT, SPARKS, AND FLAME. KEEP CONTAINER CLOSED. USE WITH ADEQUATE VENTILATION. IN CASE OF FIRE, USE WATER SPRAY, FOAM, DRY CHEMICAL, OR CO2. FIRST AID: INHALED: REMOVE TO FRESH AIR. IF BREATHING STOPPED, GIVE ARTIFICIAL RESPIRATION. IF BREATHING DIFFICULT, GIVE OXYGEN. GET IMMEDIATE MEDICAL ATTENTION. EYES: FLUSH WITH LOTS OF WATER FOR 15 MINUTES, WHILE HOLDING EYELIDS OPEN. SEE DOCTOR. SKIN: IF BURNED, GET IMMEDIATE MEDICAL ATTENTION. IF NOT, WASH WITH SOAP AND WATER. INGESTED: GET IMMEDIATE MEDICAL ATTENTION.
Label Name: SWANN OIL INC
Label Street: 67TH AND SCHUYKILL RIVER
Label City: PHILADELPHIA
Label State: PA
Label Zip Code: 19153-3489
Label Country: US
Label Emergency Number: 215-492-8000

Please reduce your browser font size for better viewing and printing.

MSDS Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865

MALLINCKRODT J.T.Baker

24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 202-483-7616

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

NAPHTHALENE

MSDS Number: N0090 --- *Effective Date: 09/08/97*

1. Product Identification

Synonyms: Naphthene; mothballs; tar camphor; naphthaliin; white-tar
CAS No.: 91-20-3
Molecular Weight: 128.16
Chemical Formula: C10H8
Product Codes:
J.T. Baker: 2718
Mallinckrodt: 6348

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Naphthalene	91-20-3	90 - 100%	Yes

3. Hazards Identification

Emergency Overview

WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY CAUSE ALLERGIC SKIN REACTION. MAY AFFECT LIVER, KIDNEY, BLOOD AND CENTRAL NERVOUS SYSTEM. COMBUSTIBLE.

J.T. Baker SAF-T-DATA(tm) Ratings (Provided here for your convenience)

Health Rating: 1 - Slight
Flammability Rating: 2 - Moderate
Reactivity Rating: 0 - None
Contact Rating: 1 - Slight
Lab Protective Equip: GOGGLES; LAB COAT
Storage Color Code: Red (Flammable)

Potential Health Effects

Inhalation:
Inhalation of dust or vapors can cause headache, nausea, vomiting, extensive sweating, and disorientation. The predominant reaction is delayed intravascular hemolysis with symptoms of anemia, fever, jaundice, and kidney or liver damage.
Ingestion:
Toxic. Can cause headache, profuse perspiration, listlessness, dark urine, nausea, vomiting and disorientation. Intravascular hemolysis may also occur with symptoms similar to those noted for inhalation. Severe cases may produce coma with or without convulsions. Death may result from renal failure.
Skin Contact:
Can irritate the skin and, on prolonged contact, may cause rashes and allergy. "Sensitized" individuals may suffer a severe dermatitis.
Eye Contact:
Vapors and solid causes irritation, redness and pain. Very high exposures can damage the nerves of the eye.
Chronic Exposure:
Has led to cataract formation in eyes. May cause skin allergy.
Aggravation of Pre-existing Conditions:
Persons with pre-existing skin, blood or vascular disorders or impaired respiratory function may be more susceptible to the effects of the substance. Particularly susceptible individuals are found in the general population, most commonly in dark skinned races.

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4. First Aid Measures

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
Ingestion:
Give large amounts of water to drink. Never give anything by mouth to an unconscious person. Get medical attention.
Skin Contact:
Wash skin with soap or mild detergent and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Call a physician.
Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper

eyelids occasionally. Get medical attention immediately.

---

5. Fire Fighting Measures

Fire:
Flash point: 87C (189F) CC
Autoignition temperature: 526C (979F)
Combustible. May be ignited by heat, sparks or flame. May burn rapidly with flare-burning effect. Fire may produce irritating or poisonous gases.
Explosion:
Explosive limits, volume % in air: lel: 0.9; uel: 5.9. Above flashpoint, vapor-air mixtures are explosive within flammable limits noted above. Closed containers exposed to heat may explode. Contact with strong oxidizers may cause fire or explosion.
Fire Extinguishing Media:
Dry chemical, foam, water or carbon dioxide. Foam or direct water spray on molten naphthalene may cause extensive foaming. Molten napthalene spatters in contact with water; apply water from as far a distance as possible.
Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Vapors can flow along surfaces to distant ignition source and flash back.

---

6. Accidental Release Measures

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools and equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

---

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from any source of heat or ignition. Keep away from moisture and oxidizers. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
- OSHA Permissible Exposure Limit (PEL):
10 ppm, 50 mg/m3.

- ACGIH Threshold Limit Value (TLV):
TWA= 10 ppm, 52 mg/m3
STEL= 15 ppm, 79 mg/m3.

Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):
If the exposure limit is exceeded, a half-face respirator with an organic vapor cartridge and dust/mist filter may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece respirator with an organic vapor cartridge and dust/mist filter may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:
Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:
Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

---

9. Physical and Chemical Properties

Appearance:
White crystals.

Odor:
Strong coal tar odor (moth balls).

Solubility:
Insoluble in water.

Specific Gravity:
1.2

pH:
No information found.

% Volatiles by volume @ 21C (70F):
No information found.

Boiling Point:
218C (424F)

Melting Point:
80C (176F)

Vapor Density (Air=1):

4.4
Vapor Pressure (mm Hg):
1 @ 53C (127F)
Evaporation Rate (BuAc=1):
< 1

---

10. Stability and Reactivity

Stability:
Stable at room temperature in sealed containers. Sublimes appreciably at temperatures above melting point.
Hazardous Decomposition Products:
Carbon dioxide and carbon monoxide may form when heated to decomposition.
Hazardous Polymerization:
Will not occur.
Incompatibilities:
Strong oxidizers, strong alkalis and strong mineral acids, mixtures of aluminum trichloride and benzoyl chloride. Reacts violently with chromic anhydride. Melted naphthalene will attack some forms of plastics, rubber, and coatings.
Conditions to Avoid:
Avoid heat, sparks, flames and other ignition sources and incompatibles.

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11. Toxicological Information

Oral rat LD50: 490 mg/kg;
Inhalation rat LC50: 340 mg/m3, 1 hour;
Skin rabbit LD50: > 20 g/kg;
Irritation data: skin (open Draize) rabbit 495 mg, mild; eye (standard Draize) rabbit 100 mg, mild;
Investigated as a tumorigen, mutagen and reproductive effector.

--------\Cancer Lists\----------

Ingredient	---NTP Carcinogen--- Known	Anticipated	IARC Category
Naphthalene (91-20-3)	No	No	None

---

12. Ecological Information

Environmental Fate:
When released into the soil, this material may biodegrade to a moderate extent. When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is expected to quickly evaporate. When released to water, this material is expected to quickly evaporate. When released into water, this material may biodegrade to a

moderate extent. When released into the water, this material is expected to have a half-life between 1 and 10 days. This material may bioaccumulate to some extent. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to have a half-life of less than 1 day.
Environmental Toxicity:
No information found.

---

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

---

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: NAPHTHALENE, REFINED
Hazard Class: 4.1
UN/NA: UN1334
Packing Group: III
Information reported for product/size: 1KG

International (Water, I.M.O.)

Proper Shipping Name: NAPHTHALENE, REFINED
Hazard Class: 4.1
UN/NA: UN1334
Packing Group: III
Information reported for product/size: 1KG

International (Air, I.C.A.O.)

Proper Shipping Name: NAPHTHALENE, REFINED
Hazard Class: 4.1
UN/NA: UN1334
Packing Group: III
Information reported for product/size: 1KG

---

15. Regulatory Information

--------\Chemical Inventory Status - Part 1\----------

Ingredient	TSCA	EC	Japan	Australia
Naphthalene (91-20-3)	Yes	Yes	Yes	Yes

--------\Chemical Inventory Status - Part 2\----------

Ingredient	Korea	--Canada-- DSL	NDSL	Phil.
Naphthalene (91-20-3)	Yes	Yes	No	Yes

--------\Federal, State & International Regulations - Part 1\----------

Ingredient	-SARA 302- RQ	TPQ	------SARA 313---- List	Chemical Catg.
Naphthalene (91-20-3)	No	No	Yes	No

--------\Federal, State & International Regulations - Part 2\----------

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Naphthalene (91-20-3)	100	U165	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No
Reactivity: No (Pure / Solid)

Australian Hazchem Code: 2Z
Poison Schedule: S6
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

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16. Other Information

NFPA Ratings: Health: **2** Flammability: **2** Reactivity: **0**
Label Hazard Warning:
WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY CAUSE ALLERGIC SKIN REACTION. MAY AFFECT LIVER, KIDNEY, BLOOD AND CENTRAL NERVOUS SYSTEM. COMBUSTIBLE.
Label Precautions:
Avoid contact with eyes, skin and clothing.
Avoid prolonged or repeated contact with skin.
Avoid breathing dust.
Avoid breathing vapor.
Keep container closed.
Use only with adequate ventilation.
Wash thoroughly after handling.

Keep away from heat, sparks and flame.

Label First Aid:

In all cases call a physician. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, give large amounts of water to drink. Never give anything by mouth to an unconscious person.

Product Use:

Laboratory Reagent.

Revision Information:

Disclaimer:

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Prepared by: Strategic Services Division
Phone Number: (314) 539-1600 (U.S.A.)

CHEM SERVICE -- 7800J 1,1,1,2-TETRACHLOROETHANE
MATERIAL SAFETY DATA SHEET
NSN: 655000F037541
Manufacturer's CAGE: 8Y898
Part No. Indicator: A
Part Number/Trade Name: 7800J 1,1,1,2-TETRACHLOROETHANE

General Information

Company's Name: CHEM SERVICE INC
Company's Street: 660 TOWER LN
Company's P. O. Box: 3108
Company's City: WEST CHESTER
Company's State: PA
Company's Country: US
Company's Zip Code: 19381-3108
Company's Emerg Ph #: 215-692-3026/800-452-9994
Company's Info Ph #: 215-692-3026/800-452-9994
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SE
Date MSDS Prepared: 01JUN89
Safety Data Review Date: 15DEC94
Preparer's Company: CHEM SERVICE INC
Preparer's St Or P. O. Box: 660 TOWER LN
Preparer's City: WEST CHESTER
Preparer's State: PA
Preparer's Zip Code: 19381-3108
MSDS Serial Number: BWJHP

Ingredients/Identity Information

Proprietary: NO
Ingredient: 1,1,1,2-TETRACHLOROETHANE
Ingredient Sequence Number: 01
NIOSH (RTECS) Number: KI8450000
CAS Number: 630-20-6

Physical/Chemical Characteristics

Appearance And Odor: YELLOWISH-RED LIQUID
Boiling Point: 266.9F
Melting Point: -94.36F

Fire and Explosion Hazard Data

Flash Point: 42.8F
Extinguishing Media: CO2, DRY CHEMICAL POWDER/SPRAY.
Unusual Fire And Expl Hazrds: FLAMMABLE CHEMICAL.

Reactivity Data

Stability: YES
Materials To Avoid: STRONG OXIDIZING AGENTS/BASES.
Hazardous Decomp Products: TOXIC FUMES.
Hazardous Poly Occur: NO

Health Hazard Data

Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES

Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: SKIN: FATAL IF ABSORBED/IRRITATION. INHALATION: FATAL/RESPIRATORY TRACT IRRITATION/MUCOUS MEMBRANE IRRITATION, LACHRYMATOR-SEVERE IRRITATION/DAMAGE. CAN CAUSE NERVOUS SYSTEM DAMAGE.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NONE
Signs/Symptoms Of Overexp: LACHRYMATOR: IRRITATION, NAUSEA, HEADACHE, DIZZINESS, GI DISTURBANCES.
Emergency/First Aid Proc: EYES: FLUSH CONTINUOUSLY W/WATER FOR 15-20 MINS. SKIN: FLUSH W/WATER FOR 15-20 MINS. IF NOT BURNED, WASH W/SOAP & WATER TO CLEANSE. INHALATION: REMOVE TO FRESH AIR. GIVE CPR/OXYGEN IF NEEDED. KEEP WARM & QUIET. INGESTION: DON'T GIVE LIQUIDS/INDUCE VOMITING IF UNCONSCIOUS/CONVULSIVE. IF VOMITING OCCURS, WATCH CLOSELY FOR ANY AIRWAY OBSTRUCTION. OBTAIN MEDICAL ATTENTION IN ALL CASES.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: EVACUATE AREA. WEAR APPRORPRIATE OSHA REGULATED EQUIPMENT. VENTILATE AREA. ABSORB ON VERMICULITE/SIMILAR MATERIAL. SWEEP UP & PLACE IN APPROPRIATE CONTAINER/HOLD FOR DISPOSAL. WASH CONTAMINATED SURFACES TO REMOVE ANY RESIDUES.
Waste Disposal Method: BURN IN A CHEMICAL INCINERATOR EQUIPPED W/AN AFTERBURNER & SCRUBBER IAW/FEDERAL, STATE & LOCAL REGULATIONS.
Precautions-Handling/Storing: STORE IN A COOL DRY PLACE ONLY W/COMPATIBLE CHEMICALS. KEEP TIGHTLY CLOSED. FOR LABORATORY USE ONLY.
Other Precautions: AVOID CONTACT W/SKIN, EYES & CLOTHING. DON'T BREATH VAPORS. CONTACT LENSES SHOULDN'T BE WORN IN THE LABORATORY. ALL CHEMICALS SHOULD BE CONSIDERED HAZARDOUS. AVOID DIRECT PHYSICAL CONTACT.

Control Measures

Respiratory Protection: WEAR APPROPRIATE OSHA/MSHA APPROVED SAFETY EQUIPMENT.
Ventilation: CHEMICAL SHOULD BE HANDLED ONLY IN A HOOD.
Eye Protection: EYE SHIELDS
Work Hygienic Practices: REMOVE/LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.

Transportation Data

Disposal Data

Label Data

Label Required: YES
Label Status: G
Common Name: 7800J 1,1,1,2-TETRACHLOROETHANE
Special Hazard Precautions: SKIN: FATAL IF ABSORBED/IRRITATION. INHALATION: FATAL/RESPIRATORY TRACT IRRITATION/MUCOUS MEMBRANE IRRITATION, LACHRYMATOR-SEVERE IRRITATION/DAMAGE. CAN CAUSE NERVOUS SYSTEM DAMAGE. LACHRYMATOR: IRRITATION, NAUSEA, HEADACHE, DIZZINESS, GI DISTURBANCES.
Label Name: CHEM SERVICE INC
Label Street: 660 TOWER LN
Label P.O. Box: 3108
Label City: WEST CHESTER
Label State: PA
Label Zip Code: 19381-3108

Label Country: US
Label Emergency Number: 215-692-3026/800-452-9994

Please reduce your browser font size for better viewing and printing.

MSDS Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Rod School Lane
Phillipsburg, NJ 08865

MALLINCKRODT J.T.Baker

24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 202-483-7616

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

1,1,2,2-TETRACHLOROETHANE

MSDS Number: T0760 — *Effective Date: 09/08/97*

1. Product Identification

Synonyms: Ethane, 1,1,2,2-tetrachloro-; s-tetrachloroethane; acetylene tetrachloride
CAS No.: 79-34-5
Molecular Weight: 167.87
Chemical Formula: C2H2Cl4
Product Codes:
J.T. Baker: V398
Mallinckrodt: 1932

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
1,1,2,2-Tetrachloroethane	79-34-5	100%	Yes

3. Hazards Identification

Emergency Overview

DANGER! MAY BE FATAL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. AFFECTS LIVER, KIDNEYS, CENTRAL NERVOUS SYSTEM AND GASTROINTESTINAL TRACT. CAUSES SEVERE EYE IRRITATION. CAUSES IRRITATION TO SKIN AND RESPIRATORY TRACT.

Potential Health Effects

Generally considered the most toxic of the common chlorinated hydrocarbons.

Inhalation:
Highly toxic. Strong irritant of the mucous membranes and upper respiratory tract. Initial symptoms may include irritation of the nose and throat, salivation. Continued exposure may produce restlessness, dizziness, nausea, vomiting and narcosis. Symptoms may progress to a more serious illness with jaundice, liver tenderness, lung edema, and possibly convulsions and coma before death.
Ingestion:
Highly toxic via ingestion. Symptoms parallel those from inhalation. Causes irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea.
Skin Contact:
Causes irritation to skin. Symptoms include redness, itching, and pain. May be absorbed through the skin with possible systemic effects.
Eye Contact:
Vapors cause eye irritation. Splashes cause severe irritation, possible corneal burns and eye damage.
Chronic Exposure:
Chronic exposure can produce the same life threatening health effects noted for inhalation exposure above. Chronic exposure may also affect liver, gastrointestinal tract and blood-forming organs.
Aggravation of Pre-existing Conditions:
Persons with pre-existing skin, eye or central nervous system disorders, or impaired liver, kidney, or pulmonary function may be more susceptible to the effects of this substance.

---

4. First Aid Measures

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician immediately.
Ingestion:
Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Call a physician immediately.
Skin Contact:
In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Call a physician immediately.
Eye Contact:
Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Call a physician immediately.

---

5. Fire Fighting Measures

Fire:
Not considered to be a fire hazard.
Explosion:
Not considered to be an explosion hazard.
Fire Extinguishing Media:
Use any means suitable for extinguishing surrounding fire.
Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

---

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

---

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
-OSHA Permissible Exposure Limit
5 ppm (TWA) skin

-ACGIH Threshold Limit Value (TLV):
1 ppm (TWA) skin
Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of*

Recommended Practices, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus. This substance has poor warning properties.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Other Control Measures:

There is insufficient data in the published literature to assign complete numerical SAF-T-DATA* ratings and laboratory protective equipment for this product. Special precautions must be used in storage, use and handling. Protective equipment for laboratory bench use should be chosen using professional judgment based on the size and type of reaction or test to be conducted and the available ventilation, with overriding consideration to minimize contact with the chemical.

---

9. Physical and Chemical Properties

Appearance:

Clear, colorless liquid.

Odor:

Chloroform-like odor.

Solubility:

Slight, 0.3 g/100g water @ 25C (77F)

Specific Gravity:

1.59 @ 20C

pH:

No information found.

% Volatiles by volume @ 21C (70F):

100

Boiling Point:

147C (297F)

Melting Point:

-43C (-45F)

Vapor Density (Air=1):

5.8

Vapor Pressure (mm Hg):

8 @ 20C (68F)

Evaporation Rate (BuAc=1):

0.65

---

10. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage. Unusual exposure to light in the presence of air may form small amounts of phosgene.
Hazardous Decomposition Products:
May produce carbon monoxide, carbon dioxide, hydrogen chloride and phosgene when heated to decomposition.
Hazardous Polymerization:
Will not occur.
Incompatibilities:
Reacts with chemically active metals, fuming sulfuric acid and strong caustics. Attacks most plastics and rubber.
Conditions to Avoid:
No information found.

---

11. Toxicological Information

Oral rat LD50: 250 mg/kg; investigated as a tumorigen, mutagen.

--------\Cancer Lists\----------

Ingredient	---NTP Carcinogen--- Known	Anticipated	IARC Category
1,1,2,2-Tetrachloroethane (79-34-5)	No	No	3

---

12. Ecological Information

Environmental Fate:
When released into the soil, this material may leach into groundwater. When released into the soil, this material may evaporate to a moderate extent. When released to water, this material is expected to quickly evaporate. When released into water, this material is expected to have a half-life between 10 and 30 days. This material has an experimentally-determined bioconcentration factor (BCF) of less than 100. This material is not expected to significantly bioaccumulate. When released into the air, this material is not expected to react with photochemically produced hydroxyl radicals. When released into the air, this material is expected to have a half-life of greater than 30 days.
Environmental Toxicity:
This material may be toxic to aquatic life. The LC50/96-hour values for fish are between 10 and 100 mg/l. The EC50/48-hour values for daphnia are between 1 and 10 mg/l.

---

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may

change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

---

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: TETRACHLOROETHANE
Hazard Class: 6.1
UN/NA: UN1702
Packing Group: II
Information reported for product/size: 1KG

International (Water, I.M.O.)

Proper Shipping Name: 1,1,2,2-TETRACHLOROETHANE
Hazard Class: 6.1
UN/NA: UN1702
Packing Group: II
Information reported for product/size: 1KG

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15. Regulatory Information

--------\Chemical Inventory Status - Part 1\---------------------------------

Ingredient	TSCA	EC	Japan	Australia
1,1,2,2-Tetrachloroethane (79-34-5)	Yes	Yes	Yes	Yes

--------\Chemical Inventory Status - Part 2\---------------------------------

Ingredient	Korea	--Canada-- DSL	NDSL	Phil.
1,1,2,2-Tetrachloroethane (79-34-5)	Yes	Yes	No	Yes

--------\Federal, State & International Regulations - Part 1\----------------

Ingredient	-SARA 302- RQ	TPQ	------SARA 313------ List	Chemical Catg.
1,1,2,2-Tetrachloroethane (79-34-5)	No	No	Yes	No

--------\Federal, State & International Regulations - Part 2\----------------

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
1,1,2,2-Tetrachloroethane (79-34-5)	100	U209	No

Chemical Weapons Convention: No TSCA 12(b): Yes CDTA: Yes
SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No

Reactivity: No (Pure / Liquid)

WARNING:
THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

Australian Hazchem Code: 2XE
Poison Schedule: No information found.
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

---

16. Other Information

NFPA Ratings: Health: **3** Flammability: **0** Reactivity: **0**
Label Hazard Warning:
DANGER! MAY BE FATAL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. AFFECTS LIVER, KIDNEYS, CENTRAL NERVOUS SYSTEM AND GASTROINTESTINAL TRACT. CAUSES SEVERE EYE IRRITATION. CAUSES IRRITATION TO SKIN AND RESPIRATORY TRACT.
Label Precautions:
No SAF-T-DATA Ratings have been developed for this product. Read and follow all warnings, precautions, instructions and other safety and handling information on the label and MSDS.
Do not breathe vapor.
Do not get in eyes, on skin, or on clothing.
Keep container closed.
Use only with adequate ventilation.
Wash thoroughly after handling.
Label First Aid:
If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. In all cases call a physician immediately.
Product Use:
Laboratory Reagent.
Revision Information:

Disclaimer:
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Prepared by: Strategic Services Division
Phone Number: (314) 539-1600 (U.S.A.)

CHEM SERVICE -- F14 1,1,2-TRICHLOROETHANE
MATERIAL SAFETY DATA SHEET
NSN: 655000F037542
Manufacturer's CAGE: 8Y898
Part No. Indicator: A
Part Number/Trade Name: F14 1,1,2-TRICHLOROETHANE

General Information

Company's Name: CHEM SERVICE INC
Company's Street: 660 TOWER LN
Company's P. O. Box: 3108
Company's City: WEST CHESTER
Company's State: PA
Company's Country: US
Company's Zip Code: 19381-3108
Company's Emerg Ph #: 215-692-3026/800-452-9994
Company's Info Ph #: 215-692-3026/800-452-9994
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SE
Date MSDS Prepared: 05JUL91
Safety Data Review Date: 15DEC94
Preparer's Company: CHEM SERVICE INC
Preparer's St Or P. O. Box: 660 TOWER LN
Preparer's City: WEST CHESTER
Preparer's State: PA
Preparer's Zip Code: 19381-3108
MSDS Serial Number: BWJHQ

Ingredients/Identity Information

Proprietary: NO
Ingredient: 1,1,2-TRICHLOROETHANE (SUSPECTED ANIMAL CARCINOGEN BY IARC GROUP 3) *94-4*
Ingredient Sequence Number: 01
NIOSH (RTECS) Number: KJ3150000
CAS Number: 79-00-5
OSHA PEL: 10 PPM (SKIN)
ACGIH TLV: 10 PPM (SKIN)
Other Recommended Limit: 10 PPM

Physical/Chemical Characteristics

Appearance And Odor: COLORLESS LIQUID W/FRUITY/PLEASANT ODOR.
Boiling Point: 230-239F
Melting Point: -34.6F
Vapor Pressure (MM Hg/70 F): 19
Solubility In Water: SLIGHT

Fire and Explosion Hazard Data

Flash Point: NON-FLAMMABLE
Lower Explosive Limit: 6
Upper Explosive Limit: 15.5
Extinguishing Media: CO2, DRY CHEMICAL POWDER. DON'T USE WATER.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): SENSITIVE TO LIGHT & HEAT.

Materials To Avoid: STRONG OXIDIZING AGENTS/BASES, ACTIVE METALS, SODIUM, POWDERED METALS, MAGNESIUM, ALUMINUM, CAUSTICS.
Hazardous Decomp Products: TOXIC FUMES.
Hazardous Poly Occur: NO

Health Hazard Data

LD50-LC50 Mixture: ORAL LD50 (RAT/MOUSE): 1140 MG/KG
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: INGESTION: FATAL. INHALATION: FATAL/ RESPIRATORY TRACT IRRITATION/MUCOUS MEMBRANE IRRITATION. EYES: IRRITATION/ INJURY/DAMAGE. SKIN: RAPIDLY ABSORBED/FATAL/ADVERSE HEALTH EFFECTS/ IRRITATION. EXPOSURE CAN CAUSE NERVOUS SYSTEM INJURY, LIVER & KIDNEY DAMAGE. NARCOTIC AT HIGH CONCENTRATIONS. (SEE SUPP)
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NONE
Signs/Symptoms Of Overexp: IRRITATION, INFLAMMATION, SWELLING, NAUSEA, HEADACHE, DIZZINESS.
Emergency/First Aid Proc: EYES: FLUSH CONTINUOUSLY W/WATER FOR 15-20 MINS. SKIN: FLUSH W/WATER FOR 15-20 MINS. IF NOT BURNED, WASH W/SOAP & WATER TO CLEANSE. INHALATION: REMOVE TO FRESH AIR. GIVE CPR/OXYGEN IF NEEDED. KEEP WARM & QUIET. INGESTION: DON'T GIVE LIQUIDS/INDUCE VOMITING IF UNCONSCIOUS/CONVULSIVE. IF VOMITING OCCURS, WATCH CLOSELY FOR ANY AIRWAY OBSTRUCTION. OBTAIN MEDICAL ATTENTION IN ALL CASES.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: EVACUATE AREA. WEAR APPRORPRIATE OSHA REGULATED EQUIPMENT. VENTILATE AREA. ABSORB ON VERMICULITE/SIMILAR MATERIAL. SWEEP UP & PLACE IN APPROPRIATE CONTAINER/HOLD FOR DISPOSAL. WASH CONTAMINATED SURFACES TO REMOVE ANY RESIDUES.
Waste Disposal Method: BURN IN A CHEMICAL INCINERATOR EQUIPPED W/AN AFTERBURNER & SCRUBBER IAW/FEDERAL, STATE & LOCAL REGULATIONS.
Precautions-Handling/Storing: STORE IN A COOL DRY PLACE ONLY W/COMPATIBLE CHEMICALS. KEEP TIGHTLY CLOSED. DON'T USE MAGNESIUM/ALUMINUM/THEIR ALLOYS AS CONTAINERS. (SEE SUPP)
Other Precautions: AVOID CONTACT W/SKIN, EYES & CLOTHING. DON'T BREATH VAPORS. CONTACT LENSES SHOULDN'T BE WORN IN THE LABORATORY. FOR LABORATORY USE ONLY. ALL CHEMCIALS SHOULD BE CONSIDERED HAZARDOUS. AVOID DIRECT PHYSICAL CONTACT.

Control Measures

Respiratory Protection: WEAR APPROPRIATE OSHA/MSHA APPROVED SAFETY EQUIPMENT.
Ventilation: CHEMICAL SHOULD BE HANDLED ONLY IN A HOOD.
Eye Protection: EYE SHIELDS
Work Hygienic Practices: REMOVE/LAUNDER CONTAMINATED CLOTHING BEFORE REUSE. READILY ABSROBED & RETAINED ON CLOTHING & SHOES.
Suppl. Safety & Health Data: HEALTH HAZARDS CONT'D: AVOID CONSUMPTION OF ALCOHOL BEFORE & AFTER HANDLING OF THIS COMPOUND BECAUSE IT WILL INCREASE THE TOXICITY OF THE COMPOUND. STORAGE & HANDLING CONT'D: DARK COLORS DON'T AFFECT PURITY.

Transportation Data

Disposal Data

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Label Data

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Label Required: YES
Label Status: G
Common Name: F14 1,1,2-TRICHLOROETHANE
Special Hazard Precautions: INGESTION: FATAL. INHALATION: FATAL/ RESPIRATORY TRACT IRRITATION/MUCOUS MEMBRANE IRRITATION. EYES: IRRITATION/ INJURY/DAMAGE. SKIN: RAPIDLY ABSORBED/FATAL/ADVERSE HEALTH EFFECTS/ IRRITATION. EXPOSURE CAN CAUSE NERVOUS SYSTEM INJURY, LIVER & KIDNEY DAMAGE. NARCOTIC AT HIGH CONCENTRATIONS. (SEE SUPP) IRRITATION, INFLAMMATION, SWELLING, NAUSEA, HEADACHE, DIZZINESS.
Label Name: CHEM SERVICE INC
Label Street: 660 TOWER LN
Label P.O. Box: 3108
Label City: WEST CHESTER
Label State: PA
Label Zip Code: 19381-3108
Label Country: US
Label Emergency Number: 215-692-3026/800-452-9994

PPG INDUSTRIES -- TRICHLOROETHYLENE - TRICHLOROETHYLENE,TECHNICAL
MATERIAL SAFETY DATA SHEET
NSN: 6810001844794
Manufacturer's CAGE: 47695
Part No. Indicator: A
Part Number/Trade Name: TRICHLOROETHYLENE

General Information

Item Name: TRICHLOROETHYLENE,TECHNICAL
Company's Name: PPG INDUSTRIES INC
Company's Street: 1 PPG PL
Company's City: PITTSBURGH
Company's State: PA
Company's Country: US
Company's Zip Code: 15272
Company's Emerg Ph #: 304-843-1300
Company's Info Ph #: 304-843-1300
Distributor/Vendor # 1: AMCO CHEMICAL CORP
Distributor/Vendor # 1 Cage: 97984
Distributor/Vendor # 2: C S D INC.
Distributor/Vendor # 2 Cage: 4N760
Record No. For Safety Entry: 002
Tot Safety Entries This Stk#: 010
Status: SE
Date MSDS Prepared: 31JUL90
Safety Data Review Date: 25FEB91
Supply Item Manager: CX
MSDS Preparer's Name: R. KENNETH LEE
MSDS Serial Number: BDGXK
Specification Number: O-T-634C
Spec Type, Grade, Class: TY II
Hazard Characteristic Code: T4
Unit Of Issue: CN
Unit Of Issue Container Qty: 5 GALLONS
Type Of Container: CAN
Net Unit Weight: 61.1 LBS

Ingredients/Identity Information

Proprietary: NO
Ingredient: TRICHLOROETHYLENE (SARA III)
Ingredient Sequence Number: 01
Percent: 100
NIOSH (RTECS) Number: KX4550000
CAS Number: 79-01-6
OSHA PEL: 100 PPM/100 STEL
ACGIH TLV: 50 PPM/100,A5STEL;93
Other Recommended Limit: NONE SPECIFIED

Physical/Chemical Characteristics

Appearance And Odor: CLEAR COLORLESS LIQUID, ETHER-LIKE ODOR
Boiling Point: 189F,87C
Melting Point: UNKNOWN
Vapor Pressure (MM Hg/70 F): 57.8 MM
Vapor Density (Air=1): 4.54
Specific Gravity: 1.465
Decomposition Temperature: UNKNOWN
Evaporation Rate And Ref: 0.28 (ETHYL ETHER = 1)
Solubility In Water: 0.11%

Percent Volatiles By Volume: 100
Viscosity: UNKNOWN
Corrosion Rate (IPY): UNKNOWN

Fire and Explosion Hazard Data

Flash Point: NONE (DOT TEST)
Lower Explosive Limit: 7.8
Upper Explosive Limit: 52
Extinguishing Media: USE WATER FOG, CARBON DIOXIDE, OR DRY CHEMICAL.
Special Fire Fighting Proc: FIRE FIGHTERS SHOULD USE NIOSH APPROVED SCBA & FULL PROTECTIVE EQUIPMENT WHEN FIGHTING CHEMICAL FIRE. USE WATER SPRAY TO COOL NEARBY CONTAINERS EXPOSED TO FIRE.
Unusual Fire And Expl Hazrds: VAPORS CONCENTRATED IN A CONFINED OR POORLY VENTILATED AREA CAN BE IGNITED BY A HIGH ENERGY SPARK FLAME OR HIGH INTENSITY SOURCE OF HEAT.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): HIGH TEMPERATURES, SPARKS, AND OPEN FLAMES
Materials To Avoid: STRONG OXIDIZING AGENTS, CAUSTICS
Hazardous Decomp Products: HYDROGEN CHLORIDE GAS OR POSSIBLY SOME PHOSGENE
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELAVANT

Health Hazard Data

LD50-LC50 Mixture: ORAL RAT LD50 IS 4900 MG/KG
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: TRICHLOROETHYLENE IS IRRITATING TO BODY TISSUES. IF INHALED, IT DEPRESSES THE CENTRAL NERVOUS SYSTEM AND MAY EVEN IN EXTREME CASES CAUSE DEATH. CHRONIC OVEREXPOSURE MAY RESULT IN LIVER AND/OR KIDNEY DAMAGE.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: IARC REPORTS TRICHLOROETHYLENE AS CLASS 3; INSUFFICIENT EVIDENCE. CALIFORNIA 'KNOWS' TRICHLOROETHYLENE CAUSES CANCER.
Signs/Symptoms Of Overexp: EYE:IRRITATION SKIN:IRRITATION,DERMITITIS. INHALED:RESPIRATORY IRRITATION, DIZZINESS, NAUSEA, HEAD ACHE, LOSS OF EQUILIBRIUM, POSSIBLE CENTRAL NERVOUS SYSTEM DAMAGE. INGESTED:G/I IRRITATION,EFFECTS SIMILAR TO INHALED, ASPIRATION INTO THE LUNGS DURING VOMITING MAY CAUSE PULMONARY EDEMA.
Med Cond Aggravated By Exp: NONE GIVEN BY MANUFACTURER (SUPPLIER).
Emergency/First Aid Proc: EYE:FLUSH W/WATER 15 MIN, HOLD LIDS OPEN. SKIN:WASH WITH SOAP & WATER. REMOVE CONTAMINATED CLOTHING AND LAUNDER BEFORE REUSE. INHALED:REMOVE TO FRESH AIR. RESTORE BREATHING IF NECESSARY. INGESTED:DO NOT INDUCE VOMITING. GIVE 2 LARGE GLASSES WATER AND GET IMMEDIATE MEDICAL CARE. GIVE NOTHING BY MOUTH IF UNCONSCIOUS. IF IRRITATION PERSISTS OR IS SEVERE,SEE A DOCTOR.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: EVACUATE AND VENTILATE AREA. ADSORB ON INERT MATERIAL SUCH AS SAWDUST OR VERMICULITE. SHOVEL INTO CLOSED CONTAINERS FOR DISPOSAL. DO NOT ALLOW TO ENTER SEWER OR DRAIN.
Neutralizing Agent: NONE
Waste Disposal Method: DISPOSE I/A/W ALL FEDERAL, STATE AND LOCAL

REGULATIONS. MANUFACTURER SUGGESTS THAT DISPOSAL MAY BE DONE BY REPROCESSING OR INCINERATION.
Precautions-Handling/Storing: STORE IN A COOL, DRY AREA. KEEP TIGHTLY COLSED WHEN NOT IN USE. USE ONLY IN A WELL VENTILATED AREA. VAPORS ARE HEAVIER THAN AIR AND WILL COLLECT.
Other Precautions: 'EMPTY' CONTAINERS MAY CONTAIN RESIDUE OR VAPOR. TREAT THEM WITH THE RESPECT DUE FULL ONES. DO NOT CUT,WELD,ETC. ON THEM.

Control Measures

Respiratory Protection: RESPIRATOR WILL NOT NORMALLY BE NECESSARY. USE NIOSH/MSHA APPROVED AIR SUPPLIED RESPIRATOR OR RESPIRATOR FOR ORGANIC MIST/VAPOR IF EXPOSURE IS ABOVE THE TLV/PEL. SEE 29 CFR 1910.134 FOR REGULATIONS PERTAINING TO RESPIRATOR USE.
Ventilation: NORMAL ROOM VENTILATION MAY BE SUFFICIENT (CHECK PEL TO BE SURE). SUPPLEMENT WITH LOCAL EXHAUST IF PEL/TLV IS EXCEEDED.
Protective Gloves: VITON, POLY VINYL ALCOHOL
Eye Protection: SAFETY GLASSES OR SPLASH GOGGLES
Other Protective Equipment: BOOTS, APRONS, ETC. AS NEEDED TO PREVENT SKIN CONTACT
Work Hygienic Practices: USE GOOD CHEMICAL HYGIENE PRACTICE. AVOID UNNECESSARY CONTACT. WASH THOROUGHLY BEFORE EATING OR DRINKING.
Suppl. Safety & Health Data: NEW JERSEY RIGHT-TO-KNOW: ALSO CONTAINS BUTYLENE OXIDE.

Transportation Data

Trans Data Review Date: 91056
DOT PSN Code: OQK
DOT Proper Shipping Name: TRICHLOROETHYLENE
DOT Class: 6.1
DOT ID Number: UN1710
DOT Pack Group: III
DOT Label: KEEP AWAY FROM FOOD
IMO PSN Code: OVL
IMO Proper Shipping Name: TRICHLOROETHYLENE
IMO Regulations Page Number: 6273
IMO UN Number: 1710
IMO UN Class: 6.1
IMO Subsidiary Risk Label: -
IATA PSN Code: YMD
IATA UN ID Number: 1710
IATA Proper Shipping Name: TRICHLOROETHYLENE
IATA UN Class: 6.1
IATA Label: TOXIC
AFI PSN Code: YMD
AFI Prop. Shipping Name: TRICHLOROETHYLENE
AFI Class: 6.1
AFI ID Number: UN1710
AFI Pack Group: III
AFI Special Prov: N36
AFI Basic Pac Ref: 10-10
Additional Trans Data: RQ = 100 POUNDS; EXCEEDED IF 2 CONTAINERS ARE SPILLED.

Disposal Data

Disposal Data Review Date: 88077
Rec # For This Disp Entry: 01
Tot Disp Entries Per NSN: 003
Landfill Ban Item: YES

Disposal Supplemental Data: MSDS DATED DECEMBER,1977.MATERIAL IS TYPE II OF FEDERAL SPEC O-T-634B.EFFECTS OF OVER EXPO;CHRONIC:MAY DAMAGE THE LIVER AND KIDNEYS.CAUSE CANCER IN EXP.LAB ANIMALS. IN CASE OF ACCIDENTAL EXPOSURE OR DISCHARGE, cONSULT HEALTH AND SAFETY FILE FOR PRECAUTIONS.
1st EPA Haz Wst Code New: U228
1st EPA Haz Wst Name New: TRICHLOROETHYLENE; TRICHLOROETHENE
1st EPA Haz Wst Char New: TOXIC (T)
1st EPA Acute Hazard New: NO

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Label Data

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Label Required: YES
Technical Review Date: 25FEB91
Label Status: F
Common Name: TRICHLOROETHYLENE
Chronic Hazard: NO
Signal Word: CAUTION!
Acute Health Hazard-Slight: X
Contact Hazard-Slight: X
Fire Hazard-Slight: X
Reactivity Hazard-None: X
Special Hazard Precautions: MAY CAUSE RESPIRATORY TRACT IRRITATION. AVOID BREATHING DUST, VAPOR, MIST OR GAS. KEEP CONTAINER CLOSED. USE WITH ADEQUATE VENTILATION. FIRST AID: IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN. GET MEDICAL ATTENTION IMMEDIATELY. TRICHLOROETHYLENE IS IRRITATING TO BODY TISSUES. IF INHALED, IT DEPRESSES THE CENTRAL NERVOUS SYSTEM AND MAY EVEN IN EXTREME CASES CAUSE DEATH. CHRONIC OVEREXPOSURE MAY RESULT IN LIVER AND/OR KIDNEY DAMAGE. STORE IN A COOL, DRY AREA. KEEP TIGHTLY CLOSED WHEN NOT IN USE. USE ONLY IN A WELL VENTILATED AREA.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: PPG INDUSTRIES INC
Label Street: 1 PPG PL
Label City: PITTSBURGH
Label State: PA
Label Zip Code: 15272
Label Country: US
Label Emergency Number: 304-843-1300
Year Procured: 1989

HACH -- 1,1,1-TRICHLOROETHANE - 1,1,1-TRICHLOROETHANE
MATERIAL SAFETY DATA SHEET
NSN: 681000D001402
Manufacturer's CAGE: 4T252
Part No. Indicator: A
Part Number/Trade Name: 1,1,1-TRICHLOROETHANE

General Information

Item Name: 1,1,1-TRICHLOROETHANE
Company's Name: HACH CO.
Company's Street: 100 DAYTON RD.
Company's P. O. Box: 907
Company's City: AMES
Company's State: IA
Company's Country: US
Company's Zip Code: 50010-6402
Company's Emerg Ph #: 800-227-4224 303-623-5716
Company's Info Ph #: 800-227-4224
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 002
Status: SE
Date MSDS Prepared: 01JAN95
Safety Data Review Date: 30MAY95
Supply Item Manager: CX
MSDS Preparer's Name: UNKNOWN
MSDS Serial Number: BWZKP
Specification Number: NONE
Spec Type, Grade, Class: NONE
Hazard Characteristic Code: T4
Unit Of Issue: NK
Unit Of Issue Container Qty: UNKNOWN
Type Of Container: UNKNOWN
Net Unit Weight: UNKNOWN

Ingredients/Identity Information

Proprietary: NO
Ingredient: METHYL CHLOROFORM (1,1,1-TRICHLOROEHANE) (SARA 313) (CERCLA)
Ingredient Sequence Number: 01
Percent: 100
NIOSH (RTECS) Number: KJ2975000
CAS Number: 71-55-6
OSHA PEL: 350 PPM
ACGIH TLV: 350 PPM/450STEL;9495
Other Recommended Limit: NONE RECOMMENDED

Physical/Chemical Characteristics

Appearance And Odor: LIQUID;COLORLESS;SWEET ODOR.
Boiling Point: 165F,74C
Melting Point: -36F,-38C
Vapor Pressure (MM Hg/70 F): 100
Vapor Density (Air=1): 4.6
Specific Gravity: 1.345
Decomposition Temperature: UNKNOWN
Solubility In Water: NEGLIGIBLE
Corrosion Rate (IPY): UNKNOWN
Autoignition Temperature: 998F

Fire and Explosion Hazard Data

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Flash Point: NONE
Flash Point Method: CC
Lower Explosive Limit: 8
Upper Explosive Limit: 10.5
Extinguishing Media: WATER,DRY CHEMICAL,CARBON DIOXIDE,ALCOHOL FOAM.
Special Fire Fighting Proc: WEAR FIRE FIGHTING PROTECTIVE EQUIPMENT AND A FULL FACED SELF CONTAINED BREATHING APPARATUS. COOL FIRE EXPOSED CONTAINERS WITH WATER SPRAY.
Unusual Fire And Expl Hazrds: COMBUSTION OR HEAT OF FIRE MAY PRODUCE HAZARDOUS DECOMPOSITION PRODUCTS AND VAPORS.
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Reactivity Data

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Stability: YES
Cond To Avoid (Stability): HIGH HEAT, OPEN FLAMES AND OTHER SOURCES OF IGNITION
Materials To Avoid: STRONG OXIDIZING AGENTS(OXYGEN GAS,NAOH,STRONG CAUSTICS).
Hazardous Decomp Products: WHEN INVOLVED IN FIRE, 1,1,1-TRICHLOROETHANE EMITS HIGHLY TOXIC AND IRRITATING HYDROGEN CHLORIDE AND PHOSGENE FUMES.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT APPLICABLE
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Health Hazard Data

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LD50-LC50 Mixture: ORAL LD50 (RAT) = 9600 MG/KG
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: EYES:MAY CAUSE IRRITATION.SKIN:MAY CAUSE IRRITATION.INGEST:MAY CAUSE GI TRACT IRRITATION.INHAL:MAY CAUSE RESPIRATORY IRRITATION AND CARDIAC SENSITIZATION.CHRONIC:MAY DAMAGE LIVER,KIDNEYS,CNS, HEART.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: THIS ITEM HAS BEEN INVESTIGATED AS A TERATOGEN(CAUSING BIRTH DEFECTS).
Signs/Symptoms Of Overexp: INHAL:NARCOTIC EFFECTS,HEADACHE,DIZZINESS, DROWSINESS,UNCONSCIOUSNESS,IRREGULAR HEARTBEAT,DEPRESSED RESPIRATION.
Med Cond Aggravated By Exp: PERSONS WITH PRE-EXISTING SKIN AILMENTS MAY BE AT INCREASED RISK FROM EXPOSURE.
Emergency/First Aid Proc: SKIN:REMOVE CONTAMINATED CLOTHING;WASH WITH SOAP AND WATER.EYES:FLUSH WITH WATER FOR 15 MINUTES.GET MEDICAL ATTENTION. INHAL:REMOVE TO FRESH AIR.GIVE OXYGEN OR ARTIFICIAL RESPIRATION IF NEEDED. INGEST:DO NOT INDUCE VOMITING.GET PROMPT QUALIFIED MEDICAL ATTENTION.
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Precautions for Safe Handling and Use

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Steps If Matl Released/Spill: SMALL SPILL: WIPE UP WITH RAGS OR TOWELS. LARGE SPILLS: WEAR NIOSH APPROVED RESPIRATOR. VENTILATE AREA. DIKE TO RETAIN FLUID. PUMP UP FREE LIQUID. RESIDUE WILL EVAPORATE QUICKLY. DO NOT FLUSH TO SEWER OR WATERWAY.
Neutralizing Agent: NONE
Waste Disposal Method: DISPOSE OF IN ACCORDANCE WITH FEDERAL,STATE AND LOCAL REGULATIONS.RCRA CODE U226.
Precautions-Handling/Storing: STORE IN A COOL, DRY, WELL-VENTILATED LOCATION, AWAY FROM ANY AREA WHERE THE FIRE HAZARD MAY BE ACUTE. KEEP CONTAINERS CLOSED WHEN NOT IN USE.
Other Precautions: DO NOT USE WITH ALUMINUM. READ AND FOLLOW DIRECTIONS ON

LABEL. DO NOT REUSE CONTAINERS.

Control Measures

Respiratory Protection: IN HIGH VAPOR AREA, USE NIOSH/MSHA APPROVED RESPIRATOR WITH ORGANIC VAPOR CARTRIDGE. USE SELF-CONTAINED BREATHING APPARATUS IF VAPOR LEVELS EXCEED 1000 PPM.
Ventilation: LOCAL EXHAUST RECOMMENDED TO CONTROL VAPORS BELOW 50% OF TLV.
Protective Gloves: NITRILE
Eye Protection: CHEMICAL SPLASH GOGGLES
Other Protective Equipment: APRON AND WORK CLOTHING TO MINIMIZE EXPOSURE. EYE WASH STATION & SAFETY SHOWER RECOMMENDED.
Work Hygienic Practices: WASH THOROUGHLY AFTER USE AND BEFORE EATING, SMOKING OR USING TOILET FACILITIES. DO NOT BREATH VAPORS OR MIST.
Suppl. Safety & Health Data: NONE

Transportation Data

Trans Data Review Date: 95150
DOT PSN Code: OQD
DOT Proper Shipping Name: 1,1,1- TRICHLOROETHANE *
DOT Class: 6.1
DOT ID Number: UN2831
DOT Pack Group: III
DOT Label: KEEP AWAY FROM FOOD
IMO PSN Code: OVK
IMO Proper Shipping Name: 1,1,1- TRICHLOROETHANE *
IMO Regulations Page Number: 6272-1 *
IMO UN Number: 2831
IMO UN Class: 6.1
IMO Subsidiary Risk Label: -
IATA PSN Code: YLY
IATA UN ID Number: 2831
IATA Proper Shipping Name: 1,1,1- TRICHLOROETHANE *
IATA UN Class: 6.1
IATA Label: TOXIC
AFI PSN Code: YLY
AFI Prop. Shipping Name: 1,1,1- TRICHLOROETHANE *
AFI Class: 6.1
AFI ID Number: UN2831
AFI Pack Group: III
AFI Special Prov: N36
AFI Basic Pac Ref: 10-10
MMAC Code: NR
Additional Trans Data: NONE

Disposal Data

Label Data

Label Required: YES
Technical Review Date: 30MAY95
MFR Label Number: UNKNOWN
Label Status: F
Common Name: 1,1,1-TRICHLOROETHANE
Signal Word: WARNING!
Acute Health Hazard-Moderate: X
Contact Hazard-Slight: X
Fire Hazard-Slight: X
Reactivity Hazard-None: X

Special Hazard Precautions: EYES:MAY CAUSE IRRITATION.SKIN:MAY CAUSE IRRITATION.INGEST:MAY CAUSE GI TRACT IRRITATION.INHAL:MAY CAUSE RESPIRATORY IRRITATION AND CARDIAC SENSITIZATION.CHRONIC:MAY DAMAGE LIVER,KIDNEYS,CNS, HEART. STORE IN A COOL, DRY, WELL-VENTILATED LOCATION, AWAY FROM ANY AREA WHERE THE FIRE HAZARD MAY BE ACUTE. KEEP CONTAINERS CLOSED WHEN NOT IN USE. FLUSH WITH WATER FOR 15 MINUTES.GET MEDICAL ATTENTION.INHAL:REMOVE TO FRESH AIR.GIVE OXYGEN OR ARTIFICIAL RESPIRATION IF NEEDED.INGEST:DO NOT INDUCE VOMITING.GET PROMPT QUALIFIED MEDICAL ATTENTION.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: HACH CO.
Label Street: 100 DAYTON RD.
Label P.O. Box: 907
Label City: AMES
Label State: IA
Label Zip Code: 50010-6402
Label Country: US
Label Emergency Number: 800-227-4224 303-623-5716

CHEM SERVICE -- F88S VINYL CHLORIDE 0.1 MG-ML IN METHANOL - LABORATORY STANDARD
MATERIAL SAFETY DATA SHEET
NSN: 655000F037508
Manufacturer's CAGE: 8Y898
Part No. Indicator: A
Part Number/Trade Name: F88S VINYL CHLORIDE 0.1 MG/ML IN METHANOL

General Information

Item Name: LABORATORY STANDARD
Company's Name: CHEM SERVICE INC
Company's Street: 660 TOWER LN
Company's P. O. Box: 3108
Company's City: WEST CHESTER
Company's State: PA
Company's Country: US
Company's Zip Code: 19381-3108
Company's Emerg Ph #: 215-692-3026/800-452-9994
Company's Info Ph #: 215-692-3026/800-452-9994
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SE
Date MSDS Prepared: 02JUN92
Safety Data Review Date: 09DEC94
Preparer's Company: CHEM SERVICE INC
Preparer's St Or P. O. Box: 660 TOWER LN
Preparer's City: WEST CHESTER
Preparer's State: PA
Preparer's Zip Code: 19381-3108
MSDS Serial Number: BWJGB

Ingredients/Identity Information

Proprietary: NO
Ingredient: VINYL CHLORIDE (CHLOROETHYLENE) (HUMAN CARCINOGEN BY NTP & IARC GROUP I) *94-4*
Ingredient Sequence Number: 01
NIOSH (RTECS) Number: KU9625000
CAS Number: 75-01-4
OSHA PEL: 200 PPM
ACGIH TLV: 200 PPM

Physical/Chemical Characteristics

Appearance And Odor: COLORLESS LIQUID
Boiling Point: 148.28F
Melting Point: -144.4F
Vapor Pressure (MM Hg/70 F): 97
Vapor Density (Air=1): 1.11
Solubility In Water: MISCIBLE

Fire and Explosion Hazard Data

Flash Point: 51.8F
Lower Explosive Limit: 6.7
Upper Explosive Limit: 36
Extinguishing Media: CO2, DRY CHEMICAL POWDER. DON'T USE WATER.
Unusual Fire And Expl Hazrds: FLAMMABLE CHEMICAL. REACTS W/ACID HALIDES & ANHYDRIDES.

Reactivity Data

==========
Stability: YES
Materials To Avoid: STRONG ACIDS, ACID HALIDES, ANHYDRIDES, STRONG OXIDIZING/REDUCING AGENTS, ACTIVE METALS, SODIUM.
Hazardous Decomp Products: TOXIC FUMES.
Hazardous Poly Occur: NO
==========

Health Hazard Data

==========
LD50-LC50 Mixture: ORAL LD50 (RAT/MOUSE): 5628 MG/KG (SUPP)
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: SKIN: FATAL IF ABSORBED. INHALATION: FATAL. INGESTION: FATAL, BLINDNESS, GI DISTURBANCES, LIVER & KIDNEY DAMAGE, CARDIOVASCULAR SYSTEM INJURY. EYES: INJURY.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: YES
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: SEE INGREDIENTS
Signs/Symptoms Of Overexp: IRRITATION, CONVULSIONS.
Emergency/First Aid Proc: EYES: FLUSH CONTINUOUSLY W/WATER FOR 15-20 MINS. SKIN: FLUSH W/WATER FOR 15-20 MINS. IF NOT BURNED, WASH W/SOAP & WATER TO CLEANSE. INHALATION: REMOVE TO FRESH AIR. GIVE CPR/OXYGEN IF NEEDED & CONTINUE UNTIL MEDICAL ASSISTANCE ARRIVES. OBTAIN MEDICAL ATTENTION IN ALL CASES.
==========

Precautions for Safe Handling and Use

==========
Steps If Matl Released/Spill: EVACUATE AREA. WEAR APPRORPRIATE OSHA REGULATED EQUIPMENT. VENTILATE AREA. ABSORB ON VERMICULITE/SIMILAR MATERIAL. SWEEP UP & PLACE IN APPROPRIATE CONTAINER/HOLD FOR DISPOSAL. WASH CONTAMINATED SURFACES TO REMOVE ANY RESIDUES.
Waste Disposal Method: BURN IN A CHEMICAL INCINERATOR EQUIPPED W/AN AFTERBURNER & SCRUBBER IAW/FEDERAL, STATE & LOCAL REGULATIONS.
Precautions-Handling/Storing: STORE IN A COOL DRY PLACE ONLY W/COMPATIBLE CHEMICALS. KEEP TIGHTLY CLOSED.
Other Precautions: AVOID CONTACT W/SKIN, EYES & CLOTHING. DON'T BREATH VAPORS. CONTACT LENSES SHOULDN'T BE WORN IN THE LABORATORY. ALL CHEMICALS SHOULD BE CONSIDERED HAZARDOUS. AVOID DIRECT PHYSICAL CONTACT.
==========

Control Measures

==========
Respiratory Protection: WEAR APPROPRIATE OSHA/MSHA APPROVED SAFETY EQUIPMENT.
Ventilation: CHEMICAL SHOULD BE HANDLED ONLY IN A HOOD.
Eye Protection: EYE SHIELDS
Work Hygienic Practices: REMOVE/LAUNDER CONTAMINATED CLOTHING & SHOES BEFORE REUSE.
Suppl. Safety & Health Data: ORAL LD50 & MSDS INFORMATION IS FOR METHYL ALCOHOL.
==========

Transportation Data

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Disposal Data

==========
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Label Data

==========
Label Required: YES

Label Status: G
Common Name: F88S VINYL CHLORIDE 0.1 MG/ML IN METHANOL
Special Hazard Precautions: SKIN: FATAL IF ABSORBED. INHALATION: FATAL.
INGESTION: FATAL, BLINDNESS, GI DISTURBANCES, LIVER & KIDNEY DAMAGE,
CARDIOVASCULAR SYSTEM INJURY. EYES: INJURY. IRRITATION, CONVULSIONS.
Label Name: CHEM SERVICE INC
Label Street: 660 TOWER LN
Label P.O. Box: 3108
Label City: WEST CHESTER
Label State: PA
Label Zip Code: 19381-3108
Label Country: US
Label Emergency Number: 215-692-3026/800-452-9994

International Chemical Safety Cards

VINYL CHLORIDE

ICSC: 0082

VINYL CHLORIDE
Chloroethene
Chloroethylene
VCM
(cylinder)
$C_2H_3Cl/H_2C=CHCl$
Molecular mass: 62.5

CAS # 75-01-4
RTECS # KU9625000
ICSC # 0082
UN # 1086 (inhibited)
EC # 602-023-00-7

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Extremely flammable. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames, NO sparks, and NO smoking.	Shut off supply; if not possible and no risk to surroundings, let the fire burn itself out; in other cases extinguish with powder, carbon dioxide.
EXPLOSION	Gas/air mixtures are explosive. Vinyl chloride monomer vapours are uninhibited and may form polymers in vents or flame arresters of storage tanks, resulting in blockage of vents.	Closed system, ventilation, explosion-proof electrical equipment and lighting. Use non-sparking handtools.	In case of fire: keep cylinder cool by spraying with water. Combat fire from a sheltered position.
EXPOSURE		AVOID ALL CONTACT!	
• **INHALATION**	Dizziness. Drowsiness. Headache. Unconsciousness.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
• **SKIN**	ON CONTACT WITH LIQUID: FROSTBITE.	Protective gloves. Cold-insulating gloves. Protective clothing.	ON FROSTBITE: rinse with plenty of water, do NOT remove clothes.
• **EYES**	Redness. Pain.	Safety goggles, or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
• **INGESTION**		Do not eat, drink, or smoke during work. Wash hands before eating.	

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Evacuate danger area! Consult an expert! Ventilation (extra personal protection: complete protective clothing including self-contained breathing apparatus).	Fireproof. Separated from incompatible materials (see Chemical Danger). Cool.	F symbol T symbol R: 45-13 S: 53-9-16-44 Note: D UN Hazard Class: 2.1

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0082

International Chemical Safety Cards

VINYL CHLORIDE

ICSC: 0082

IMPORTANT DATA

PHYSICAL STATE; APPEARANCE:
COLOURLESS COMPRESSED LIQUEFIED GAS, WITH CHARACTERISTIC ODOUR.

PHYSICAL DANGERS:
The gas is heavier than air, and may travel along the ground; distant ignition possible.

CHEMICAL DANGERS:
The substance can under specific circumstances form peroxides, initiating explosive polymerization. The substance will polymerize readily due to heating and under the influence of air, light, and on contact with a catalyst, strong oxidizing agents and metals such as copper and aluminium, with fire or explosion hazard. The substance decomposes on burning producing toxic and corrosive fumes (hydrogen chloride and phosgene).

OCCUPATIONAL EXPOSURE LIMITS (OELs):
TLV: 5 ppm; 13 mg/m^3 (ACGIH 1993-1994).

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation.

INHALATION RISK:
A harmful concentration of this gas in the air will be reached very quickly on loss of containment.

EFFECTS OF SHORT-TERM EXPOSURE:
The substance irritates the eyes. The liquid may cause frostbite. The substance may cause effects on the central nervous system. Exposure could cause lowering of consciousness. Medical observation is indicated.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
The substance may have effects on the liver, blood vessels and connective tissue. This substance is carcinogenic to humans. May cause heritable genetic damage in humans.

PHYSICAL PROPERTIES

Boiling point: -13°C
Melting point: -154°C
Relative density (water = 1): 0.9
Solubility in water: none
Relative vapour density (air = 1): 2.2
Flash point: -78°C c.c.°C
Auto-ignition temperature: 472°C
Explosive limits, vol% in air: 3.6-33
Octanol/water partition coefficient as log Pow: 0.6

ENVIRONMENTAL DATA

NOTES

According to ACGIH this substance belongs to Group A1 indicating confirmed human carcinogen. Contains inhibitors (e.g. phenol). Depending on the degree of exposure, periodic medical examination is indicated. The odour warning when the exposure limit value is exceeded is insufficient. Do NOT use in the vicinity of a fire or a hot surface, or during welding.

Transport Emergency Card: TEC (R)-150
NFPA Code: H 2; F 4; R 2;

ADDITIONAL INFORMATION

IMPORTANT LEGAL NOTICE:	Neither the CEC or the IPCS nor any person acting on behalf of the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use.

EM SCIENCE -- 1,1-DICHLOROETHANE SOLUTION, EPM50113
MATERIAL SAFETY DATA SHEET
NSN: 681000N064965
Manufacturer's CAGE: 63612
Part No. Indicator: A
Part Number/Trade Name: 1,1-DICHLOROETHANE SOLUTION, EPM50113

General Information

Company's Name: EM SCIENCE
Company's Street: 480 DEMOCRAT RD
Company's P. O. Box: 70
Company's City: GIBBSTOWN
Company's State: NJ
Company's Country: US
Company's Zip Code: 08027
Company's Emerg Ph #: 800-424-9300(CHEMTREC)
Company's Info Ph #: 609-354-9200
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SMJ
Date MSDS Prepared: 05AUG94
Safety Data Review Date: 13OCT95
MSDS Serial Number: CBVZY

Ingredients/Identity Information

Proprietary: NO
Ingredient: ETHANE, 1,1-DICHLORO-; (1,1-DICHLOROETHANE) (SARA 313) (CERCLA)
Ingredient Sequence Number: 01
Percent: 0.02
NIOSH (RTECS) Number: KI0175000
CAS Number: 75-34-3
OSHA PEL: 100 PPM
ACGIH TLV: 100 PPM

Proprietary: NO
Ingredient: METHYL ALCOHOL (METHANOL) (SARA 313) (CERCLA)
Ingredient Sequence Number: 02
Percent: 99.98
NIOSH (RTECS) Number: PC1400000
CAS Number: 67-56-1
OSHA PEL: S, 200 PPM
ACGIH TLV: S,200PPM/250STEL

Physical/Chemical Characteristics

Appearance And Odor: CLEAR LIQUID.
Boiling Point: 149F,65C
Melting Point: -144F,-98C
Vapor Pressure (MM Hg/70 F): 97 @ 20C
Vapor Density (Air=1): 1.1
Specific Gravity: 0.791 (H*2O=1)
Evaporation Rate And Ref: 5.9 (BUAC=1)
Solubility In Water: SOLUBLE
Percent Volatiles By Volume: 99.9 +

Fire and Explosion Hazard Data

Flash Point: 52.0F,11.1C

Flash Point Method: TCC
Lower Explosive Limit: 6.7%
Upper Explosive Limit: 36.5%
Extinguishing Media: USE WATER SPRAY, FOAM, DRY CHEMICAL, OR CO*2.
Special Fire Fighting Proc: WEAR NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT (FP N).
Unusual Fire And Expl Hazrds: DANGEROUS FIRE AND EXPLOSIVE HAZARD. CLOSED CONTAINERS MAY EXPLODE UPON HEATING. VAPOR CAN TRAVEL DISTANCES TO IGNITION SOURCE AND FLASH BACK.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): HEAT; CONTACT WITH IGNITION SOURCES.
Materials To Avoid: ACIDS, OXIDIZERS, REACTIVE METALS.
Hazardous Decomp Products: CO*X, FORMALDEHYDE.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT

Health Hazard Data

LD50-LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: TOXIC BY INGESTION AND INHALATION. CAN BE TOXIC BY SKIN ABSORPTION. AFTER INGESTION OR INHALATION, INITIAL SYMPTOMS MAY BE ONLY THAT OF MILD INTOXICATION, BUT MAY BECOME SEVERE AFTER 1-18 HRS. AFFECTS CNS, ESP OPTIC NERVE. CHRONIC:MARKED IMPAIRMENT OF VISION & ENLARGEMENT OF LIVER HAS BEEN REPORTED W/(EFTS OF OVEREXP)
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NOT RELEVANT
Signs/Symptoms Of Overexp: HLTH HAZS:CHRONIC EXPOS. CHRONIC EXPOS MAY ALSO CAUSE DMG TO KIDNEYS & CNS. CAUSES DIZZ, NAUS, MUSCLE WEAK, NARCOSIS, RESP FAILURE. INGEST CAN PRDCE BLINDNESS (AS LITTLE AS 30 ML)/DEATH (AS LITTLE AS 100 ML). PRLNGD/RPTD SKIN CONT MAY CAUSE IRRIT. FETAL DEVELOPMENT ABNORMS & EFTS ON EMBRYO/FETUS HAVE BEEN (SUPP DATA)
Med Cond Aggravated By Exp: SKIN CONDITIONS, EYE PROBLEMS, IMPAIRED LIVER OR KIDNEY FUNCTION.
Emergency/First Aid Proc: GET MED ASSISTANCE FOR ALL CASES OF OVEREXP. SKIN:IMMED FLUSH THORO W/LG AMTS OF WATER. REMOVE CONTAM CLOTHES AND WASH BEFORE REUSE. EYES:IMMED FLUSH THORO W/WATER FOR @ LST 15 MIN. INHAL:REMOVE TO FRESH AIR; GIVE ARTF RESP IF BRTHG HAS STOPPED. INGEST:IF CONSCIOUS, DRINK WATER & INDUCE VOMIT IMMED AS DIRECTED BY MED PERS. NEVER GIVE ANYTHING BY MOUTH TO AN UNCON PERSON.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: WEAR SUITABLE PROT EQUIP LISTED IN CTL MEASURES. ELIM ANY IGNIT SOURCES UNTIL AREA IS DETERM TO BE FREE FROM EXPLO/FIRE HAZS. CNTN RELS & ELIM IT SOURCE, IF THIS CAN BE DONE W/OUT RISK. DISP AS HAZ WASTE. COMPLY W/FED, STATE & LOC REGS.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Method: DISPOSE AS HAZARDOUS WASTE. COMPLY WITH FEDERAL, STATE AND LOCAL REGULATIONS.
Precautions-Handling/Storing: KEEP CONTAINER CLOSED. STORE IN A COOL AREA AWAY FROM IGNITION SOURCES AND OXIDIZERS. DO NOT BREATHE VAPOR OR MIST. DO NOT GET IN EYES, ON SKIN/CLTHG.
Other Precautions: NONE SPECIFIED BY MANUFACTURER.

Control Measures

Respiratory Protection: IF WORKPLACE EXPOS LIM(S) OF PROD/ANY COMPONENT IS EXCEEDED (SEE TLV/PEL), NIOSH/MSHA APPRVD AIR SUPPLIED RESP IS ADVISED IN ABSENCE OF PROPER ENVIRON CTL. ENGINEERING &/OR ADMIN CTLS SHOULD BE IMPLEMENTED TO REDUCE EXPOS.
Ventilation: MATL SHOULD BE HANDLED OR TRANSFERRED IN AN APPROVED FUME HOOD OR WITH ADEQUATE VENTILATION.
Protective Gloves: BUTYL RUBBER, VITON OR EQUIVALENT.
Eye Protection: ANSI APPROVED CHEM WORKERS GOGGS (FP N).
Other Protective Equipment: ANSI APPROVED EMERGENCY EYE WASH AND DELUGE SHOWER (FP N).
Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING. DO NOT TAKE INTERNALLY.
Suppl. Safety & Health Data: EFTS OF OVEREXP:REPORTED FROM PROLONGED EXPOSURE TO METHYL ALCOHOL IN LABORATORY TESTS INVOLVING PREGNANT RATS.

Transportation Data

Disposal Data

Label Data

Label Required: YES
Technical Review Date: 13OCT95
Label Status: G
Common Name: 1,1-DICHLOROETHANE SOLUTION, EPM50113
Chronic Hazard: YES
Signal Word: DANGER!
Acute Health Hazard-Severe: X
Contact Hazard-Moderate: X
Fire Hazard-Severe: X
Reactivity Hazard-None: X
TOXIC BY INGESTION AND INHALATION. CAN BE TOXIC BY SKIN ABSORPTION. AFTER INGESTION OR INHALATION, INITIAL SYMPTOMS MAY BE ONLY THAT OF MILD INTOXICATION, BUT MAY BECOME SEVERE AFTER 1-18 HRS. AFFECTS CENTRAL NERVOUS SYSTEM, ESPECIALLY OPTIC NERVE. CHRONIC:MARKED IMPAIRMENT OF VISION AND ENLARGEMENT OF LIVER HAS BEEN REPORTED. CHRONIC EXPOSURE MAY ALSO CAUSE DAMAGE TO KIDNEYS AND CENTRAL NERVOUS SYSTEM. CAUSES DIZZINESS, NAUSEA, MUSCLE WEAKNESS, NARCOSIS, RESPIRATORY FAILURE. INGESTION CAN PRODUCE BLINDNESS (AS LITTLE AS 30 ML) OR DEATH (AS LITTLE AS 100 ML). PRLNGD/RPTD SKIN CONT MAY CAUSE IRRIT.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: EM SCIENCE
Label Street: 480 DEMOCRAT RD
Label P.O. Box: 70
Label City: GIBBSTOWN
Label State: NJ
Label Zip Code: 08027
Label Country: US
Label Emergency Number: 800-424-9300(CHEMTREC)

MATERIAL SAFETY DATA SHEET

1,1-Dichloroethane,99+%, stabilized with nitromethane
83933

**** SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ****

MSDS Name: 1,1-Dichloroethane,99+%, stabilized with nitromethane

Ethylidene chloride
Company Identification: Acros Organics N.V.
One Reagent Lane
Fairlawn, NJ 07410
For information in North America, call: 800-ACROS-01
For emergencies in the US, call CHEMTREC: 800-424-9300

**** SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS ****

CAS#	Chemical Name	%	EINECS#
75-34-3	1,1-Dichloroethane, 99+%, stabilized with nitromethane		200-863-5

Hazard Symbols: XN F
Risk Phrases: 11 22 36/37 52/53

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW

Appearance: clear colourless to very light yellow liquid.

Target Organs: None.

Potential Health Effects

The toxicological properties of this material have not been investigated. Use appropriate procedures to prevent opportunities for direct contact with the skin or eyes and to prevent inhalation.

**** SECTION 4 - FIRST AID MEASURES ****

Eyes:

Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting

the upper and lower lids. Get medical aid immediately.

Skin:

Get medical aid. Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Remove contaminated clothing and shoes.

Ingestion:

If victim is conscious and alert, give 2-4 cupfuls of milk or water. Get medical aid immediately. Do NOT induce vomiting. Allow the victim to rinse his mouth and then to drink 2-4 cupfuls of water, and seek medical advice.

Inhalation:

Get medical aid immediately. Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Notes to Physician:

Treat symptomatically and supportively.

**** SECTION 5 - FIRE FIGHTING MEASURES ****

General Information:

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Flammable Liquid.

Extinguishing Media:

In case of fire, use water, dry chemical, chemical foam, or alcohol-resistant foam. Use agent most appropriate to extinguish fire.

Autoignition Temperature: 660 deg C (1,220.00 deg F)
Flash Point: -10 deg C (14.00 deg F)
NFPA Rating: health-2; flammability-3; reactivity-0
Explosion Limits, Lower: .16 vol %
Upper: .06 vol %

**** SECTION 6 - ACCIDENTAL RELEASE MEASURES ****

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:

Absorb spill with inert material, (e.g., dry sand or earth), then place into a chemical waste container. Clean up spills immediately, observing precautions in the Protective Equipment section.

**** SECTION 7 - HANDLING and STORAGE ****

Handling:

Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Avoid contact with heat, sparks and flame. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

Storage:

Keep away from heat, sparks, and flame. Flammables-area.

**** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION ****

Engineering Controls:

Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits. Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
1,1-Dichloroethane, 99+%, stabilized with nitromethane	100 ppm ; 405 mg/m3	100 ppm TWA; 400 mg/m3 TWA; see Appendix C for supplementary exposure limits 3000 ppm IDLH	100 ppm TWA; 400 mg/m3 TWA

OSHA Vacated PELs:
1,1-Dichloroethane, 99+%, stabilized with nitromethane:
100 ppm TWA; 400 mg/m3 TWA

Personal Protective Equipment

Eyes:
Wear chemical goggles. Wear safety glasses and chemical goggles if splashing is possible.

Skin:
Wear appropriate protective gloves and clothing to prevent skin exposure. Wear appropriate protective gloves to prevent skin exposure.

Clothing:
Wear appropriate protective clothing to minimize contact with skin.

Respirators:
A respiratory protection program that meets OSHA's 29 CFR |1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use. Wear a NIOSH/MSHA-approved (or equivalent) full-facepiece airline respirator in the positive pressure mode with emergency escape provisions.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State:	Not available.
Appearance:	clear colorless to very faint yellow
Odor:	None reported.
pH:	Not available.
Vapor Pressure:	244 mbar @ 20 C
Vapor Density:	Not available.
Evaporation Rate:	Not available.
Viscosity:	Not available.
Boiling Point:	57 deg C @ 760.00mm Hg
Freezing/Melting Point:	-97 deg C
Decomposition Temperature:	Not available.
Solubility:	0.5g/100ml
Specific Gravity/Density:	1.1770g/cm3
Molecular Formula:	C2H4Cl2
Molecular Weight:	98.96

**** SECTION 10 - STABILITY AND REACTIVITY ****

Chemical Stability:
Stable under normal temperatures and pressures.
Conditions to Avoid:
Incompatible materials, strong oxidants.
Incompatibilities with Other Materials:

Oxidizing agents.
Hazardous Decomposition Products:
Hydrogen chloride, phosgene, carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.
Hazardous Polymerization: Has not been reported.

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#:
CAS# 75-34-3: KI0175000
LD50/LC50:
CAS# 75-34-3: Inhalation, rat: LC50 =13000 ppm/4H; Oral, rat: LD50 = 725 mg/kg.
Carcinogenicity:
1,1-Dichloroethane, 99+%, stabilized with nitromethane -
ACGIH: A4 - Not Classifiable as a Human Carcinogen
California: carcinogen - initial date 1/1/90

**** SECTION 12 - ECOLOGICAL INFORMATION ****

Ecotoxicity:
Not available.

**** SECTION 13 - DISPOSAL CONSIDERATIONS ****

Dispose of in a manner consistent with federal, state, and local regulations.
RCRA D-Series Maximum Concentration of Contaminants:
None listed.
RCRA D-Series Chronic Toxicity Reference Levels: None listed.
RCRA F-Series: None listed.
RCRA P-Series: None listed.
RCRA U-Series: CAS# 75-34-3: waste number U076.
CAS# 75-34-3 is banned from land disposal according to RCRA.

**** SECTION 14 - TRANSPORT INFORMATION ****

US DOT
Shipping Name: 1,1-DICHLOROETHANE
Hazard Class: 3
UN Number: UN2362
Packing Group: II
IMO
Shipping Name: 1,1-DICHLOROETHANE
Hazard Class: 3.2
UN Number: 2362
Packing Group: II
IATA
Shipping Name: 1,1-DICHLOROETHANE
Hazard Class: 3
UN Number: 2362
Packing Group: II
RID/ADR
Shipping Name: 1,1-DICHLOROETHANE
Dangerous Goods Code: 3(3B)
UN Number: 2362
Canadian TDG
Shipping Name: 1,1-DICHLOROETHANE
Hazard Class: 3
UN Number: UN2362

Other Information: FLASHPOINT -10 C

**** SECTION 15 - REGULATORY INFORMATION ****

US FEDERAL

TSCA

CAS# 75-34-3 is listed on the TSCA inventory.

Health & Safety Reporting List

CAS# 75-34-3: Effective Date: June 1, 1987; Sunset Date: June 1, 1997

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

CAS# 75-34-3: export notification required - Section 4

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

SARA

Section 302 (RQ)

final RQ = 1000 pounds (454 kg)

Section 302 (TPQ)

None of the chemicals in this product have a TPQ.

Section 313

This chemical is not at a high enough concentration to be reportable under Section 313.

No chemicals are reportable under Section 313.

Clean Air Act:

CAS# 75-34-3 is listed as a hazardous air pollutant (HAP).

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

CAS# 75-34-3 is listed as a Priority Pollutant under the Clean Water Act.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

1,1-Dichloroethane, 99+%, stab can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.

The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:

WARNING: This product contains 1,1-Dichloroethane, 99+%, stab, a chemical known to the state of California to cause cancer.

California No Significant Risk Level:

CAS# 75-34-3: no significant risk level = 100 ug/day

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: XN F

Risk Phrases:

R 11 Highly flammable.

R 22 Harmful if swallowed.

R 36/37 Irritating to eyes and respiratory system.

R 52/53 Harmful to aquatic organisms; may cause long-term adverse effects in the aquatic environment.

Safety Phrases:

S 16 Keep away from sources of ignition - No smoking.

S 23 Do not inhale gas/fumes/vapour/spray.

S 61 Avoid release to the environment. Refer to special instructions/Safety data sheets.

WGK (Water Danger/Protection)

CAS# 75-34-3: 3

Canada

CAS# 75-34-3 is listed on Canada's DSL/NDSL List.

This product has a WHMIS classification of B2, D2B.

CAS# 75-34-3 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits

CAS# 75-34-3:. OEL-ARAB Republic of Egypt. OEL-AUSTRALIA:TWA 200 ppm (810 mg/m3);STEL 250 pp (1010 mg/m3). OEL-AUSTRIA:TWA 100 ppm (400 mg/m3). OEL-BELGIUM:TWA 200 ppm (810 mg/m3);STEL 250 ppm (1010 mg/m3). OEL-DENMARK:TWA 100 ppm (400 mg/m3). OEL-FINLAND:TWA 100 ppm (400 mg/m3);STEL 250 ppm (1000 mg/m3). OEL-FRANCE:TWA 200 ppm (810 mg/m3). OEL-GERMANY:TWA 100 ppm (400 mg/m3). OEL-JAPAN:TWA 100 ppm (400 mg/m3). OEL-THE NETHERLANDS:TWA 200 ppm (820 mg/m3). OEL-THE PHILIPPINES:TWA 100 ppm (400 mg/m3). OEL-RUSSIA:TWA 100 ppm. OEL-SWITZERLAND:TWA 100 ppm (400 mg/m3);STEL 200 ppm (800 mg/m3). OEL-THAILAND:TWA 50 ppm;STEL 100 ppm. OEL-TURKEY:TWA 100 ppm (400 mg/m3). OEL-UNITED KINGDOM:TWA 200 ppm (810 mg/m3);STEL 400 ppm. OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV. OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 8/11/1990 Revision #2 Date: 9/02/1997

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

Back to product information.

MATERIAL SAFETY DATA SHEET

1,2-Dichloroethane, 99+% (gc)
96088

**** SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ****

MSDS Name: 1,2-Dichloroethane, 99+% (gc)

Ethylene Dichloride, 1,2- Ethylene Dichloride, Glycol Dichloride,Ethane 1,2-Dichloro-

Company Identification: Acros Organics N.V.
One Reagent Lane
Fairlawn, NJ 07410

For information in North America, call: 800-ACROS-01
For emergencies in the US, call CHEMTREC: 800-424-9300

**** SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS ****

CAS#	Chemical Name	%	EINECS#
107-06-2	Ethane, 1,2-dichloro-	100	203-458-1

Hazard Symbols: T F
Risk Phrases: 11 22 36/37/38 45

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW

Appearance: colorless, oily liquid. Flash Point: 13 deg C.
Warning! Flammable liquid. May be harmful if swallowed. May cause central nervous system depression. May cause liver and kidney damage. Causes digestive and respiratory tract irritation. May cause severe eye and skin irritation with possible burns. May cause cancer based on animal studies.
Target Organs: Kidneys, central nervous system, liver.

Potential Health Effects

Eye:
May cause irreversible eye injury. Vapors may cause eye irritation.

Skin:
Exposure may cause irritation and possible burns.

Ingestion:
May cause central nervous system depression, kidney damage, and liver damage. May cause gastrointestinal irritation with nausea,

vomiting and diarrhea. May be harmful if swallowed.

Inhalation:

Inhalation of high concentrations may cause central nervous system effects characterized by headache, dizziness, unconsciousness and coma. Causes respiratory tract irritation. May cause liver and kidney damage.

Chronic:

Possible cancer hazard based on tests with laboratory animals. Prolonged or repeated skin contact may cause dermatitis. Prolonged or repeated eye contact may cause conjunctivitis. May cause liver and kidney damage.

**** SECTION 4 - FIRST AID MEASURES ****

Eyes:

Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Get medical aid immediately.

Skin:

Get medical aid. Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Ingestion:

Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Get medical aid immediately.

Inhalation:

Get medical aid immediately. Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Notes to Physician:

Treat symptomatically and supportively.

**** SECTION 5 - FIRE FIGHTING MEASURES ****

General Information:

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. Containers may explode in the heat of a fire. Flammable Liquid. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas.

Extinguishing Media:

For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. Use water spray to cool fire-exposed containers. Water may be ineffective. For large fires, use water spray, fog or alcohol-resistant foam. Do NOT use straight streams of water. Cool containers with flooding quantities of water until well after fire is out.

Autoignition Temperature: 440 deg C (824.00 deg F)
Flash Point: 13 deg C (55.40 deg F)
NFPA Rating: health-2; flammability-3; reactivity-0
Explosion Limits, Lower: 6.2%
Upper: 16%

**** SECTION 6 - ACCIDENTAL RELEASE MEASURES ****

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:

Absorb spill with inert material, (e.g., dry sand or earth), then

place into a chemical waste container. Do not flush into a sewer. Remove all sources of ignition. Use a spark-proof tool. A vapor suppressing foam may be used to reduce vapors.

**** SECTION 7 - HANDLING and STORAGE ****

Handling:

Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use only in a well ventilated area. Ground and bond containers when transferring material. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Avoid contact with heat, sparks and flame. Do not ingest or inhale. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

Storage:

Keep away from heat, sparks, and flame. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area.

**** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION ****

Engineering Controls:

Local exhaust ventilation may be necessary to control any air contaminants to within their TLVs during the use of this product.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Ethane, 1,2-dichloro-	10 ppm ; 40 mg/m3	1 ppm TWA; 4 mg/m3 TWA; NIOSH Potential Occupational Carcinogen - see Appendix A ; see Appendix C for supplementary exposure limits 50 ppm IDLH (not considering carcinogenic effects)	50 ppm TWA; C 100 ppm; C 100 ppm

OSHA Vacated PELs:

Ethane, 1,2-dichloro-:
1 ppm TWA; 4 mg/m3 TWA

Personal Protective Equipment

Eyes:

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133.

Skin:

Wear appropriate protective gloves to prevent skin exposure.

Clothing:

Wear appropriate protective clothing to prevent skin

exposure.

Respirators:

Follow the OSHA respirator regulations found in 29CFR 1910.134. Always use a NIOSH-approved respirator when necessary.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State:	Liquid
Appearance:	colorless, oily liquid
Odor:	Chloroform odor.
pH:	Not available.
Vapor Pressure:	66 mm Hg @ 20 C
Vapor Density:	3.5 (Air=1)
Evaporation Rate:	0.3 (Butyl acetate=1)
Viscosity:	0.84 cP @ 20C
Boiling Point:	83 deg C
Freezing/Melting Point:	-35.3 deg C
Decomposition Temperature:	600 deg C
Solubility:	0.864g/100ml @ 20C
Specific Gravity/Density:	1.2600g/cm3
Molecular Formula:	C2H4Cl2
Molecular Weight:	98.96

**** SECTION 10 - STABILITY AND REACTIVITY ****

Chemical Stability:
Stable under normal temperatures and pressures.

Conditions to Avoid:
Incompatible materials, ignition sources, excess heat, electrical sparks.

Incompatibilities with Other Materials:
Incompatiblities with strong oxidizers, aluminum, ketone solvents, bases, roganic peroxides, alkali metals, reducing agents or nitric acid. Explosions have occurred with with mixtures of this materials and liquid ammonia or dimethylaminopropylamine.

Hazardous Decomposition Products:
Hydrogen chloride, carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.

Hazardous Polymerization: Has not been reported.

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#:
CAS# 107-06-2: KI0525000

LD50/LC50:
CAS# 107-06-2: Inhalation, rat: LC50 =1000 ppm/7H; Oral, mouse: LD50 = 413 mg/kg; Oral, rabbit: LD50 = 860 mg/kg; Oral, rat: LD50 = 670 mg/kg; Skin, rabbit: LD50 = 2800 mg/kg.

Carcinogenicity:
Ethane, 1,2-dichloro- -
ACGIH: A4 - Not Classifiable as a Human Carcinogen
California: carcinogen - initial date 10/1/87
NIOSH: occupational carcinogen
NTP: Suspect carcinogen
OSHA: Possible Select carcinogen
IARC: Group 2B carcinogen

Epidemiology:
No information available.

Teratogenicity:
May cause decreased fertility and other adverse effects in pregnant

female rats and the progeny of the first generation, but not of the second, by giving them repeated 4-hr/day exposures to 57 mg/m3. Death, Ihl-rat, TCLo=20100 ug/m3/1H (female 7-14D post); Stunted fetus, Oral-rat, TDLo=1260 mg/kg (6-15D preg) Developmental abnormalities: Craniofacial, Ihl-mouse, TCLo=100 ppm/7H (female 6-15D post); Musculoskeletal, Oral-rat, TDLo=1260 mg/kg (6-15D preg)

Reproductive Effects:
No information available.

Neurotoxicity:
No information available.

Mutagenicity:
This material may have mutagenic potential at high concentrations, but the relationship of mutagenesis and carcinogenic effect is not yet clear because activity for the two responses is not consistent between organs or species.

Other Studies:
None.

**** SECTION 12 - ECOLOGICAL INFORMATION ****

Ecotoxicity:
This chemical is expected to cause little oxygen depletion in aquatic systems. It has a low potential to affect aquatic organisms. Sheepshead minnow: 24-,48-, and 96-hr. LC50=GT130 mg/L,LT320 mg/L; Bluegill sunfish: 96-hr. LC50=550 mg/L/; Water flea: 24-and 48-hr.LC50=250 mg/L and 220mg/L; Brine shrimp: 24-hr.LC50=320 mg/L.

Environmental Fate:
This material is not likely to bioconcentrate.

Physical/Chemical:
Not available.

Other:
None.

**** SECTION 13 - DISPOSAL CONSIDERATIONS ****

Dispose of in a manner consistent with federal, state, and local regulations.
RCRA D-Series Maximum Concentration of Contaminants:
CAS# 107-06-2: waste number D028; regulatory level = 0.5 mg/L.
RCRA D-Series Chronic Toxicity Reference Levels: CAS# 107-06-2: chronic toxicity reference level = 0.005 mg/L.
RCRA F-Series: None listed.
RCRA P-Series: None listed.
RCRA U-Series: CAS# 107-06-2: waste number U077.
CAS# 107-06-2 is banned from land disposal according to RCRA.

**** SECTION 14 - TRANSPORT INFORMATION ****

US DOT
No information available

IMO
Not regulated as a hazardous material.

IATA
Not regulated as a hazardous material.

RID/ADR
Not regulated as a hazardous material.

Canadian TDG
No information available.

**** SECTION 15 - REGULATORY INFORMATION ****

US FEDERAL

TSCA

CAS# 107-06-2 is listed on the TSCA inventory.

Health & Safety Reporting List

CAS# 107-06-2: Effective Date: June 1, 1987; Sunset Date: June 1, 1997

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

SARA

Section 302 (RQ)

final RQ = 100 pounds (45.4 kg)

Section 302 (TPQ)

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 107-06-2: acute, chronic, flammable.

Section 313

This material contains Ethane, 1,2-dichloro- (CAS# 107-06-2, 100%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:

CAS# 107-06-2 is listed as a hazardous air pollutant (HAP).

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

CAS# 107-06-2 is listed as a Hazardous Substance under the CWA.

CAS# 107-06-2 is listed as a Priority Pollutant under the Clean Water Act.

CAS# 107-06-2 is listed as a Toxic Pollutant under the Clean Water Act.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

Ethane, 1,2-dichloro- can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.

The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:

WARNING: This product contains Ethane, 1,2-dichloro-, a chemical known to the state of California to cause cancer.

California No Significant Risk Level:

CAS# 107-06-2: no significant risk level = 10 ug/day

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: T F

Risk Phrases:

R 11 Highly flammable.

R 22 Harmful if swallowed.

R 36/37/38 Irritating to eyes, respiratory system and skin.

R 45 May cause cancer.

Safety Phrases:

S 45 In case of accident of if you feel unwell, seek medical advice immediately (show the label where possible).

S 53 Avoid exposure - obtain special instructions

before use.

WGK (Water Danger/Protection)

CAS# 107-06-2: 3

Canada

CAS# 107-06-2 is listed on Canada's DSL/NDSL List.

WHMIS: Not available.

CAS# 107-06-2 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits

CAS# 107-06-2:. OEL-ARAB Republic of Egypt:TWA 5 ppm (2 mg/m3). OEL-AUSTRALIA:TWA 10 ppm (40 mg/m3). OEL-AUSTRIA:TWA 20 ppm (80 mg/m3). OEL-BELGIUM:TWA 10 ppm (40 mg/m3). OEL-DENMARK:TWA 1 ppm (4 mg/m3);Skin. OEL-FINLAND:TWA 10 ppm (40 mg/m3);STEL 20 ppm (80 mg/m3);CAR. OEL-FRANCE:TWA 10 ppm (40 mg/m3). OEL-GERMANY;Carcinogen. OEL-HUNGARY:STEL 4 mg/m3;Carcinogen. OEL-JAPAN:TWA 10 ppm (40 mg/m3). OEL-THE NETHERLANDS: TWA 50 ppm (200 mg/m3). OEL-THE PHILIPPINES:TWA 50 ppm (200 mg/m3). OEL-RUSSIA:TWA 10 ppm. OEL-SWEDEN:TWA 1 ppm (4 mg/m3);STEL 5 ppm (20 mg/m3);Skin;CAR. OEL-SWITZERLAND:TWA 10 ppm (40 mg/m3);STEL 20 ppm (80 mg/m3). OEL-TURKEY:TWA 50 ppm (200 mg/m3). OEL-UNITED KINGDOM:TWA 10 ppm (40 mg/m3);STEL 15 ppm (60 mg/m3). OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV. OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 2/01/1996 Revision #5 Date: 12/19/1997

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

Back to product information.

CHEM SERVICE -- 0-659 CIS 1,2-DICHLOROETHENE - LABORATORY STANDARD
MATERIAL SAFETY DATA SHEET
NSN: 655000F037480
Manufacturer's CAGE: 8Y898
Part No. Indicator: A
Part Number/Trade Name: 0-659 CIS 1,2-DICHLOROETHENE

General Information

Item Name: LABORATORY STANDARD
Company's Name: CHEM SERVICE INC
Company's Street: 660 TOWER LN
Company's P. O. Box: 3108
Company's City: WEST CHESTER
Company's State: PA
Company's Country: US
Company's Zip Code: 19381-3108
Company's Emerg Ph #: 215-692-3026/800-452-9994
Company's Info Ph #: 215-692-3026/800-452-9994
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SE
Date MSDS Prepared: 02JUN92
Safety Data Review Date: 06DEC94
Preparer's Company: CHEM SERVICE INC
Preparer's St Or P. O. Box: 660 TOWER LN
Preparer's City: WEST CHESTER
Preparer's State: PA
Preparer's Zip Code: 19381-3108
MSDS Serial Number: BWJDT

Ingredients/Identity Information

Proprietary: NO
Ingredient: DICHLOROETHENE
Ingredient Sequence Number: 01
NIOSH (RTECS) Number: KV9420000
CAS Number: 156-59-2

Physical/Chemical Characteristics

Appearance And Odor: COLORLESS LIQUID
Boiling Point: 140F
Melting Point: -112F
Solubility In Water: INSOLUBLE

Fire and Explosion Hazard Data

Flash Point: 42.8F
Extinguishing Media: CO2, DRY CHEMICAL POWDER/SPRAY.
Unusual Fire And Expl Hazrds: FLAMMABLE CHEMICAL. VAPORS MAY TRAVEL CONSIDERABLE DISTANCE TO IGNITION SOURCE & FLASH BACK. DECOMPOSITION PRODUCTS ARE CORROSIVE.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): MOISTURE, AIR, LIGHT, HEAT & OTHER IGNITION SOURCES.
Materials To Avoid: STRONG OXIDIZING AGENTS, MAGNESIUM, ALUMINUM.
Hazardous Decomp Products: TOXIC FUMES

Hazardous Poly Occur: NO

Health Hazard Data

Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: SKIN: MAY BE HARMFUL IF ABSORBED. CAN CAUSE IRRITATION. INHALATION: MAY BE HARMFUL. DUST &/VAPORS CAN CAUSE RESPIRATORY TRACT IRRITATION. CAN BE IRRITATING TO MUCOUS MEMBRANCES. INGESTION: MAY BE HARMFUL. EYES: IRRITATION. EXPOSURE CAN CAUSE LIVER DAMAGE. NARCOTIC AT HIGH CONCENTRATIONS.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NONE
Signs/Symptoms Of Overexp: IRRITATION, NARCOTIC.
Emergency/First Aid Proc: EYES: FLUSH CONTINUOUSLY W/WATER FOR 15-20 MINS. SKIN: FLUSH W/WATER FOR 15-20 MINS. IF NOT BURNED, WASH W/SOAP & WATER TO CLEANSE. INHALATION: REMOVE TO FRESH AIR. GIVE CPR/OXYGEN IF NEEDED & CONTINUE LIFE SUPPORT UNTIL MEDICAL ASSISTANCE ARRIVES. INGESTION: RINSE MOUTH OUT W/WATER, IF CONSCIOUS. OBTAIN MEDICAL ATTENTION IN ALL CASES.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: EVACUATE AREA. WEAR APPRORPRIATE OSHA REGULATED EQUIPMENT. VENTILATE AREA. ABSORB ON VERMICULITE/SIMILAR MATERIAL. SWEEP UP & PLACE IN APPROPRIATE CONTAINER/HOLD FOR DISPOSAL. WASH CONTAMINATED SURFACES TO REMOVE ANY RESIDUES.
Waste Disposal Method: BURN IN A CHEMICAL INCINERATOR EQUIPPED W/AN AFTERBURNER & SCRUBBER IAW/FEDERAL, STATE & LOCAL REGULATIONS.
Precautions-Handling/Storing: STORE IN A COOL DRY PLACE ONLY W/COMPATIBLE CHEMICALS. KEEP TIGHTLY CLOSED. STORE UNDER REFRIGERATION.
Other Precautions: AVOID CONTACT W/SKIN, EYES & CLOTHING. DON'T BREATH VAPORS. CONTACT LENSES SHOULDN'T BE WORN IN THE LABORATORY. ALL CHEMICALS SHOULD BE CONSIDERED HAZARDOUS. AVOID DIRECT PHYSICAL CONTACT.

Control Measures

Respiratory Protection: WEAR APPROPRIATE OSHA/MSHA APPROVED SAFETY EQUIPMENT.
Ventilation: CHEMICAL SHOULD BE HANDLED ONLY IN A HOOD.
Eye Protection: EYE SHIELDS

Transportation Data

Disposal Data

Label Data

Label Required: YES
Label Status: G
Common Name: 0-659 CIS 1,2-DICHLOROETHENE
Special Hazard Precautions: SKIN: MAY BE HARMFUL IF ABSORBED. CAN CAUSE IRRITATION. INHALATION: MAY BE HARMFUL. DUST &/VAPORS CAN CAUSE RESPIRATORY TRACT IRRITATION. CAN BE IRRITATING TO MUCOUS MEMBRANCES. INGESTION: MAY BE HARMFUL. EYES: IRRITATION. EXPOSURE CAN CAUSE LIVER DAMAGE. NARCOTIC AT HIGH CONCENTRATIONS. IRRITATION, NARCOTIC.
Label Name: CHEM SERVICE INC

Label Street: 660 TOWER LN
Label P.O. Box: 3108
Label City: WEST CHESTER
Label State: PA
Label Zip Code: 19381-3108
Label Country: US
Label Emergency Number: 215-692-3026/800-452-9994

CHEM SERVICE -- F30 TRANS-1,2-DICHLOROETHENE
MATERIAL SAFETY DATA SHEET
NSN: 655000F037529
Manufacturer's CAGE: 8Y898
Part No. Indicator: A
Part Number/Trade Name: F30 TRANS-1,2-DICHLOROETHENE

General Information

Company's Name: CHEM SERVICE INC
Company's Street: 660 TOWER LN
Company's P. O. Box: 3108
Company's City: WEST CHESTER
Company's State: PA
Company's Country: US
Company's Zip Code: 19381-3108
Company's Emerg Ph #: 215-692-3026/800-452-9994
Company's Info Ph #: 215-692-3026/800-452-9994
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SE
Date MSDS Prepared: 28APR92
Safety Data Review Date: 15DEC94
Preparer's Company: CHEM SERVICE INC
Preparer's St Or P. O. Box: 660 TOWER LN
Preparer's City: WEST CHESTER
Preparer's State: PA
Preparer's Zip Code: 19381-3108
MSDS Serial Number: BWJGZ

Ingredients/Identity Information

Proprietary: NO
Ingredient: TRANS-1,2-DICHLOROETHYLENE, TRANS-1,2-DICHLOROETHENE
Ingredient Sequence Number: 01
NIOSH (RTECS) Number: KV9400000
CAS Number: 156-60-5
OSHA PEL: 200 PPM
ACGIH TLV: 200 PPM

Physical/Chemical Characteristics

Appearance And Odor: COLORLESS LIQUID W/FRUITY/PLEASANT ODOR.
Boiling Point: 118.4F
Melting Point: -58F
Solubility In Water: SLIGHT

Fire and Explosion Hazard Data

Flash Point: 39.2F
Lower Explosive Limit: 9.7
Upper Explosive Limit: 12.8
Extinguishing Media: CO2, DRY CHEMICAL POWDER/SPRAY.
Unusual Fire And Expl Hazrds: FLAMMABLE CHEMICAL.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): AIR, HEAT, MOISTURE, LIGHT.
Materials To Avoid: STRONG OXIDIZING AGENTS.
Hazardous Decomp Products: TOXIC FUMES/CO/CO2/HYDROGEN CHLORIDE GAS.

DECOMPOSITION PRODUCTS ARE CORROSIVE.
Hazardous Poly Occur: NO

Health Hazard Data

LD50-LC50 Mixture: ORAL LD50 (RAT/MOUSE): 7536 MG/KG
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: INHALATION: HARMFUL/RESPIRATORY TRACT IRRITATION. SKIN: HARMFUL IF ABSORBED/IRRITATION. EXPOSURE CAN CAUSE CNS DEPRESSION.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NONE
Signs/Symptoms Of Overexp: IRRITATION.
Emergency/First Aid Proc: EYES: FLUSH CONTINUOUSLY W/WATER FOR 15-20 MINS. SKIN: FLUSH W/WATER FOR 15-20 MINS. IF NOT BURNED, WASH W/SOAP & WATER TO CLEANSE. INHALATION: REMOVE TO FRESH AIR. GIVE CPR/OXYGEN IF NEEDED. KEEP WARM & QUIET. INGESTION: DON'T GIVE LIQUIDS/INDUCE VOMITING IF UNCONSCIOUS/CONVULSIVE. IF VOMITING OCCURS, WATCH CLOSELY TO AVOID AIRWAY OBSTRUCTION. OBTAIN MEDICAL ATTENTION IN ALL CASES.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: EVACUATE AREA. WEAR APPRORPRIATE OSHA REGULATED EQUIPMENT. VENTILATE AREA. ABSORB ON VERMICULITE/SIMILAR MATERIAL. SWEEP UP & PLACE IN APPROPRIATE CONTAINER/HOLD FOR DISPOSAL. WASH CONTAMINATED SURFACES TO REMOVE ANY RESIDUES.
Waste Disposal Method: BURN IN A CHEMICAL INCINERATOR EQUIPPED W/AN AFTERBURNER & SCRUBBER IAW/FEDERAL, STATE & LOCAL REGULATIONS.
Precautions-Handling/Storing: STORE IN A COOL DRY PLACE ONLY W/COMPATIBLE CHEMICALS. KEEP TIGHTLY CLOSED. STORE UNDER REFRIGERATION. FOR LABORATORY USE ONLY.
Other Precautions: AVOID CONTACT W/SKIN, EYES & CLOTHING. DON'T BREATH VAPORS. CONTACT LENSES SHOULDN'T BE WORN IN THE LABORATORY. ALL CHEMICALS SHOULD BE CONSIDERED HAZARDOUS. AVOID DIRECT PHYSICAL CONTACT.

Control Measures

Respiratory Protection: WEAR APPROPRIATE OSHA/MSHA APPROVED SAFETY EQUIPMENT.
Ventilation: CHEMICAL SHOULD BE HANDLED ONLY IN A HOOD.
Eye Protection: EYE SHIELDS
Work Hygienic Practices: REMOVE/LAUNDER CONTAMINATED CLOTHING BEFORE REUSE. READILY ABSORBED & RETAINED ON CLOTHING & SHOES.

Transportation Data

Disposal Data

Label Data

Label Required: YES
Label Status: G
Common Name: F30 TRANS-1,2-DICHLOROETHENE
Special Hazard Precautions: INHALATION: HARMFUL/RESPIRATORY TRACT IRRITATION. SKIN: HARMFUL IF ABSORBED/IRRITATION. EXPOSURE CAN CAUSE CNS

EM SCIENCE -- 1,1-DICHLOROETHANE SOLUTION, EPM50113
MATERIAL SAFETY DATA SHEET
NSN: 681000N064965
Manufacturer's CAGE: 63612
Part No. Indicator: A
Part Number/Trade Name: 1,1-DICHLOROETHANE SOLUTION, EPM50113

General Information

Company's Name: EM SCIENCE
Company's Street: 480 DEMOCRAT RD
Company's P. O. Box: 70
Company's City: GIBBSTOWN
Company's State: NJ
Company's Country: US
Company's Zip Code: 08027
Company's Emerg Ph #: 800-424-9300(CHEMTREC)
Company's Info Ph #: 609-354-9200
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SMJ
Date MSDS Prepared: 05AUG94
Safety Data Review Date: 13OCT95
MSDS Serial Number: CBVZY

Ingredients/Identity Information

Proprietary: NO
Ingredient: ETHANE, 1,1-DICHLORO-; (1,1-DICHLOROETHANE) (SARA 313) (CERCLA)
Ingredient Sequence Number: 01
Percent: 0.02
NIOSH (RTECS) Number: KI0175000
CAS Number: 75-34-3
OSHA PEL: 100 PPM
ACGIH TLV: 100 PPM

Proprietary: NO
Ingredient: METHYL ALCOHOL (METHANOL) (SARA 313) (CERCLA)
Ingredient Sequence Number: 02
Percent: 99.98
NIOSH (RTECS) Number: PC1400000
CAS Number: 67-56-1
OSHA PEL: S, 200 PPM
ACGIH TLV: S,200PPM/250STEL

Physical/Chemical Characteristics

Appearance And Odor: CLEAR LIQUID.
Boiling Point: 149F,65C
Melting Point: -144F,-98C
Vapor Pressure (MM Hg/70 F): 97 @ 20C
Vapor Density (Air=1): 1.1
Specific Gravity: 0.791 (H*2O=1)
Evaporation Rate And Ref: 5.9 (BUAC=1)
Solubility In Water: SOLUBLE
Percent Volatiles By Volume: 99.9 +

Fire and Explosion Hazard Data

Flash Point: 52.0F,11.1C

Flash Point Method: TCC
Lower Explosive Limit: 6.7%
Upper Explosive Limit: 36.5%
Extinguishing Media: USE WATER SPRAY, FOAM, DRY CHEMICAL, OR CO*2.
Special Fire Fighting Proc: WEAR NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT (FP N).
Unusual Fire And Expl Hazrds: DANGEROUS FIRE AND EXPLOSIVE HAZARD. CLOSED CONTAINERS MAY EXPLODE UPON HEATING. VAPOR CAN TRAVEL DISTANCES TO IGNITION SOURCE AND FLASH BACK.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): HEAT; CONTACT WITH IGNITION SOURCES.
Materials To Avoid: ACIDS, OXIDIZERS, REACTIVE METALS.
Hazardous Decomp Products: CO*X, FORMALDEHYDE.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT

Health Hazard Data

LD50-LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: TOXIC BY INGESTION AND INHALATION. CAN BE TOXIC BY SKIN ABSORPTION. AFTER INGESTION OR INHALATION, INITIAL SYMPTOMS MAY BE ONLY THAT OF MILD INTOXICATION, BUT MAY BECOME SEVERE AFTER 1-18 HRS. AFFECTS CNS, ESP OPTIC NERVE. CHRONIC:MARKED IMPAIRMENT OF VISION & ENLARGEMENT OF LIVER HAS BEEN REPORTED W/(EFTS OF OVEREXP)
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NOT RELEVANT
Signs/Symptoms Of Overexp: HLTH HAZS:CHRONIC EXPOS. CHRONIC EXPOS MAY ALSO CAUSE DMG TO KIDNEYS & CNS. CAUSES DIZZ, NAUS, MUSCLE WEAK, NARCOSIS, RESP FAILURE. INGEST CAN PRDCE BLINDNESS (AS LITTLE AS 30 ML)/DEATH (AS LITTLE AS 100 ML). PRLNGD/RPTD SKIN CONT MAY CAUSE IRRIT. FETAL DEVELOPMENT ABNORMS & EFTS ON EMBRYO/FETUS HAVE BEEN (SUPP DATA)
Med Cond Aggravated By Exp: SKIN CONDITIONS, EYE PROBLEMS, IMPAIRED LIVER OR KIDNEY FUNCTION.
Emergency/First Aid Proc: GET MED ASSISTANCE FOR ALL CASES OF OVEREXP. SKIN:IMMED FLUSH THORO W/LG AMTS OF WATER. REMOVE CONTAM CLOTHES AND WASH BEFORE REUSE. EYES:IMMED FLUSH THORO W/WATER FOR @ LST 15 MIN. INHAL:REMOVE TO FRESH AIR; GIVE ARTF RESP IF BRTHG HAS STOPPED. INGEST:IF CONSCIOUS, DRINK WATER & INDUCE VOMIT IMMED AS DIRECTED BY MED PERS. NEVER GIVE ANYTHING BY MOUTH TO AN UNCON PERSON.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: WEAR SUITABLE PROT EQUIP LISTED IN CTL MEASURES. ELIM ANY IGNIT SOURCES UNTIL AREA IS DETERM TO BE FREE FROM EXPLO/FIRE HAZS. CNTN RELS & ELIM IT SOURCE, IF THIS CAN BE DONE W/OUT RISK. DISP AS HAZ WASTE. COMPLY W/FED, STATE & LOC REGS.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Method: DISPOSE AS HAZARDOUS WASTE. COMPLY WITH FEDERAL, STATE AND LOCAL REGULATIONS.
Precautions-Handling/Storing: KEEP CONTAINER CLOSED. STORE IN A COOL AREA AWAY FROM IGNITION SOURCES AND OXIDIZERS. DO NOT BREATHE VAPOR OR MIST. DO NOT GET IN EYES, ON SKIN/CLTHG.
Other Precautions: NONE SPECIFIED BY MANUFACTURER.

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Control Measures

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Respiratory Protection: IF WORKPLACE EXPOS LIM(S) OF PROD/ANY COMPONENT IS EXCEEDED (SEE TLV/PEL), NIOSH/MSHA APPRVD AIR SUPPLIED RESP IS ADVISED IN ABSENCE OF PROPER ENVIRON CTL. ENGINEERING &/OR ADMIN CTLS SHOULD BE IMPLEMENTED TO REDUCE EXPOS.
Ventilation: MATL SHOULD BE HANDLED OR TRANSFERRED IN AN APPROVED FUME HOOD OR WITH ADEQUATE VENTILATION.
Protective Gloves: BUTYL RUBBER, VITON OR EQUIVALENT.
Eye Protection: ANSI APPROVED CHEM WORKERS GOGGS (FP N).
Other Protective Equipment: ANSI APPROVED EMERGENCY EYE WASH AND DELUGE SHOWER (FP N).
Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING. DO NOT TAKE INTERNALLY.
Suppl. Safety & Health Data: EFTS OF OVEREXP:REPORTED FROM PROLONGED EXPOSURE TO METHYL ALCOHOL IN LABORATORY TESTS INVOLVING PREGNANT RATS.

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Transportation Data

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Disposal Data

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Label Data

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Label Required: YES
Technical Review Date: 13OCT95
Label Status: G
Common Name: 1,1-DICHLOROETHANE SOLUTION, EPM50113
Chronic Hazard: YES
Signal Word: DANGER!
Acute Health Hazard-Severe: X
Contact Hazard-Moderate: X
Fire Hazard-Severe: X
Reactivity Hazard-None: X
TOXIC BY INGESTION AND INHALATION. CAN BE TOXIC BY SKIN ABSORPTION. AFTER INGESTION OR INHALATION, INITIAL SYMPTOMS MAY BE ONLY THAT OF MILD INTOXICATION, BUT MAY BECOME SEVERE AFTER 1-18 HRS. AFFECTS CENTRAL NERVOUS SYSTEM, ESPECIALLY OPTIC NERVE. CHRONIC:MARKED IMPAIRMENT OF VISION AND ENLARGEMENT OF LIVER HAS BEEN REPORTED. CHRONIC EXPOSURE MAY ALSO CAUSE DAMAGE TO KIDNEYS AND CENTRAL NERVOUS SYSTEM. CAUSES DIZZINESS, NAUSEA, MUSCLE WEAKNESS, NARCOSIS, RESPIRATORY FAILURE. INGESTION CAN PRODUCE BLINDNESS (AS LITTLE AS 30 ML) OR DEATH (AS LITTLE AS 100 ML). PRLNGD/RPTD SKIN CONT MAY CAUSE IRRIT.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: EM SCIENCE
Label Street: 480 DEMOCRAT RD
Label P.O. Box: 70
Label City: GIBBSTOWN
Label State: NJ
Label Zip Code: 08027
Label Country: US
Label Emergency Number: 800-424-9300(CHEMTREC)

MATERIAL SAFETY DATA SHEET

1,1-Dichloroethane,99+%, stabilized with nitromethane

83933

**** SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ****

MSDS Name: 1,1-Dichloroethane,99+%, stabilized with nitromethane

Ethylidene chloride
Company Identification: Acros Organics N.V.
One Reagent Lane
Fairlawn, NJ 07410
For information in North America, call: 800-ACROS-01
For emergencies in the US, call CHEMTREC: 800-424-9300

**** SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS ****

CAS#	Chemical Name	%	EINECS#
75-34-3	1,1-Dichloroethane, 99+%, stabilized with nitromethane		200-863-5

Hazard Symbols: XN F
Risk Phrases: 11 22 36/37 52/53

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW

Appearance: clear colourless to very light yellow liquid.

Target Organs: None.

Potential Health Effects

The toxicological properties of this material have not been investigated. Use appropriate procedures to prevent opportunities for direct contact with the skin or eyes and to prevent inhalation.

**** SECTION 4 - FIRST AID MEASURES ****

Eyes:

Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting

the upper and lower lids. Get medical aid immediately.

Skin:

Get medical aid. Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Remove contaminated clothing and shoes.

Ingestion:

If victim is conscious and alert, give 2-4 cupfuls of milk or water. Get medical aid immediately. Do NOT induce vomiting. Allow the victim to rinse his mouth and then to drink 2-4 cupfuls of water, and seek medical advice.

Inhalation:

Get medical aid immediately. Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Notes to Physician:

Treat symptomatically and supportively.

**** SECTION 5 - FIRE FIGHTING MEASURES ****

General Information:

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Flammable Liquid.

Extinguishing Media:

In case of fire, use water, dry chemical, chemical foam, or alcohol-resistant foam. Use agent most appropriate to extinguish fire.

Autoignition Temperature: 660 deg C (1,220.00 deg F)
Flash Point: -10 deg C (14.00 deg F)
NFPA Rating: health-2; flammability-3; reactivity-0
Explosion Limits, Lower: .16 vol %
Upper: .06 vol %

**** SECTION 6 - ACCIDENTAL RELEASE MEASURES ****

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:

Absorb spill with inert material, (e.g., dry sand or earth), then place into a chemical waste container. Clean up spills immediately, observing precautions in the Protective Equipment section.

**** SECTION 7 - HANDLING and STORAGE ****

Handling:

Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Avoid contact with heat, sparks and flame. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

Storage:

Keep away from heat, sparks, and flame. Flammables-area.

**** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION ****

Engineering Controls:

Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits. Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
1,1-Dichloroethane, 99+%, stabilized with nitromethane	100 ppm ; 405 mg/m3	100 ppm TWA; 400 mg/m3 TWA; see Appendix C for supplementary exposure limits 3000 ppm IDLH	100 ppm TWA; 400 mg/m3 TWA

OSHA Vacated PELs:
1,1-Dichloroethane, 99+%, stabilized with nitromethane:
100 ppm TWA; 400 mg/m3 TWA

Personal Protective Equipment

Eyes:
Wear chemical goggles. Wear safety glasses and chemical goggles if splashing is possible.

Skin:
Wear appropriate protective gloves and clothing to prevent skin exposure. Wear appropriate protective gloves to prevent skin exposure.

Clothing:
Wear appropriate protective clothing to minimize contact with skin.

Respirators:
A respiratory protection program that meets OSHA's 29 CFR |1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use. Wear a NIOSH/MSHA-approved (or equivalent) full-facepiece airline respirator in the positive pressure mode with emergency escape provisions.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State:	Not available.
Appearance:	clear colorless to very faint yellow
Odor:	None reported.
pH:	Not available.
Vapor Pressure:	244 mbar @ 20 C
Vapor Density:	Not available.
Evaporation Rate:	Not available.
Viscosity:	Not available.
Boiling Point:	57 deg C @ 760.00mm Hg
Freezing/Melting Point:	-97 deg C
Decomposition Temperature:	Not available.
Solubility:	0.5g/100ml
Specific Gravity/Density:	1.1770g/cm3
Molecular Formula:	C2H4Cl2
Molecular Weight:	98.96

**** SECTION 10 - STABILITY AND REACTIVITY ****

Chemical Stability:
Stable under normal temperatures and pressures.
Conditions to Avoid:
Incompatible materials, strong oxidants.
Incompatibilities with Other Materials:

Oxidizing agents.
Hazardous Decomposition Products:
Hydrogen chloride, phosgene, carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.
Hazardous Polymerization: Has not been reported.

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#:
CAS# 75-34-3: KI0175000
LD50/LC50:
CAS# 75-34-3: Inhalation, rat: LC50 =13000 ppm/4H; Oral, rat: LD50 = 725 mg/kg.
Carcinogenicity:
1,1-Dichloroethane, 99+%, stabilized with nitromethane -
ACGIH: A4 - Not Classifiable as a Human Carcinogen
California: carcinogen - initial date 1/1/90

**** SECTION 12 - ECOLOGICAL INFORMATION ****

Ecotoxicity:
Not available.

**** SECTION 13 - DISPOSAL CONSIDERATIONS ****

Dispose of in a manner consistent with federal, state, and local regulations.
RCRA D-Series Maximum Concentration of Contaminants:
None listed.
RCRA D-Series Chronic Toxicity Reference Levels: None listed.
RCRA F-Series: None listed.
RCRA P-Series: None listed.
RCRA U-Series: CAS# 75-34-3: waste number U076.
CAS# 75-34-3 is banned from land disposal according to RCRA.

**** SECTION 14 - TRANSPORT INFORMATION ****

US DOT
Shipping Name: 1,1-DICHLOROETHANE
Hazard Class: 3
UN Number: UN2362
Packing Group: II
IMO
Shipping Name: 1,1-DICHLOROETHANE
Hazard Class: 3.2
UN Number: 2362
Packing Group: II
IATA
Shipping Name: 1,1-DICHLOROETHANE
Hazard Class: 3
UN Number: 2362
Packing Group: II
RID/ADR
Shipping Name: 1,1-DICHLOROETHANE
Dangerous Goods Code: 3(3B)
UN Number: 2362
Canadian TDG
Shipping Name: 1,1-DICHLOROETHANE
Hazard Class: 3
UN Number: UN2362

Other Information: FLASHPOINT -10 C

**** SECTION 15 - REGULATORY INFORMATION ****

US FEDERAL

TSCA

CAS# 75-34-3 is listed on the TSCA inventory.

Health & Safety Reporting List

CAS# 75-34-3: Effective Date: June 1, 1987; Sunset Date: June 1, 1997

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

CAS# 75-34-3: export notification required - Section 4

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

SARA

Section 302 (RQ)

final RQ = 1000 pounds (454 kg)

Section 302 (TPQ)

None of the chemicals in this product have a TPQ.

Section 313

This chemical is not at a high enough concentration to be reportable under Section 313.

No chemicals are reportable under Section 313.

Clean Air Act:

CAS# 75-34-3 is listed as a hazardous air pollutant (HAP).

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

CAS# 75-34-3 is listed as a Priority Pollutant under the Clean Water Act.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

1,1-Dichloroethane, 99+%, stab can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.

The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:

WARNING: This product contains 1,1-Dichloroethane, 99+%, stab, a chemical known to the state of California to cause cancer.

California No Significant Risk Level:

CAS# 75-34-3: no significant risk level = 100 ug/day

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: XN F

Risk Phrases:

R 11 Highly flammable.

R 22 Harmful if swallowed.

R 36/37 Irritating to eyes and respiratory system.

R 52/53 Harmful to aquatic organisms; may cause long-term adverse effects in the aquatic environment.

Safety Phrases:

S 16 Keep away from sources of ignition - No smoking.

S 23 Do not inhale gas/fumes/vapour/spray.

S 61 Avoid release to the environment. Refer to special instructions/Safety data sheets.

WGK (Water Danger/Protection)

CAS# 75-34-3: 3

Canada

CAS# 75-34-3 is listed on Canada's DSL/NDSL List.

This product has a WHMIS classification of B2, D2B.

CAS# 75-34-3 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits

CAS# 75-34-3:. OEL-ARAB Republic of Egypt. OEL-AUSTRALIA:TWA 200 ppm (810 mg/m3);STEL 250 pp (1010 mg/m3). OEL-AUSTRIA:TWA 100 ppm (400 mg/m3). OEL-BELGIUM:TWA 200 ppm (810 mg/m3);STEL 250 ppm (1010 mg/m3). OEL-DENMARK:TWA 100 ppm (400 mg/m3). OEL-FINLAND:TWA 100 ppm (400 mg/m3);STEL 250 ppm (1000 mg/m3). OEL-FRANCE:TWA 200 ppm (810 mg/m3). OEL-GERMANY:TWA 100 ppm (400 mg/m3). OEL-JAPAN:TWA 100 ppm (400 mg/m3). OEL-THE NETHERLANDS:TWA 200 ppm (820 mg/m3). OEL-THE PHILIPPINES:TWA 100 ppm (400 mg/m3). OEL-RUSSIA:TWA 100 ppm. OEL-SWITZERLAND:TWA 100 ppm (400 mg/m3);STEL 200 ppm (800 mg/m3). OEL-THAILAND:TWA 50 ppm;STEL 100 ppm. OEL-TURKEY:TWA 100 ppm (400 mg/m3). OEL-UNITED KINGDOM:TWA 200 ppm (810 mg/m3);STEL 400 ppm. OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV. OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 8/11/1990 Revision #2 Date: 9/02/1997

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

Back to product information.

MATERIAL SAFETY DATA SHEET

1,2-Dichloroethane, 99+% (gc)
96088

**** SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ****

MSDS Name: 1,2-Dichloroethane, 99+% (gc)

Ethylene Dichloride, 1,2- Ethylene Dichloride, Glycol Dichloride,Ethane 1,2-Dichloro-

Company Identification: Acros Organics N.V.
One Reagent Lane
Fairlawn, NJ 07410
For information in North America, call: 800-ACROS-01
For emergencies in the US, call CHEMTREC: 800-424-9300

**** SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS ****

CAS#	Chemical Name	%	EINECS#
107-06-2	Ethane, 1,2-dichloro-	100	203-458-1

Hazard Symbols: T F
Risk Phrases: 11 22 36/37/38 45

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW

Appearance: colorless, oily liquid. Flash Point: 13 deg C.
Warning! Flammable liquid. May be harmful if swallowed. May cause central nervous system depression. May cause liver and kidney damage. Causes digestive and respiratory tract irritation. May cause severe eye and skin irritation with possible burns. May cause cancer based on animal studies.
Target Organs: Kidneys, central nervous system, liver.

Potential Health Effects

Eye:
May cause irreversible eye injury. Vapors may cause eye irritation.

Skin:
Exposure may cause irritation and possible burns.

Ingestion:
May cause central nervous system depression, kidney damage, and liver damage. May cause gastrointestinal irritation with nausea,

vomiting and diarrhea. May be harmful if swallowed.

Inhalation:

Inhalation of high concentrations may cause central nervous system effects characterized by headache, dizziness, unconsciousness and coma. Causes respiratory tract irritation. May cause liver and kidney damage.

Chronic:

Possible cancer hazard based on tests with laboratory animals. Prolonged or repeated skin contact may cause dermatitis. Prolonged or repeated eye contact may cause conjunctivitis. May cause liver and kidney damage.

**** SECTION 4 - FIRST AID MEASURES ****

Eyes:

Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Get medical aid immediately.

Skin:

Get medical aid. Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Ingestion:

Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Get medical aid immediately.

Inhalation:

Get medical aid immediately. Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Notes to Physician:

Treat symptomatically and supportively.

**** SECTION 5 - FIRE FIGHTING MEASURES ****

General Information:

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. Containers may explode in the heat of a fire. Flammable Liquid. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas.

Extinguishing Media:

For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. Use water spray to cool fire-exposed containers. Water may be ineffective. For large fires, use water spray, fog or alcohol-resistant foam. Do NOT use straight streams of water. Cool containers with flooding quantities of water until well after fire is out.

Autoignition Temperature: 440 deg C (824.00 deg F)
Flash Point: 13 deg C (55.40 deg F)
NFPA Rating: health-2; flammability-3; reactivity-0
Explosion Limits, Lower: 6.2%
Upper: 16%

**** SECTION 6 - ACCIDENTAL RELEASE MEASURES ****

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:

Absorb spill with inert material, (e.g., dry sand or earth), then

place into a chemical waste container. Do not flush into a sewer. Remove all sources of ignition. Use a spark-proof tool. A vapor suppressing foam may be used to reduce vapors.

**** SECTION 7 - HANDLING and STORAGE ****

Handling:

Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use only in a well ventilated area. Ground and bond containers when transferring material. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Avoid contact with heat, sparks and flame. Do not ingest or inhale. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

Storage:

Keep away from heat, sparks, and flame. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area.

**** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION ****

Engineering Controls:

Local exhaust ventilation may be necessary to control any air contaminants to within their TLVs during the use of this product.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Ethane, 1,2-dichloro-	10 ppm ; 40 mg/m3	1 ppm TWA; 4 mg/m3 TWA; NIOSH Potential Occupational Carcinogen - see Appendix A ; see Appendix C for supplementary exposure limits 50 ppm IDLH (not considering carcinogenic effects)	50 ppm TWA; C 100 ppm; C 100 ppm

OSHA Vacated PELs:

Ethane, 1,2-dichloro-:
1 ppm TWA; 4 mg/m3 TWA

Personal Protective Equipment

Eyes:

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133.

Skin:

Wear appropriate protective gloves to prevent skin exposure.

Clothing:

Wear appropriate protective clothing to prevent skin

exposure.

Respirators:

Follow the OSHA respirator regulations found in 29CFR 1910.134. Always use a NIOSH-approved respirator when necessary.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State:	Liquid
Appearance:	colorless, oily liquid
Odor:	Chloroform odor.
pH:	Not available.
Vapor Pressure:	66 mm Hg @ 20 C
Vapor Density:	3.5 (Air=1)
Evaporation Rate:	0.3 (Butyl acetate=1)
Viscosity:	0.84 cP @ 20C
Boiling Point:	83 deg C
Freezing/Melting Point:	-35.3 deg C
Decomposition Temperature:	600 deg C
Solubility:	0.864g/100ml @ 20C
Specific Gravity/Density:	1.2600g/cm3
Molecular Formula:	C2H4Cl2
Molecular Weight:	98.96

**** SECTION 10 - STABILITY AND REACTIVITY ****

Chemical Stability:
Stable under normal temperatures and pressures.

Conditions to Avoid:
Incompatible materials, ignition sources, excess heat, electrical sparks.

Incompatibilities with Other Materials:
Incompatiblities with strong oxidizers, aluminum, ketone solvents, bases, roganic peroxides, alkali metals, reducing agents or nitric acid. Explosions have occurred with with mixtures of this materials and liquid ammonia or dimethylaminopropylamine.

Hazardous Decomposition Products:
Hydrogen chloride, carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.

Hazardous Polymerization: Has not been reported.

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#:
CAS# 107-06-2: KI0525000

LD50/LC50:
CAS# 107-06-2: Inhalation, rat: LC50 =1000 ppm/7H; Oral, mouse: LD50 = 413 mg/kg; Oral, rabbit: LD50 = 860 mg/kg; Oral, rat: LD50 = 670 mg/kg; Skin, rabbit: LD50 = 2800 mg/kg.

Carcinogenicity:
Ethane, 1,2-dichloro- -
ACGIH: A4 - Not Classifiable as a Human Carcinogen
California: carcinogen - initial date 10/1/87
NIOSH: occupational carcinogen
NTP: Suspect carcinogen
OSHA: Possible Select carcinogen
IARC: Group 2B carcinogen

Epidemiology:
No information available.

Teratogenicity:
May cause decreased fertility and other adverse effects in pregnant

female rats and the progeny of the first generation, but not of the second, by giving them repeated 4-hr/day exposures to 57 mg/m3. Death, Ihl-rat, TCLo=20100 ug/m3/1H (female 7-14D post); Stunted fetus, Oral-rat, TDLo=1260 mg/kg (6-15D preg) Developmental abnormalities: Craniofacial, Ihl-mouse, TCLo=100 ppm/7H (female 6-15D post); Musculoskeletal, Oral-rat, TDLo=1260 mg/kg (6-15D preg)

Reproductive Effects:
No information available.

Neurotoxicity:
No information available.

Mutagenicity:
This material may have mutagenic potential at high concentrations, but the relationship of mutagenesis and carcinogenic effect is not yet clear because activity for the two responses is not consistent between organs or species.

Other Studies:
None.

**** SECTION 12 - ECOLOGICAL INFORMATION ****

Ecotoxicity:
This chemical is expected to cause little oxygen depletion in aquatic systems. It has a low potential to affect aquatic organisms. Sheepshead minnow: 24-,48-, and 96-hr. LC50=GT130 mg/L,LT320 mg/L; Bluegill sunfish: 96-hr. LC50=550 mg/L/; Water flea: 24-and 48-hr.LC50=250 mg/L and 220mg/L; Brine shrimp: 24-hr.LC50=320 mg/L.

Environmental Fate:
This material is not likely to bioconcentrate.

Physical/Chemical:
Not available.

Other:
None.

**** SECTION 13 - DISPOSAL CONSIDERATIONS ****

Dispose of in a manner consistent with federal, state, and local regulations.
RCRA D-Series Maximum Concentration of Contaminants:
CAS# 107-06-2: waste number D028; regulatory level = 0.5 mg/L.
RCRA D-Series Chronic Toxicity Reference Levels: CAS# 107-06-2: chronic toxicity reference level = 0.005 mg/L.
RCRA F-Series: None listed.
RCRA P-Series: None listed.
RCRA U-Series: CAS# 107-06-2: waste number U077.
CAS# 107-06-2 is banned from land disposal according to RCRA.

**** SECTION 14 - TRANSPORT INFORMATION ****

US DOT
No information available

IMO
Not regulated as a hazardous material.

IATA
Not regulated as a hazardous material.

RID/ADR
Not regulated as a hazardous material.

Canadian TDG
No information available.

**** SECTION 15 - REGULATORY INFORMATION ****

US FEDERAL

TSCA

CAS# 107-06-2 is listed on the TSCA inventory.

Health & Safety Reporting List

CAS# 107-06-2: Effective Date: June 1, 1987; Sunset Date: June 1, 1997

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

SARA

Section 302 (RQ)

final RQ = 100 pounds (45.4 kg)

Section 302 (TPQ)

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 107-06-2: acute, chronic, flammable.

Section 313

This material contains Ethane, 1,2-dichloro- (CAS# 107-06-2, 100%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:

CAS# 107-06-2 is listed as a hazardous air pollutant (HAP).
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

CAS# 107-06-2 is listed as a Hazardous Substance under the CWA.
CAS# 107-06-2 is listed as a Priority Pollutant under the Clean Water Act.
CAS# 107-06-2 is listed as a Toxic Pollutant under the Clean Water Act.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

Ethane, 1,2-dichloro- can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.
The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:
WARNING: This product contains Ethane, 1,2-dichloro-, a chemical known to the state of California to cause cancer.
California No Significant Risk Level:
CAS# 107-06-2: no significant risk level = 10 ug/day

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: T F
Risk Phrases:
R 11 Highly flammable.
R 22 Harmful if swallowed.
R 36/37/38 Irritating to eyes, respiratory system and skin.
R 45 May cause cancer.
Safety Phrases:
S 45 In case of accident of if you feel unwell, seek medical advice immediately (show the label where possible).
S 53 Avoid exposure - obtain special instructions

before use.

WGK (Water Danger/Protection)

CAS# 107-06-2: 3

Canada

CAS# 107-06-2 is listed on Canada's DSL/NDSL List.

WHMIS: Not available.

CAS# 107-06-2 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits

CAS# 107-06-2:. OEL-ARAB Republic of Egypt:TWA 5 ppm (2 mg/m3). OEL-AUSTRALIA:TWA 10 ppm (40 mg/m3). OEL-AUSTRIA:TWA 20 ppm (80 mg/m3). OEL-BELGIUM:TWA 10 ppm (40 mg/m3). OEL-DENMARK:TWA 1 ppm (4 mg/m3);Skin. OEL-FINLAND:TWA 10 ppm (40 mg/m3);STEL 20 ppm (80 mg/m3);CAR. OEL-FRANCE:TWA 10 ppm (40 mg/m3). OEL-GERMANY;Carcinogen. OEL-HUNGARY:STEL 4 mg/m3;Carcinogen. OEL-JAPAN:TWA 10 ppm (40 mg/m3). OEL-THE NETHERLANDS: TWA 50 ppm (200 mg/m3). OEL-THE PHILIPPINES:TWA 50 ppm (200 mg/m3). OEL-RUSSIA:TWA 10 ppm. OEL-SWEDEN:TWA 1 ppm (4 mg/m3);STEL 5 ppm (20 mg/m3);Skin;CAR. OEL-SWITZERLAND:TWA 10 ppm (40 mg/m3);STEL 20 ppm (80 mg/m3). OEL-TURKEY:TWA 50 ppm (200 mg/m3). OEL-UNITED KINGDOM:TWA 10 ppm (40 mg/m3);STEL 15 ppm (60 mg/m3). OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV. OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 2/01/1996 Revision #5 Date: 12/19/1997

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

Back to product information.

CHEM SERVICE -- 0-659 CIS 1,2-DICHLOROETHENE - LABORATORY STANDARD
MATERIAL SAFETY DATA SHEET
NSN: 655000F037480
Manufacturer's CAGE: 8Y898
Part No. Indicator: A
Part Number/Trade Name: 0-659 CIS 1,2-DICHLOROETHENE

General Information

Item Name: LABORATORY STANDARD
Company's Name: CHEM SERVICE INC
Company's Street: 660 TOWER LN
Company's P. O. Box: 3108
Company's City: WEST CHESTER
Company's State: PA
Company's Country: US
Company's Zip Code: 19381-3108
Company's Emerg Ph #: 215-692-3026/800-452-9994
Company's Info Ph #: 215-692-3026/800-452-9994
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SE
Date MSDS Prepared: 02JUN92
Safety Data Review Date: 06DEC94
Preparer's Company: CHEM SERVICE INC
Preparer's St Or P. O. Box: 660 TOWER LN
Preparer's City: WEST CHESTER
Preparer's State: PA
Preparer's Zip Code: 19381-3108
MSDS Serial Number: BWJDT

Ingredients/Identity Information

Proprietary: NO
Ingredient: DICHLOROETHENE
Ingredient Sequence Number: 01
NIOSH (RTECS) Number: KV9420000
CAS Number: 156-59-2

Physical/Chemical Characteristics

Appearance And Odor: COLORLESS LIQUID
Boiling Point: 140F
Melting Point: -112F
Solubility In Water: INSOLUBLE

Fire and Explosion Hazard Data

Flash Point: 42.8F
Extinguishing Media: CO2, DRY CHEMICAL POWDER/SPRAY.
Unusual Fire And Expl Hazrds: FLAMMABLE CHEMICAL. VAPORS MAY TRAVEL CONSIDERABLE DISTANCE TO IGNITION SOURCE & FLASH BACK. DECOMPOSITION PRODUCTS ARE CORROSIVE.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): MOISTURE, AIR, LIGHT, HEAT & OTHER IGNITION SOURCES.
Materials To Avoid: STRONG OXIDIZING AGENTS, MAGNESIUM, ALUMINUM.
Hazardous Decomp Products: TOXIC FUMES

Hazardous Poly Occur: NO

Health Hazard Data

Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: SKIN: MAY BE HARMFUL IF ABSORBED. CAN CAUSE IRRITATION. INHALATION: MAY BE HARMFUL. DUST &/VAPORS CAN CAUSE RESPIRATORY TRACT IRRITATION. CAN BE IRRITATING TO MUCOUS MEMBRANCES. INGESTION: MAY BE HARMFUL. EYES: IRRITATION. EXPOSURE CAN CAUSE LIVER DAMAGE. NARCOTIC AT HIGH CONCENTRATIONS.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NONE
Signs/Symptoms Of Overexp: IRRITATION, NARCOTIC.
Emergency/First Aid Proc: EYES: FLUSH CONTINUOUSLY W/WATER FOR 15-20 MINS. SKIN: FLUSH W/WATER FOR 15-20 MINS. IF NOT BURNED, WASH W/SOAP & WATER TO CLEANSE. INHALATION: REMOVE TO FRESH AIR. GIVE CPR/OXYGEN IF NEEDED & CONTINUE LIFE SUPPORT UNTIL MEDICAL ASSISTANCE ARRIVES. INGESTION: RINSE MOUTH OUT W/WATER, IF CONSCIOUS. OBTAIN MEDICAL ATTENTION IN ALL CASES.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: EVACUATE AREA. WEAR APPRORPRIATE OSHA REGULATED EQUIPMENT. VENTILATE AREA. ABSORB ON VERMICULITE/SIMILAR MATERIAL. SWEEP UP & PLACE IN APPROPRIATE CONTAINER/HOLD FOR DISPOSAL. WASH CONTAMINATED SURFACES TO REMOVE ANY RESIDUES.
Waste Disposal Method: BURN IN A CHEMICAL INCINERATOR EQUIPPED W/AN AFTERBURNER & SCRUBBER IAW/FEDERAL, STATE & LOCAL REGULATIONS.
Precautions-Handling/Storing: STORE IN A COOL DRY PLACE ONLY W/COMPATIBLE CHEMICALS. KEEP TIGHTLY CLOSED. STORE UNDER REFRIGERATION.
Other Precautions: AVOID CONTACT W/SKIN, EYES & CLOTHING. DON'T BREATH VAPORS. CONTACT LENSES SHOULDN'T BE WORN IN THE LABORATORY. ALL CHEMICALS SHOULD BE CONSIDERED HAZARDOUS. AVOID DIRECT PHYSICAL CONTACT.

Control Measures

Respiratory Protection: WEAR APPROPRIATE OSHA/MSHA APPROVED SAFETY EQUIPMENT.
Ventilation: CHEMICAL SHOULD BE HANDLED ONLY IN A HOOD.
Eye Protection: EYE SHIELDS

Transportation Data

Disposal Data

Label Data

Label Required: YES
Label Status: G
Common Name: 0-659 CIS 1,2-DICHLOROETHENE
Special Hazard Precautions: SKIN: MAY BE HARMFUL IF ABSORBED. CAN CAUSE IRRITATION. INHALATION: MAY BE HARMFUL. DUST &/VAPORS CAN CAUSE RESPIRATORY TRACT IRRITATION. CAN BE IRRITATING TO MUCOUS MEMBRANCES. INGESTION: MAY BE HARMFUL. EYES: IRRITATION. EXPOSURE CAN CAUSE LIVER DAMAGE. NARCOTIC AT HIGH CONCENTRATIONS. IRRITATION, NARCOTIC.
Label Name: CHEM SERVICE INC

Label Street: 660 TOWER LN
Label P.O. Box: 3108
Label City: WEST CHESTER
Label State: PA
Label Zip Code: 19381-3108
Label Country: US
Label Emergency Number: 215-692-3026/800-452-9994

CHEM SERVICE -- F30 TRANS-1,2-DICHLOROETHENE
MATERIAL SAFETY DATA SHEET
NSN: 655000F037529
Manufacturer's CAGE: 8Y898
Part No. Indicator: A
Part Number/Trade Name: F30 TRANS-1,2-DICHLOROETHENE

General Information

Company's Name: CHEM SERVICE INC
Company's Street: 660 TOWER LN
Company's P. O. Box: 3108
Company's City: WEST CHESTER
Company's State: PA
Company's Country: US
Company's Zip Code: 19381-3108
Company's Emerg Ph #: 215-692-3026/800-452-9994
Company's Info Ph #: 215-692-3026/800-452-9994
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SE
Date MSDS Prepared: 28APR92
Safety Data Review Date: 15DEC94
Preparer's Company: CHEM SERVICE INC
Preparer's St Or P. O. Box: 660 TOWER LN
Preparer's City: WEST CHESTER
Preparer's State: PA
Preparer's Zip Code: 19381-3108
MSDS Serial Number: BWJGZ

Ingredients/Identity Information

Proprietary: NO
Ingredient: TRANS-1,2-DICHLOROETHYLENE, TRANS-1,2-DICHLOROETHENE
Ingredient Sequence Number: 01
NIOSH (RTECS) Number: KV9400000
CAS Number: 156-60-5
OSHA PEL: 200 PPM
ACGIH TLV: 200 PPM

Physical/Chemical Characteristics

Appearance And Odor: COLORLESS LIQUID W/FRUITY/PLEASANT ODOR.
Boiling Point: 118.4F
Melting Point: -58F
Solubility In Water: SLIGHT

Fire and Explosion Hazard Data

Flash Point: 39.2F
Lower Explosive Limit: 9.7
Upper Explosive Limit: 12.8
Extinguishing Media: CO2, DRY CHEMICAL POWDER/SPRAY.
Unusual Fire And Expl Hazrds: FLAMMABLE CHEMICAL.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): AIR, HEAT, MOISTURE, LIGHT.
Materials To Avoid: STRONG OXIDIZING AGENTS.
Hazardous Decomp Products: TOXIC FUMES/CO/CO2/HYDROGEN CHLORIDE GAS.

DECOMPOSITION PRODUCTS ARE CORROSIVE.
Hazardous Poly Occur: NO

Health Hazard Data

LD50-LC50 Mixture: ORAL LD50 (RAT/MOUSE): 7536 MG/KG
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: INHALATION: HARMFUL/RESPIRATORY TRACT IRRITATION. SKIN: HARMFUL IF ABSORBED/IRRITATION. EXPOSURE CAN CAUSE CNS DEPRESSION.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NONE
Signs/Symptoms Of Overexp: IRRITATION.
Emergency/First Aid Proc: EYES: FLUSH CONTINUOUSLY W/WATER FOR 15-20 MINS. SKIN: FLUSH W/WATER FOR 15-20 MINS. IF NOT BURNED, WASH W/SOAP & WATER TO CLEANSE. INHALATION: REMOVE TO FRESH AIR. GIVE CPR/OXYGEN IF NEEDED. KEEP WARM & QUIET. INGESTION: DON'T GIVE LIQUIDS/INDUCE VOMITING IF UNCONSCIOUS/CONVULSIVE. IF VOMITING OCCURS, WATCH CLOSELY TO AVOID AIRWAY OBSTRUCTION. OBTAIN MEDICAL ATTENTION IN ALL CASES.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: EVACUATE AREA. WEAR APPRORPRIATE OSHA REGULATED EQUIPMENT. VENTILATE AREA. ABSORB ON VERMICULITE/SIMILAR MATERIAL. SWEEP UP & PLACE IN APPROPRIATE CONTAINER/HOLD FOR DISPOSAL. WASH CONTAMINATED SURFACES TO REMOVE ANY RESIDUES.
Waste Disposal Method: BURN IN A CHEMICAL INCINERATOR EQUIPPED W/AN AFTERBURNER & SCRUBBER IAW/FEDERAL, STATE & LOCAL REGULATIONS.
Precautions-Handling/Storing: STORE IN A COOL DRY PLACE ONLY W/COMPATIBLE CHEMICALS. KEEP TIGHTLY CLOSED. STORE UNDER REFRIGERATION. FOR LABORATORY USE ONLY.
Other Precautions: AVOID CONTACT W/SKIN, EYES & CLOTHING. DON'T BREATH VAPORS. CONTACT LENSES SHOULDN'T BE WORN IN THE LABORATORY. ALL CHEMICALS SHOULD BE CONSIDERED HAZARDOUS. AVOID DIRECT PHYSICAL CONTACT.

Control Measures

Respiratory Protection: WEAR APPROPRIATE OSHA/MSHA APPROVED SAFETY EQUIPMENT.
Ventilation: CHEMICAL SHOULD BE HANDLED ONLY IN A HOOD.
Eye Protection: EYE SHIELDS
Work Hygienic Practices: REMOVE/LAUNDER CONTAMINATED CLOTHING BEFORE REUSE. READILY ABSORBED & RETAINED ON CLOTHING & SHOES.

Transportation Data

Disposal Data

Label Data

Label Required: YES
Label Status: G
Common Name: F30 TRANS-1,2-DICHLOROETHENE
Special Hazard Precautions: INHALATION: HARMFUL/RESPIRATORY TRACT IRRITATION. SKIN: HARMFUL IF ABSORBED/IRRITATION. EXPOSURE CAN CAUSE CNS

Please reduce your browser font size for better viewing and printing.

MSDS Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865

MALLINCKRODT J.T.Baker

24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 202-483-7616

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

CARBON TETRACHLORIDE

MSDS Number: C0979 --- *Effective Date: 12/08/96*

1. Product Identification

Synonyms: Tetrachloromethane, carbon tet, carbon chloride
CAS No.: 56-23-5
Molecular Weight: 153.84
Chemical Formula: CCl4

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Carbon tetrachloride	56-23-5	99 - 100%	Yes

3. Hazards Identification

Emergency Overview

MAY BE FATAL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. SUSPECT CANCER HAZARD. MAY CAUSE CANCER. Risk of cancer depends on level and duration of exposure. AFFECTS CENTRAL NERVOUS SYSTEM, LUNGS, LIVER AND KIDNEYS.

J.T. Baker SAF-T-DATA(tm) Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Cancer Causing)
Flammability Rating: 0 - None
Reactivity Rating: 1 - Slight
Contact Rating: 3 - Severe (Life)
Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES
Storage Color Code:
Blue (Health)

Potential Health Effects

Inhalation:
Inhalation has a narcotic effect. Symptoms include headache, dizziness, nausea and dullness. Following exposures of high concentrations, victim may become unconscious, and if exposure is not terminated, death can result from respiratory failure.

Ingestion:
Abdominal pain, vomiting, diarrhea, visual disturbances, dizziness and unconsciousness can occur. Severe gastrointestinal upset progressing to serious kidney and liver damage can occur. Death can occur immediately or be delayed for as much as one week.

Skin Contact:
Can be absorbed through skin, with symptoms paralleling ingestion exposure. A dermatitis may be produced following long or repeated contact. Skin oils are removed upon contact, and the skin becomes red, cracked, and dry.

Eye Contact:
Severe irritant as vapor or liquid. Symptoms of burning and intense irritation occur.

Chronic Exposure:
Affects nervous system. Delayed effects from exposure include damage to the heart, liver and kidneys. Repeated or prolonged exposures may cause skin irritation, optic nerve damage with possible blindness, and hearing loss. Symptoms of darkened urine and liver cirrhosis have been reported.

Aggravation of Pre-existing Conditions:
Persons with pre-existing skin disorders or eye problems, or impaired liver, kidney or respiratory function may be more susceptible to the effects of the substance.

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4. First Aid Measures

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion:
Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact:
Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Note to Physician:
To minimize hepatorenal damage, consider intravenous acetylcysteine. Hyperbaric oxygen is also utilized for significant exposures. Dialysis has also been suggested in severe cases. Give cardiorespiratory support as indicated and carefully monitor fluid and electrolytes. Closely monitor hepatic and renal functions. Avoid epinephrine because of myocardial sensitization and potential for inducing ventricular arhythymias.

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5. Fire Fighting Measures

Fire:
Not considered to be a fire hazard. Under fire conditions, produces hydrochloric acid and phosgene.

Explosion:
Not considered to be an explosion hazard.

Fire Extinguishing Media:
Use any means suitable for extinguishing surrounding fire.

Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

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6. Accidental Release Measures

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7. Handling and Storage

Keep in a tightly closed container. Protect from physical damage. Store in a cool, dry,

ventilated area away from sources of heat, moisture and incompatibilities. Wear special protective equipment (Sec. 8) for maintenance break-in or where exposures may exceed established exposure levels. Wash hands, face, forearms and neck when exiting restricted areas. Shower, dispose of outer clothing, change to clean garments at the end of the day. Avoid cross-contamination of street clothes. Wash hands before eating and do not eat, drink, or smoke in workplace. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

---

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
- OSHA Permissible Exposure Limit (PEL): 10 ppm (TWA); ceiling = 25 ppm, maximum 200 ppm (5-minute maximum peak in any 4 hours); - ACGIH Threshold Limit Value (TLV): 5 ppm (TWA), 10 ppm (STEL), skin; A2 suspected human carcinogen - NIOSH Recommended Expoisure Limits (RELs): 2 ppm, 60-minute (STEL).

Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):
If the exposure limit is exceeded, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus.

Skin Protection:
Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:
Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

---

9. Physical and Chemical Properties

Appearance:
Clear, colorless liquid.

Odor:
Ether odor.

Solubility:
Negligible in water.

Specific Gravity:
1.59 @ 20C(68F)

pH:
No information found.

% Volatiles by volume @ 21C (70F):
100

Boiling Point:
76.8C (171F)

Melting Point:
-23C (-9F)

Vapor Density (Air=1):
5.3

Vapor Pressure (mm Hg):
91 @ 20C (68F)

Evaporation Rate (BuAc=1):
No information found.

---

10. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:
May produce carbon monoxide, carbon dioxide, hydrogen chloride and phosgene when heated to decomposition.

Hazardous Polymerization:
Will not occur.

Incompatibilities:
Reacts violently with fluorine gas, alkali metals, and aluminum. Incompatible with chemically active metals such as sodium, potassium, and magnesium. Will attack some forms of plastics, rubber, and coatings.

Conditions to Avoid:
Heat, flames, ignition sources and incompatibles.

---

11. Toxicological Information

Oral rat LD50: 2350 mg/kg; skin rat LD50: 5070 mg/kg. Oral rat LD50: 2350 mg/kg; Inhalation rat LC50: 8000 ppm/4H; Skin rabbit LD50: >20 gm/kg; Irritation data, rabbit - std Draize: skin 4 mg, mild; eye 500 mg/24H, mild. Investigated as a tumorigen, mutagen, reproductive effector.

--------\Cancer Lists\----------

Ingredient	---NTP Carcinogen--- Known	Anticipated	IARC Category
Carbon tetrachloride (56-23-5)	No	Yes	2B

---

12. Ecological Information

Environmental Fate:
When released into the soil, this material may leach into groundwater. When released into the soil, this material is expected to quickly evaporate. When released to water, this material is expected to quickly evaporate. This material has an experimentally-determined bioconcentration factor (BCF) of less than 100. This material is not expected to significantly bioaccumulate. When released into the air, this material is expected to have a half-life of greater than 30 days.

Environmental Toxicity:
No information found.

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13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

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14. Transport Information

Not regulated.

---

15. Regulatory Information

--------\Chemical Inventory Status - Part 1\----------

Ingredient	TSCA	EC	Japan	Australia
Carbon tetrachloride (56-23-5)	Yes	NE*	Yes	Yes

Ingredient	Korea	--Canada-- DSL	NDSL	Phil.
Carbon tetrachloride (56-23-5)	Yes	Yes	No	Yes

*NE - Not Evaluated

Ingredient	-SARA 302- RQ	TPQ	------SARA 313------ List	Chemical Catg.
Carbon tetrachloride (56-23-5)	No	No	Yes	No

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Carbon tetrachloride (56-23-5)	10	U211	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No
Reactivity: No (Pure / Liquid)

Prop 65:
THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

Australian Hazchem Code: 2Z
Poison Schedule: S7

WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

---

16. Other Information

Health: 3 **Flammability:** 0 **Reactivity:** 0

Label Hazard Warning:
DANGER! MAY BE FATAL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. SUSPECT CANCER HAZARD. MAY CAUSE CANCER. Risk of cancer depends on level and duration of exposure. AFFECTS CENTRAL NERVOUS SYSTEM, LUNGS, LIVER AND KIDNEYS.

Label Precautions:
Do not breathe vapor or mist. Do not get in eyes, on skin, or on clothing. Keep container

closed. Use only with adequate ventilation. Wash thoroughly after handling.

Label First Aid:
If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Get medical attention immediately.

Product Use:
Laboratory Reagent

Revision Information:
New 16 section MSDS format, all sections have been revised.

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