



**CITY OF MADISON
ZONING BOARD OF APPEALS
VARIANCE APPLICATION**

\$300 Filing Fee

Ensure all information is **typed** or legibly **printed** using blue or black ink.

Address of Subject Property: 110 South Paterson Street

Name of Owner: Madison Water Utility

Address of Owner (if different than above): 119 East Olin Avenue
Madison, WI 53713

Daytime Phone: 608-266-4651 Evening Phone: _____

Email Address: _____

Name of Applicant (Owner's Representative): Al Larson

Address of Applicant: See Above

Daytime Phone: 608-266-⁴⁶⁵³4651 Evening Phone: 608-225-9131

Email Address: ALarson@madisonwater.org

Description of Requested Variance:

Elimination of Interior Parking Lot Landscaping - 28.142 (7) (a).

(See reverse side for more instructions)

FOR OFFICE USE ONLY

Amount Paid: _____	Hearing Date: _____
Receipt: _____	Published Date: _____
Filing Date: <u>4/23/15</u>	Appeal Number: _____
Received By: <u>JEM</u>	GQ: <u>WP-24</u>
Parcel Number: <u>0709-134-1101-6</u>	Code Section(s): <u>28.142 (b) (a) - Islands</u>
Zoning District: <u>TE</u>	_____
Alder District: <u>6 - RUMMEL</u>	_____

Standards for Variance

The Zoning Board of Appeals shall not grant a variance unless it finds that the applicant has shown the following standards are met:

1. There are conditions unique to the property of the applicant that do not apply generally to other properties in the district.

This parcel is a contaminated site with an oil plume. Part of its deed restrictions mandates it to maintain a capped site. Interior parking tree islands would violate these restrictions set forth by the Department of Natural Resources.

2. The variance is not contrary to the spirit, purpose, and intent of the regulations in the zoning district and is not contrary to the public interest.

The purpose of the code is to reduce the negative environmental effect of the development. Pervious landscaped areas would disturb the oil plume, and therefore would create a negative environmental effect.

3. For an area (setbacks, etc) variance, compliance with the strict letter of the ordinance would unreasonably prevent use of the property for a permitted purpose or would render compliance with the ordinance unnecessarily burdensome.

The use of the area is sited for parking for the Operations Center. This center currently employs 65 people. Abandoning the back lot for parking, would put us in violation of the required zoning parking requirements for this Employment zoned facility. The intent of this parking lot is to provide 39 employee, vehicle parking spaces and 4 bicycle racks.

4. The alleged difficulty or hardship is created by the terms of the ordinance rather than by a person who has a present interest in the property.

The hardship is created by the conflict of the State of Wisconsin, Department of Natural Resources requirements, the deed restrictions, and the City of Madison Interior Parking Lot Landscaping requirements.

5. The proposed variance shall not create substantial detriment to adjacent property.

The current adjacent properties are mostly industrial in nature (MG&E properties being directly adjacent). This would pose little to no impact on current conditions.

6. The proposed variance shall be compatible with the character of the immediate neighborhood.

This development is not incompatible with the neighboring industrial and eclectic mix of buildings in the area.

Application Requirements

Please provide the following Information (Please note any boxes left unchecked below could result in a processing delay or the Board's denial of your application):

☒	Pre-application meeting with staff: Prior to submittal of this application, the applicant is strongly encouraged to discuss the proposed project and submittal material with Zoning staff. Incomplete applications could result in referral or denial by the Zoning Board of Appeals.
☒	Site plan , drawn to scale. A registered survey is recommended, but not required. Show the following on the site plan (Maximum size for all drawings is 11" x 17"): ☐ Lot lines ☐ Existing and proposed structures, with dimensions and setback distances to all property lines ☐ Approximate location of structures on neighboring properties adjacent to variance ☐ Major landscape elements, fencing, retaining walls or other relevant site features ☐ Scale (1" = 20' or 1" = 30' preferred) ☐ North arrow
☐	Elevations from all relevant directions showing existing and proposed views, with notation showing the existing structure and proposed addition(s). (Maximum size for all drawings is 11" x 17")
☐	Interior floor plan of existing and proposed structure , when relevant to the variance request and required by Zoning Staff (Most additions and expansions will require floor plans). (Maximum size for all drawings is 11" x 17")
☐	Front yard variance requests only. Show the building location (front setback) of adjacent properties on each side of the subject property to determine front setback average.
☐	Lakefront setback variance requests only. Provide a survey prepared by a registered land surveyor showing existing setbacks of buildings on adjacent lots, per MGO 28.138.
☐	Variance requests specifically involving slope, grade, or trees. Approximate location and amount of slope, direction of drainage, location, species and size of trees.
☒	CHECK HERE. I acknowledge any statements implied as fact require supporting evidence.
☒	CHECK HERE. I have been given a copy of and have reviewed the standards that the Zoning Board of Appeals will use when reviewing applications for variances.

Owner's Signature: _____

Date: 4/21/15

----- (Do not write below this line/For Office Use Only) -----

DECISION

The Board, in accordance with its findings of fact, hereby determines that the requested variance for _____ **(is) (is not)** in compliance with all of the standards for a variance. Further findings of fact are stated in the minutes of this public hearing.

The Zoning Board of Appeals: ☐ Approved ☐ Denied ☐ Conditionally Approved

Zoning Board of Appeals Chair: _____

Date: _____



**Madison Water Utility – Paterson Operations Center
Additions and Remodeling**

110 South Paterson Street

Project Summary

The proposed project development is to provide safer and more appropriate spaces for the existing Madison Water Utility Paterson Operations Center. Currently, the site and structures are used for administrative offices, workshops and staging of work crews, and maintenance of Water Utility construction vehicles. The Water Utility currently employs 65 people; the new, enhanced facility should accommodate 80 employees. This facility typically operates from 7am to 4pm. However, during the busy season (main breaks in the winter and well repairs in summer), there are many 24-hour-operation days.

The existing facility comprises 28,000 sf. The project includes demolition of the existing vehicle maintenance bays and offices (8,900 sf). New, replacement construction is to provide enhanced vehicle maintenance areas, employee support spaces, and administrative areas (22,700 sf). Remodeling and minor addition to the existing two-and-half story building is to provide enhanced workshop space (7,100 sf).

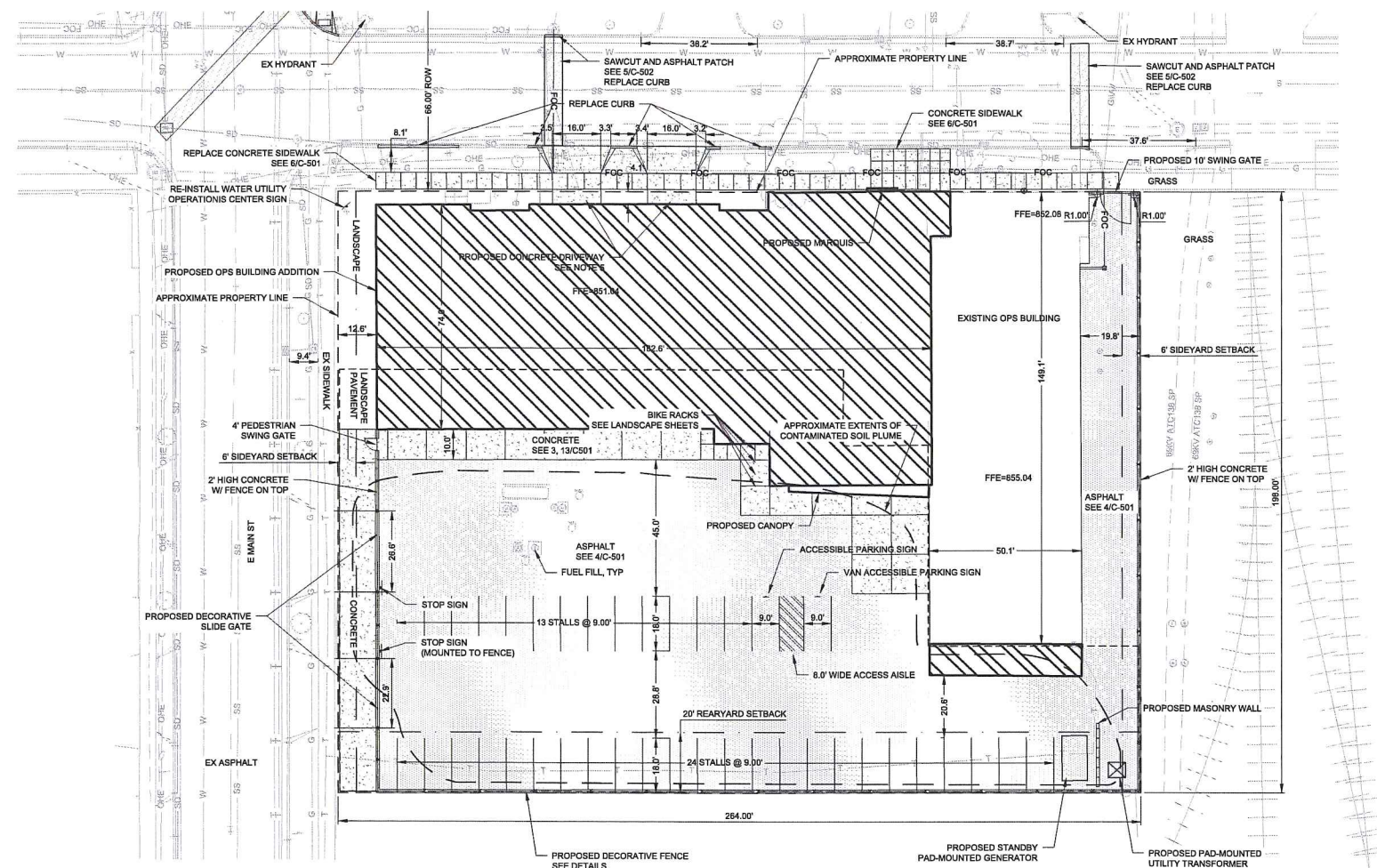
Site development is to include re-paving the existing parking lot, new fence line, site lighting, and a new landscape terrace at the corner of Paterson and Main. The site design shall provide 39 parking spaces, and 4 bike racks. The existing lot coverage is 98.9% impervious or building covered, with only 592 sf. The proposed project would provide 1,222 sf of landscaped, pervious area, which provides 97.6% lot coverage. No usable open space is calculated, as it is not a residential use. Being a capped site with an underground oil plume, additional landscaped areas at grade are not advised.

The project schedule is anticipating a public bid to be released in July 2015, and bid opening in August 2015. This would allow for a construction start in October 2015. The phased construction, with shifting owner-occupied areas, is anticipated to take 20 months and would be complete in August 2017.

The current assessed value of land is \$0.00, as a city property. The estimated project cost is \$8.5 million. Based on \$1 million dollars of construction activity creating 6.8 direct construction jobs and 4.9 indirect construction jobs, the project should create 99.5 jobs. This project is funded by the public entity of the Madison Water Utility and is to be financed through the Utility Capital Budget.







SITE IMPROVEMENTS PLAN NOTES:

1. LOT LINES ARE NOT MEASURED OR FIELD VERIFIED AND ARE SHOWN AS RECORDED ON THE ORIGINAL PLAT OF THE CITY OF MADISON. ALL TOPOGRAPHIC DATA IS REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM.
2. 40 TOTAL PARKING STALLS.
3. 2 ADA PARKING STALLS.
4. ESTIMATED EXTENT OF CONTAMINATED SOIL EXCEEDING NR 720 GENERIC RCLs FROM DEED RESTRICTION, ATTACHMENT A DATED 7/2/2003, DOCUMENT # 9770078.
5. FOR ALL CONCRETE IN DRIVEWAY INCLUDING CONCRETE SIDEWALK, CONSTRUCT ACCORDING TO DETAILS #3 AND #13, SHEET C-501.
6. ANY PAVEMENT DAMAGED DURING CONSTRUCTION MUST BE REPLACED BY CONTRACTOR AT NO EXPENSE TO OWNER.
- 7.

LEGEND:

- ESTIMATED EXTENTS OF SOIL CONTAMINATION, SEE NOTE 4.
- - - PROPOSED BOUNDARY OF SURFACE CAP
- SIGN (SINGLE POST)
- ⊞ STORM INLET, CURB
- ⊞ STORM INLET, ROUND
- ⊞ STORM INLET, SQUARE
- ⊞ STORM SEWER MANHOLE
- ↑ TRAFFIC FLOW DIRECTION
- G GAS
- OHE ELECTRIC, OVERHEAD
- E ELECTRIC, UNDERGROUND
- X FENCE
- o HANDRAIL
- - - PROPERTY LINE
- SS SANITARY SEWER
- S SIGNAL CABLE, UNDERGROUND
- SD STORM SEWER / CULVERT
- T TELEPHONE, UNDERGROUND
- TV TV CABLE
- W WATER
- ASPHALT
- CONCRETE

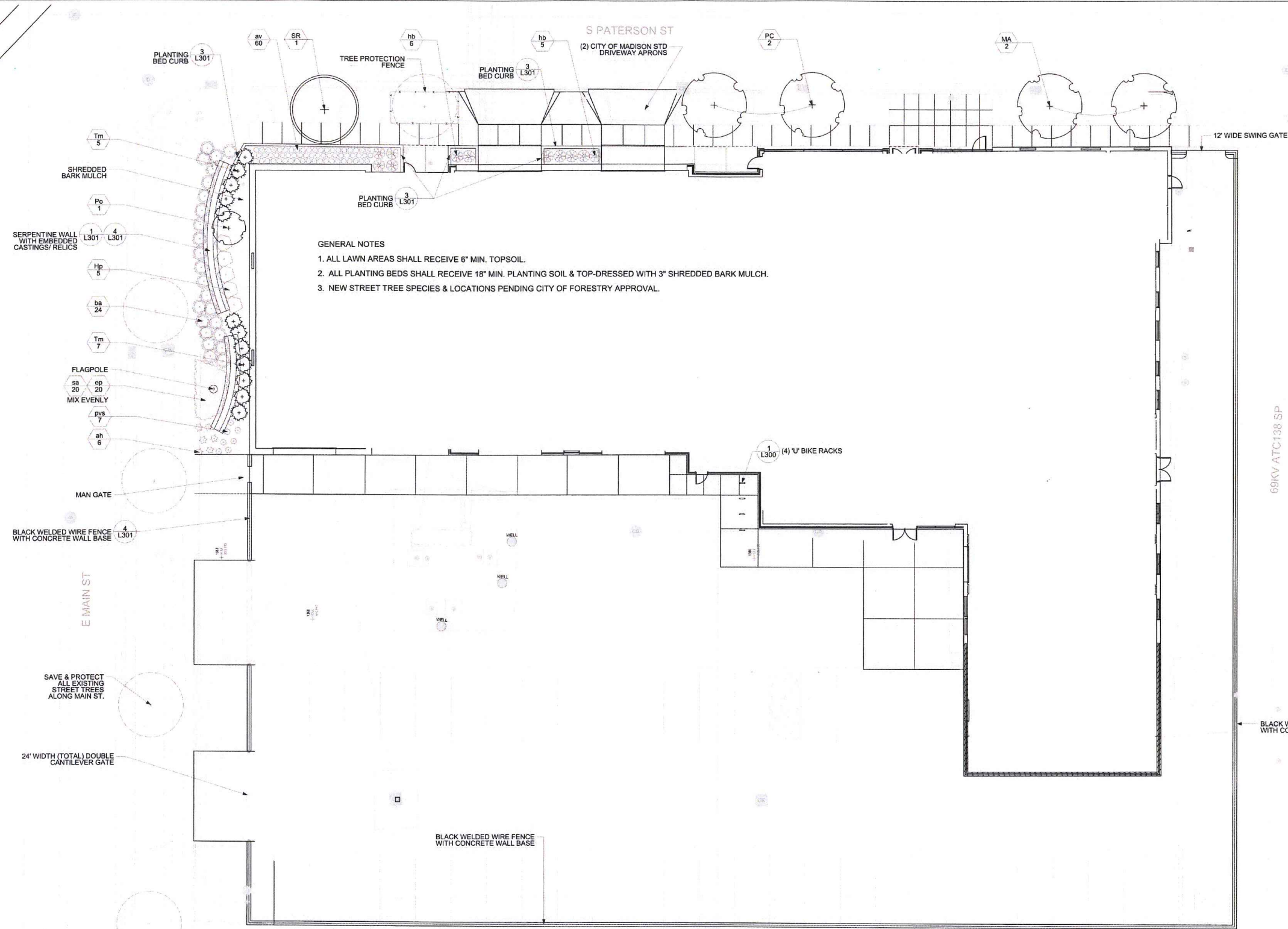
Parking Lot Plan Site Information Block

Site Address: 855 E MAIN ST
 Site acreage (total): 1.20 ACRE
 Number of building stories: 1 (ADDITION)
 Building Height:
 DILHR type of construction: NEW
 Total square footage of building: 14,840 SF
 Use of property: INDUSTRIAL
 Gross square feet of office:
 Number of employees in warehouse:
 Number of employees in office:
 Number of bicycle stalls shown: 8
 Number of parking stalls shown: 40
 Small car: 0
 Large car: 38
 Accessible: 2
 Total: 40
 Number of trees: 8



MADISON WATER UTILITY
Paterson Street Operations Center
 SITE IMPROVEMENTS PLAN
 22 April 2015

**Mead
& Hunt**



- GENERAL NOTES
1. ALL LAWN AREAS SHALL RECEIVE 6" MIN. TOPSOIL.
 2. ALL PLANTING BEDS SHALL RECEIVE 18" MIN. PLANTING SOIL & TOP-DRESSED WITH 3" SHREDDED BARK MULCH.
 3. NEW STREET TREE SPECIES & LOCATIONS PENDING CITY OF FORESTRY APPROVAL.

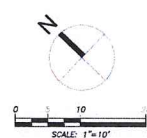
1 LANDSCAPE PLAN
L200

Plant List						
Key	Botanical Name	Common Name	Quantity	Size	Spec	Comments
MA	<i>Maackia amurensis</i> 'Starburst'	Starburst Amur Maackia	2	2" Cal	B&B	Single, straight leader, match specimens, branching shall start at 5'-0" min.
PC	<i>Pyrus calleryana</i> 'Cleveland Select'	Cleveland Select Pear	2	2" Cal	B&B	Single, straight leader, match specimens, branching shall start at 5'-0" min.
SR	<i>Syringa reticulata</i> 'Williamsii'	Ivory Pillar Tree Lilac	1	2" Cal	B&B	Single, straight leader, match specimens, branching shall start at 5'-0" min.
Evergreen Shrubs						
Tm	<i>Taxus media</i> 'Taunton'	Taunton Yew	12	24" Ht.	B&B	Single, straight leader, match specimens
Deciduous Shrubs & Vines						
Hp	<i>Hydrangea paniculata</i> 'Jani'	Little Lime Hydrangea	5	36" Ht.	B&B	Space 4'-0" o.c.
Po	<i>Physocarpus opulifolius</i> 'Dorona May'	Little Devil Ninebark	1	5 gal.	Cont.	Space 5'-0" o.c.
Perennials & Ornamental Grasses						
ah	<i>Asperula hibernica</i> 'Halfway to Arkansas'	Halfway to Arkansas Narrow Leaf Blue Star	6	1 gal.	Cont.	Space 3'-0" o.c.
av	<i>Aichemilia vulgaris</i>	Lady's Mantle	60	1 gal.	Cont.	Space 18" o.c.
ba	<i>Baptisia australis</i>	Blue False Indigo	24	1 gal.	Cont.	Space 3'-0" o.c.
ep	<i>Echinacea x 'Pride of Meadville'</i>	Pride Meadowwhite Coneflower	20	1 gal.	Cont.	Space 18" o.c.
hb	<i>Hosta Blue Angel</i>	Blue Angel Hosta	11	2 gal.	Cont.	Space 3'-0" o.c.
pvs	<i>Panicum virgatum</i> 'Shenandoah'	Shenandoah Switchgrass	7	1 gal.	Cont.	Space 3'-0" o.c.
sa	<i>Sesleria autumnalis</i>	Autumn Moor Grass	20	1 gal.	Cont.	Space 1'-6" o.c.

City of Madison - Landscape Worksheet									
Operations Center Site		Points Req.							
Total Sq. Footage of Developed Area		29,425 sf							
Total No. of Landscape Points Req.		5 per 500 sf of developed area		491					
Plant Type/Element	Minimum Size at Installation	Points	Credit/ Existing Landscaping	New Proposed Landscaping	Quantity	Points Achieved	Quantity	Points Achieved	
Overstory deciduous tree	2 1/2" inch caliper (dbh)	35			0	0	0	0	
Tall evergreen tree (i.e. pine, spruce)	5-6 feet tall	35			0	0	0	0	
Ornamental tree	1 1/2" inch caliper	15			5	75	0	0	
Upright evergreen shrub (i.e. arbovitae)	3-4 feet tall	10			0	0	0	0	
Shrub, deciduous	#3 gallon container size, Min. 12"-24"	3			6	18	0	0	
Shrub, evergreen	#3 gallon container size, Min. 12"-24"	4			12	48	0	0	
Ornamental grasses/ perennials	#1 gallon container size, Min. 6"-18"	2			148	296	0	0	
Ornamental/decorative fencing or wall	na	4 per 10 lin ft			582 lf	2328	0	0	
Existing significant specimen tree	min. 2-1/2" cal.	14 per inch dbh			0	0	0	0	
Landscape furniture for public seating and/or transit connections	publicly accessible	5 per seat			0	0	0	0	
				TOTAL POINTS: 669					



MADISON WATER UTILITY
Paterson Street Operations Center
LANDSCAPE PLAN
22 April 2015



Document Number

DEED RESTRICTION

Paterson

DANE COUNTY
REGISTER OF DEEDS

DOCUMENT #
3770072

07/28/2003 04:30:22PM

Trans. Fee:
Exempt #:

Rec. Fee: 21.00
Pages: 6

005185

Declaration of Restrictions

In Re: Lots 7, 8, 9, 10, 11, and 12 of Block 145, in the City of Madison, according to the recorded plat thereof, located in the Southwest Quarter of the Southeast Quarter of Section 13, Township 7 North, Range 9 East.

STATE OF WISCONSIN

COUNTY OF Dane

WHEREAS, The City of Madison, Wisconsin is the owner of the above-described property.

WHEREAS, one or more petroleum product discharges have occurred on this property, and as of October 5 and 6, 1994, when soil samples were collected on this property, petroleum-contaminated soil remained on this property at the following location: southern half of property (see Attachment A).

WHEREAS, it is the desire and intention of the property owner to impose on the property restrictions which will make it unnecessary to conduct further soil remediation activities on the property at the present time.

NOW THEREFORE, the owner hereby declares that all of the property described above is held and shall be held, conveyed or encumbered, leased, rented, used, occupied and improved subject to the following limitation and restrictions:

The paved surfaces that existed on the above-described property on the date that this restriction was signed form a barrier that must be maintained in order to prevent direct contact with residual soil contamination that might otherwise pose a threat to human health. These structures are also required in order to minimize the infiltration of water and prevent additional groundwater contamination that would violate the groundwater quality standards in ch. NR 140, Wis. Adm. Code. The paved surfaces shall be maintained on the above-described property in the locations shown on the attached map, labeled "Attachment B" unless another barrier, with an infiltration rate of 10^{-7} cm/sec or less, is installed and maintained in their place. The existing paved surfaces, and any replacement barrier with an infiltration rate of 10^{-7} cm/sec or less, shall be maintained on the above-described property in compliance with the attached maintenance plan labeled "Attachment C" dated April 9, 2003, that was submitted to the Wisconsin Department of Natural Resources by the City of Madison, as required by section NR 724.13(2), Wis. Adm. Code (1999).

In addition, the following activities are prohibited on any portion of the above-described property where an impervious cap has been placed or where impervious surfaces exist (see Attachment

Recording Area

Name and Return Address

David Denig-Chakroff
Madison Water Utility
523 East Main Street
Madison, WI 53703

0709-134-1101-6

Parcel Identification Number (PIN)

6/21

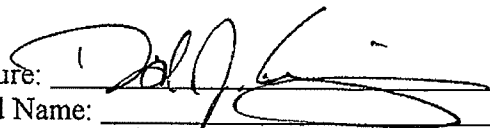
B), unless prior written approval has been obtained from the Wisconsin Department of Natural Resources or its successor or assign: (1) Excavating or grading of the land surface; (2) Filling on capped areas and areas with impervious surfaces; (3) Plowing for agricultural cultivation; and (4) Construction or installation of a building or other structure with a foundation that would sit on or be placed within the cap or impervious surface.

This restriction is hereby declared to be a covenant running with the land and shall be fully binding upon all persons acquiring the above-described property whether by descent, devise, purchase or otherwise. This restriction inures to the benefit of and is enforceable by the Wisconsin Department of Natural Resources, its successors or assigns. The Department, its successors or assigns, may initiate proceedings at law or in equity against any person or persons who violate or are proposing to violate this covenant, to prevent the proposed violation or to recover damages for such violation.

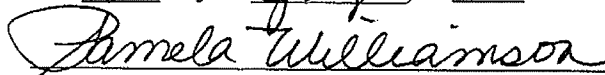
Any person who is or becomes owner of the property described above may request that the Wisconsin Department of Natural Resources or its successor issue a determination that one or more of the restrictions set forth in this covenant is no longer required. Upon the receipt of such a request, the Wisconsin Department of Natural Resources shall determine whether or not the restrictions contained herein can be extinguished. If the Department determines that the restrictions can be extinguished, an affidavit, attached to a copy of the Department's written determination, may be recorded by the property owner or other interested party to give notice that this deed restriction, or portions of this deed restriction, are no longer binding.

By signing this document, Dave Cieslewicz asserts that he or she is duly authorized to sign this document on behalf of The City of Madison, Wisconsin.

IN WITNESS WHEREOF, the owner of the property has executed this Declaration of Restrictions, this 10th day of July, 2003.

Signature: 
 Printed Name: _____
 Title: Mayor

Subscribed and sworn to before me
 this 10th day of July, 2003.


 Notary Public, State of _____
 My commission expires 2-12-2006

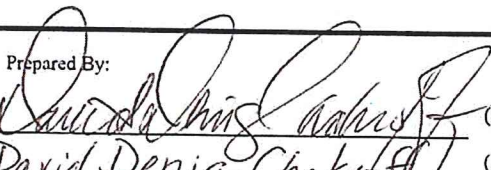
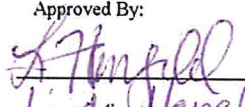
This document was drafted by Gannett Fleming, Inc., with assistance from the Wisconsin Department of Natural Resources.

ATTACHMENT C
MAINTENANCE PLAN FOR SURFACE CAP
110 SOUTH PATERSON STREET
PARCEL NO. 0709-134-1101-6
(WDNR BRRTS CASE NO. 03-13-000045)

The owner of the property shall maintain the existing surface cap shown on Attachment B in such a manner as to prevent, to the extent practicable, the infiltration of storm water runoff into the soils in the areas of documented residual soil contamination. The areas of documented residual soil contamination are shown on the Deed Restriction included in Attachment A.

Maintenance of the cap shall consist of, but not be limited to, annual visual inspections to assess the integrity of the cap. Cracks, holes, erosion, or any other failure of the cap that will permit the infiltration of storm water shall be repaired as soon as possible after discovery.

A brief statement signed by the property owner stating the results of the annual inspection and any remedial measures taken shall be prepared annually and kept on file. Names and phone numbers of contractors used and dates of surface cap repair and/or maintenance shall be included in the annual statements. Statements shall be made available to the WDNR on request.

Prepared By: <u></u> (SIGNATURE) <u>David Denig-Chakroff</u> (PRINTED NAME) <u>General Manager</u> (TITLE) City of Madison <u>03/10/03</u> (DATE)	Approved By: <u></u> (SIGNATURE) <u>Linda Hanefeld</u> (PRINTED NAME) <u>Hydrogeologist</u> (TITLE) Wisconsin Department of Natural Resources <u>9 April 03</u> (DATE)
---	---

AJA 7/28/03

AGENDA # _____

City of Madison, Wisconsin

005190

A RESOLUTION _____

Authorizing the Mayor and the City Clerk to execute a Deed Restriction on Water Utility property for Lots 7, 8, 9, 10, 11, and 12 of Block 145 in the City of Madison in conjunction with the WDNR requirements for site closure. This property is owned by Madison Water Utility and currently houses the Utility's Operations Center.

Drafted By: Alan L. Larson
Principal Engineer - Water

Date: June 9, 2003

Fiscal Note: No financial requirements.

Sponsors: Ald. Judy Olson
Ald. Jean MacCubbin
(By request of the Board of Water Commissioners)

Aldermanic Dist. No. 6

PRESENTED June 17, 2003
REFERRED Common Council meeting of
July 1, 2003

REREFERRED _____

REPORTED BACK **JUL 01 2003**

ADOPTED ☒ POF _____
RULES SUSPENDED _____
PUBLIC HEARING _____

APPROVAL OF FISCAL NOTE IS NEEDED
BY THE COMPTROLLER'S OFFICE
Approved By

Patricia M. Olsen
Comptroller's Office

RESOLUTION NUMBER **60704**
ID NUMBER **34244**

WHEREAS: Madison Water Utility is finishing the cleanup of the Utility's Operation Center Site at 110 South Paterson Street and has requested site closure from the Wisconsin Department of Natural Resources (WDNR); and

WHEREAS: as a part of this site closure, Madison Water Utility agrees to a set of restrictions on the property; and

WHEREAS: these restrictions shall be attached to the property until removed by WDNR.

NOW, THEREFORE, BE IT RESOLVED: That the Mayor and the City Clerk are authorized to execute a Deed Restriction per WDNR requirements in association with the cleanup of the Utility Operations Center on Lots 7, 8, 9, 10, 11, and 12 of Block 145 in the City of Madison; according to the recorded plat thereof, located in the Southwest Quarter of the Southeast Quarter of Section 13, Township 7 North, Range 9 East.



Madison Water Utility

David Denig-Chakroff, General Manager

523 East Main Street
Madison, Wisconsin 53703
PH: 608 266 4651
FAX: 608 266 4426
water@ci.madison.wi.us

October 27, 2003

Ms. Linda Hanefeld
Dodgeville service Center
Wisconsin Department of Natural Resources
1500 N. Johns Street
Dodgeville, Wisconsin 53533

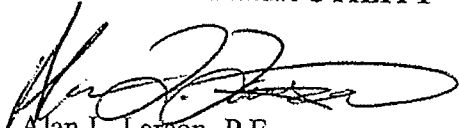
Subject: Deed Restriction for Water Utility Property

Dear Ms. Hanefeld:

Enclosed please find a copy of the recorded deed for our property on Paterson Street. We assume that this will allow you to issue the closure letter for this property and we can finish the project. Please let us know if that is not the case.

Sincerely,

MADISON WATER UTILITY



Alan L. Larson, P.E.
Principal Engineer

cc: Andy Harris -- Gannett Fleming Inc.

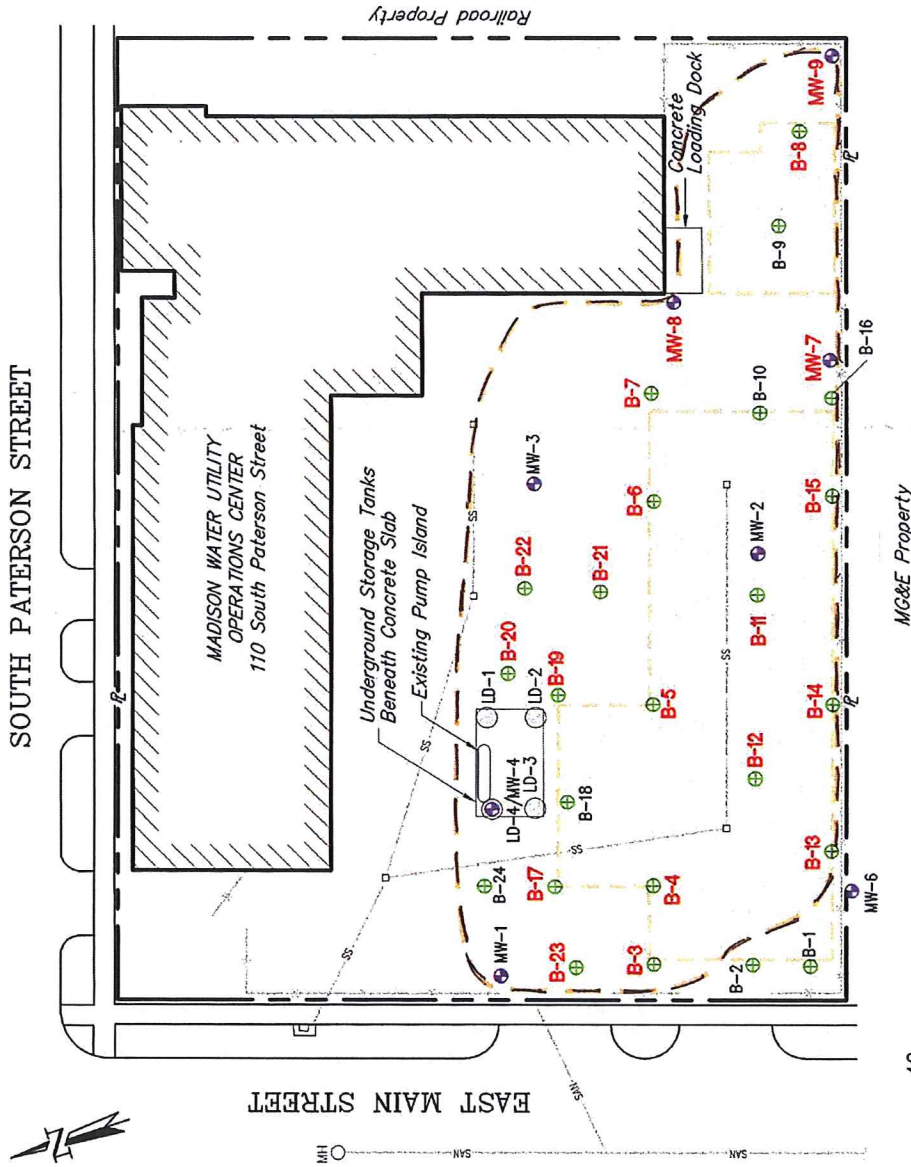


NOTE

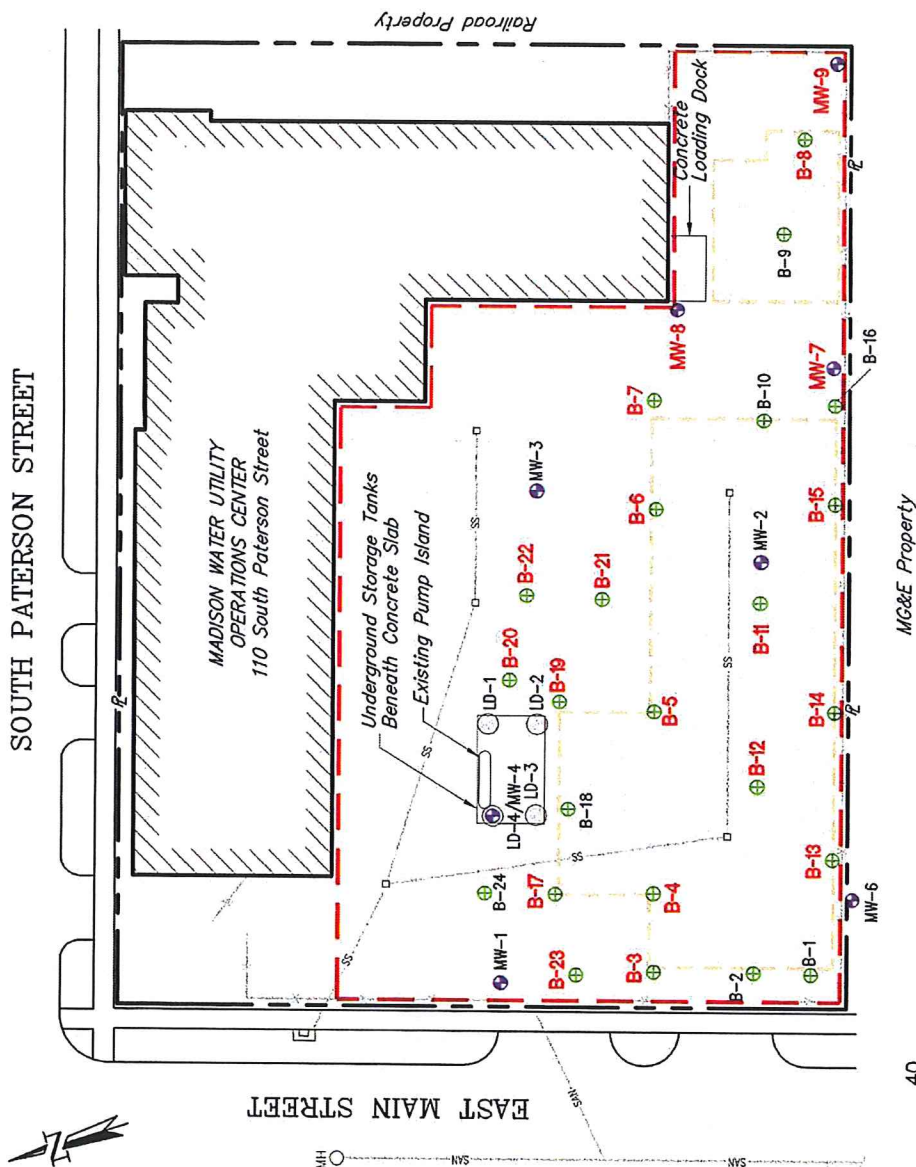
1. SAMPLE LOCATIONS WHERE CONTAMINANT CONCENTRATIONS EXCEED NR 720 GENERIC RCLs ARE IN **BOLD**.

**ESTIMATED HORIZONTAL
EXTENT OF SOIL
CONTAMINATION
(OCTOBER 1994)**
MADISON WATER UTILITY
MADISON, WISCONSIN

003187



Scale In Feet
0 1 40



LEGEND

Proposed Boundary Of
Surface Cap

Former Location Of Aboveground
Storage Tank Systems (Approximate)

Borehole Location (10/94)

Monitoring Well

Leak Detection Well

Storm Sewer Catch Basin

Storm Sewer

Sanitary Sewer

Fence

NOTE

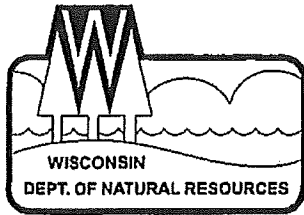
1. SAMPLE LOCATIONS WHERE CONTAMINANT CONCENTRATIONS EXCEED NR 720 GENERIC RCLs ARE IN **BOLD**.

**BOUNDARY OF
REQUIRED
SURFACE CAP**
MADISON WATER UTILITY
MADISON, WISCONSIN

005188

Scale In Feet
0 40

MW-5



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Scott McCallum, Governor
Darrell Bazzell, Secretary
Ruthe E. Badger, Regional Director

South Central Region Headquarters
3911 Fish Hatchery Road
Fitchburg, Wisconsin 53711-5397
Telephone 608-275-3266
FAX 608-275-3338
TDD 608-275-3231

April 23, 2002

File Ref: 03-13-000045

City of Madison Water Utility
523 E. Main St.
Madison WI

SUBJECT: Receipt of Site Closure: Madison Water Utility, 110 S. Patterson St.

Dear Sir or Madam:

On April 22, 2002 the Department received a request for "Site Closure" for the above named site.

Section NR 726.07, Wisconsin Administrative Code, requires the Department to respond within 30 days after receipt of a request for case closure providing an estimated date by which the department intends to issue a determination on case closure.

This letter serves as written acknowledgment of your request for closure. Based on current Department workloads, your closure request will likely be reviewed within 1 to 2 months. NOTE: This is only an estimate, changes in workload may cause unforeseen delays in the review process. The Department will make every effort to review requests in a timely manner.

If you have any questions, please call me at the number listed below.

Sincerely,

Wendy Weikemuller, Program Assistant
Remediation & Redevelopment
Telephone: (608) 275-3212

cc: File

Andrew Harris, Gannett Fleming Inc., 8025 Excelsior Dr. Madison WI 53717

Quality Natural Resources Management
Through Excellent Customer Service





April 19, 2002
File #34490.001

Mr. Mike Schmoller
Wisconsin Department of Natural Resources
South Central Regional Headquarters
3911 Fish Hatchery Road
Fitchburg, WI 53711

Re: Closure Request for Madison Water Utility Operations Center Site
110 S. Paterson St., Madison, Wisconsin
WDNR File Ref: 45 UST - Dane County
BRRS #03-13-000045
PECFA Claim #53703-2901-10

Dear Mike:

On behalf of the City of Madison, Gannett Fleming, Inc. is submitting one copy of the *Case Summary and Close Out Form* (Form NR 4400-202) and required attachments for closure of the Madison Water Utility Operations Center site located at 110 South Paterson Street, Madison, Wisconsin. Checks for \$750 and \$250 are enclosed for closure request review and the GIS Registry fee, respectively.

Soil samples collected in October 1994 at the site prior to remedial activities documented a widespread area with contaminant concentrations exceeding NR 720 soil cleanup standards. In an effort to remediate impacted soils, a bioventing system was operated for about one and one-half years. However, the bioventing blower would not run for extended periods of time because it continued to pull in excessive condensate due to wet conditions. These conditions persisted because it took longer for the groundwater trenches to dewater the site than anticipated. The effectiveness of the bioventing system was likely hindered by the high percentage of fine-grained soils at the site.

The remaining contaminated soil at the site is covered by a concrete and asphalt cap, which minimizes the direct-contact risk associated with impacted soils and prevents further groundwater contamination by preventing the infiltration of storm water.

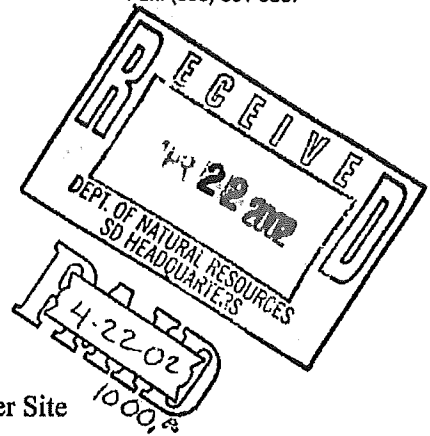
MA\CLERICAL\PROJECTS\34400\34490\Reports\Closeout\IL34490_001.doc

Continued . . .

A Tradition of Excellence Since 1915

Madison Water Utility
03-13-000045

GANNETT FLEMING, INC.
8025 Excelsior Drive
Madison, WI 53717-1900
Office: (608) 836-1500
Fax: (608) 831-3337



Gannett Fleming

Mr. Mike Schmoller
Wisconsin Department of Natural Resources
April 19, 2002

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The groundwater monitoring conducted at this site and the results of Mann-Kendall statistical trend analyses document that the groundwater plume is stable or receding. MW-2 is the only monitoring well on site with contamination exceeding WDNR NR 140 Preventive Action Limits (PALs). A small free product plume remains at MW-2, but it appears to be stable, and its measured thickness has decreased from over 6 inches when monitoring began to less than 1 inch.

Remediation through natural attenuation (RNA) sample results from January 2002 were used to calculate the estimated assimilative capacity (EAC) of the aquifer at the site. The EAC based on the stoichiometry of BTEX degradation is 19.6 mg/l, which is eight times the dissolved-phase BTEX concentration of 2.44 mg/l in MW-2 on January 16, 2001.

Our proposed pathway to closure for soil and groundwater at the site is the maintenance of the existing concrete and asphalt surface cap and natural attenuation, respectively. Proposed institutional controls are a deed restriction for residual soil contamination and listing the site on the GIS Registry for residual groundwater contamination.

The attachments to Form NR 4400-202 include the following items:

Attachment A

- Case History
- Proposed Maintenance Plan for Surface Cap
- Table A-1: Free Product Thickness at MW-2
- Figure A-1: Free Product Thickness at MW-2
- Table A-2: VOCs Analytical Results for City Well No. 24
- Figure A-2: Surface Cap Photos Taken on April 9, 2001

Attachment B

- Figure B-1: Location Map
- Figure B-2: Site Map
- Figure B-4: Pre-Remedial Soil Sample Location Map
- Figure B-5: Pre-Remedial Cross Section
- Figure B-8: Groundwater Sample Location Map
- Figure B-9: Groundwater Contour Map

Gannett Fleming

Mr. Mike Schmoller
Wisconsin Department of Natural Resources
April 19, 2002

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Attachment C

- Table C-1: Pre-Remedial Soil Analytical Results
- Table C-3 (1 of 4): Groundwater Contaminant Chemistry Data for PVOCs
- Table C-3 (2 of 4): Groundwater Monitoring Analytical Results for Regulated Polycyclic Aromatic Hydrocarbons (PAHs) and DRO
- Table C-3 (3 of 4): Natural Attenuation Parameters for Groundwater (January 2002)
- Table C-3 (4 of 4): Estimated Assimilative Capacity of the Aquifer on January 16, 2002
- Table C-4: Groundwater Depth and Elevation Data

Attachment D

- Mann-Kendall Statistical Tests for MW-3, MW-4, and MW-8 (Form 4400-215)

Attachments E and F

- Signed Statement by the Responsible Party and Copy of the Most Recent Deed

Attachment H

- Laboratory Analytical Reports and Chain of Custody Records for Samples Collected Between 10/17/00 and 01/16/02

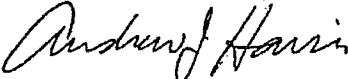
Attachment I

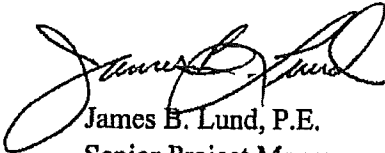
- Geographic Position of Contaminated Site

We look forward to a favorable review from the WDNR for the closure of this site. Please call Jim Lund or me if you have any questions regarding this closure request.

Sincerely,

GANNETT FLEMING, INC.


Andrew J. Harris
Project Engineer


James B. Lund, P.E.
Senior Project Manager

AJH/JBL/reb

cc: Al Larson (Madison Water Utility)

WISCONSIN DEPARTMENT OF NATURAL RESOURCES
Case Summary and Close Out Form

The Case Summary and Close Out Form has been designed by staff in the Bureau for Remediation and Redevelopment to provide responsible parties, environmental consultants, Department staff, and other interested parties with instructions and a checklist of information that must be submitted for evaluation prior to case closure. The closure of a case means that the Department has determined that no further response is required at that time. Various closure options are available within Department rules. Responsible parties and their consultants should specify the options sought for closure for the soils and groundwater at their site. Groundwater quality standards found in ch. NR 140 and soil standards found in ch. NR 720 must generally be met. However, some closure options allow closure where standards are not met, if the site is placed on the GIS Registry of Closed Remediation Sites or if deed restrictions are imposed on impacted properties. The Department may reopen a previously closed case if information regarding site conditions indicates that contamination on or from the site poses a threat to public health, safety or welfare or the environment.

In order to expedite the closure process for your case, you should provide a complete and accurate closure package according to the following instructions. Submit the Case Summary and Close Out Form and required attachments as a stand alone document. **Please do not submit the close out request in a bound report. All maps should be no larger than 8.5 x 14 inches where designated. Also, please do not use shading or highlights on any of the analytical tables, maps or other information as it interferes with scanning documents into our GIS registry.** Instead, you **may use a bold font** on information of importance. The information supplied should succinctly summarize the chronological history of the entire case and should support the justification for closure. Submission of tabulated analytical results from previous reports is acceptable (i.e. it is not necessary to create new tables). However, do not submit previously submitted reports themselves as attachments.

NOTE: Use of this form is required by the Department for any case close out application filed pursuant to ch. 292, Wis. Stats. and ch. NR 726, Wis. Adm. Code. Completion of this form is mandatory for applications for case closure. The Department will not consider, or act upon your application, unless all applicable sections are completed on this form and the closure fee required by ch. NR 749, Wis. Adm. Code, Table 1 is included. It is not the Department's intention to use any personally identifiable information from this form for any purpose other than reviewing close out requests and determining the need for additional response action.

The following items should be included in the order shown (if any item is not included, please attach a justification):

(A) **A Brief, Written Case History, Description of the Remedial Action Taken and Justification for Case Closure** must be included. The Case History should consist of the Executive Summary from the Site Investigation Report, a summary of any investigative activities conducted subsequent to the Site Investigation Report, and a summary of the interim and remedial actions taken at the site. The history should also specify the pathway(s) to closure requested for both the soil and groundwater as specified in item #8 on the form and include a description of any residual contamination in soils or groundwater and location of properties or partial properties within the contamination site boundaries.

(B) Maps to be included with this form:

1. **Regional Location Map** that identifies the site on a USGS topographic map and also identifies locations of all municipal and potable wells within 1200' of the site must be included. The map shall be no larger than 8.5 x 14 inches.
2. **Site Map**, as required by s. NR 726.05(3)(a)(4)b, to scale showing the layout of the buildings, roads contamination sources, utility lines, monitoring and potable wells, property boundaries and other relevant features of all properties within the contamination boundaries. The map shall be no larger than 8.5 x 14 inches.
3. **Copy of Certified Survey Map(s)**, as required by s. NR 716.15(2)(j)(2), or the relevant portion of the recorded plat map for those properties where the legal description in the most recent deed refers to a certified survey map or a recorded plat map. Include the parcel identification number for each property, if the county in which the property is located uses parcel identification numbers. This information must be submitted for all properties within the contaminated site boundaries.
4. **Pre-Remedial Soil Sample Location Map(s)** that depict all soil sample locations and the items listed in Item B.2., above. Note in bold font those sample locations that exceed ch. NR 720 (including free product location) and identify the extent of contamination. Maps should be prepared according to the applicable portions of s. NR 716.15(2)(h)1. You may submit more than one map, for example various contaminant isoconcentration maps. Maps should be no larger than 8.5 x 14 inches.
5. **Pre-Remedial Geologic Cross Section(s)** including source location(s), extent of soil and groundwater contamination, free product location/depth, soil sample locations, water table elevation, and bedrock elevation, if encountered. Maps should be prepared according to the requirements in ss. NR 716.15(2)(g)5-8 and 716.15(2)(h)1-2.

6. **Post-Remedial Soil Sample Location Map(s)** which show the location of all post-remedial soil sample locations, the extent of remedial efforts and the items listed in Item B.2., above. Use bold font to indicate sample locations that exceed ch. NR 720 soil standards, and identify the extent of any remaining contaminated soils by drawing a single contour to identify the horizontal extent of each area of contamination. This should include adjacent affected properties. Maps should be prepared according to the applicable portions of s. NR 716.15(2)(h)1. You may submit more than one map but each one should be no greater than 8.5 x 14 inches.
7. **Post-Remedial Geologic Cross Section(s)** including former source location(s), showing the vertical extent of remaining soil and groundwater contamination, soil sample locations, extent of excavation, water table elevation, and bedrock elevation, if encountered. Maps should be prepared according to ss. NR 716.15(2)(g)5-8 and 716.15(2)(h)1-2 and should not be greater than 8.5 x 14 inches.
8. **Groundwater Sample Location Map(s)** which show the locations of the items from B.2., above, and all of the monitoring wells, sumps, extraction wells, and potable wells. Use bold font to indicate those wells that have PAL or ES exceedances in the most recent round of sampling (differentiate between PAL and ES). Maps should be prepared according to the applicable portions of ss. NR 716.15(2)(h)1 and 726.05(3)(a)4 d. You may submit one or more maps that include the pre-remedial extent of groundwater contamination, post-remedial extent of groundwater contamination, and isoconcentration maps.
9. **Groundwater Contour Map(s)** which show the historical changes in direction, elevation and/or gradient. Provide one map if data is consistent over time. Maps should be prepared according to the applicable portions of ss. NR 716.15(2)(g)5-8 and 716.15(2)(h)1-2.

(C) Tables to include:

1. **Pre-Remedial Soil Analytical Results Table(s)** that show the results for all contaminants analyzed and sample depths of all of the pre-remedial soil samples (i.e. tank pull, site investigation, etc.). If more than one table, please put them in chronological order. Use bold font to note those results that exceed the ch. NR 720 soil standards. Provide the level of detection for results which are below the detection level (i.e. do not just list as ND). Identify the depth of the water table. All data must be in table format as specified in ss. NR 716.15(2)(g)3 and 716.15(2)(h)3, (i.e. do not submit lab data sheets unless they have not been submitted in a previous report).
2. **Post-Remedial Soil Analytical Results Table(s)** that show the results for all contaminants analyzed and sample depths of all of the post-remedial soil samples. Use bold font to indicate those results that exceed ch. NR 720 soil standards. Provide the level of detection for analytical results which are below the detection level (i.e. do not just list as ND). Identify the depth of the water table. Document free product recovery results as required in s. NR 708.15. All data must be in table format as identified in ss. NR 716.15(2)(g)3 and 716.15(2)(h)3, (i.e. do not submit lab data sheets unless they have not been submitted in a previous report).
3. **Groundwater Analytical Results Table(s)** showing all of the site's historical groundwater results for all contaminants analyzed in chronological order. Use bold font to indicate those results which exceeded ch. NR 140 (differentiate between PAL and ES exceedances). All data must be in table format as identified in ss. NR 716.15(2)(g)3 and 716.15(2)(h)3, (i.e. do not submit lab data sheets unless they have not been submitted in a previous report). Differentiate between pre-remedial, remedial and post-remedial samples (i.e. identify when the groundwater remediation system was active/inactive) and provide dates that samples were collected.
4. **Groundwater Elevations Table** which shows all of the site's historical groundwater elevations for each well in chronologic order. Also indicate the elevations of the top and bottom of the screened interval for each well.

(D) Graphs and Statistical Analyses which demonstrate the dynamics of the groundwater plume, for sites requesting closure using Natural Attenuation under s. NR 726.05(2)(b). Refer to WDNR Publication RR-614 for guidance.

(E) Copy of most recent deed that includes the legal description of the source property, and copies of the legal descriptions for all properties affected. Where a public street or highway right of way has groundwater contamination above the ES, provide evidence that notice has been given to the Clerk of the town and county, or village or city where the right of way is located, and municipal department or state agency responsible for maintaining that street or highway.

(F) Provide a statement signed by the RP that the legal descriptions of all properties within or partially within the contaminated site boundaries are attached to the statement.

(G) Provide a copy of the letter(s) as required by s. NR 726.05(3)(a)(4)(g), sent by the RP to all landowners whose property has groundwater contamination that exceeds NR 140 Enforcement Standards. Letters must contain standard provisions of Appendix A of ch. NR 726.

I certify that, to the best of my knowledge, the information presented on and attached to this form is true and accurate. This recommendation for case closure is based upon all available data as of 04/19/02 (date). I have read the Case Summary and Close Out Form Instructions and all required information has been included.

Form Completed By:

☒ Closeout Review Fee Attached
☒ GW Registry fee attached

(Signature)

(Date)

Printed Name: Andrew J. Harris

Company Name: Gannett Fleming, Inc.

Email address: aharris@gfnet.com

If not site owner, relationship to site owner: Consultant

Address: 8025 Excelsior Drive, Madison, WI 53717

Telephone Number: (608) 836-1500

FAX Number: (608) 831-3337

Environmental Consultant (if different then above):

Address:

Telephone Number: ()

FAX Number: ()

1. SITE LOCATION & ZONING

WDNR Site Name: Madison Water Utility Operations Center, 110 S. Paterson St., Madison, WDNR File Ref: 45 UST-Dane Cty

Complete Site Address: 110 South Paterson Street, Madison, Wisconsin

WDNR BRRTS Case #:

FID #:

PECFA Claim #: 5 3 7 0 3 - 2 9 0 1 - 1 0

Responsible Party Name: City of Madison Water Utility

Complete Responsible Party Address: 523 East Main Street

Site Legal Description: SW 1/4, SE 1/4, Section 13, T 7 N, R 9E (E/W) Town: Madison

County: Dane

Latitude: 43 ° 4 ' 5 2 . 4 "

Longitude: 89 ° 22 ' 2 0 . 0 "

GIS Coordinates obtained: on site using GPS Locator converted or projected onto WMTM '91
using RR GIS Registry on screen digitizing to get WMTM coordinates

Date of Incident/Discovery: 08/1998 1988

Contaminant Type(s): GRO, PVOCs, DRO, PAHs

Quantity Released: Unknown

Post remedial Zoning Classification: Industrial
(do not abbreviate zoning terms)

2. RECEPTORS

Identify all pre-remedial potential and actual receptors, the potential risk and their locations (i.e. both on and off site utility corridors, basements or sumps of nearby buildings, direct contact threat from soil, water supplies, surface waters, sediments, etc.) (For definition, refer to s. NR 700.03 (47), Wis. Adm. Code):

The City of Madison Water Utility operates two drinking water supply wells (#24 at 101 North Livingston Street and #17 at 201 South Hancock Street) that are in the vicinity of the site.

Have the remedial actions abated the potential or actual impacts to these receptors? ☒ Yes ☐ No

If no, provide details in case summary.

If yes, please identify the nature of the remaining risk and the receptor at risk: Remaining risk is minimal as the plume has diminished and the entire site is paved, which minimizes the migration of contaminated groundwater.

3. SOIL INVESTIGATION INFORMATION

Extent Defined? ☒ Yes ☐ No If not, explain Why? _____

Soil Type(s): Sand and gravel fill and clayey silt Depth of Contamination: 4.5 feet bgs

Type of Bedrock: Sandstone Depth to Bedrock: 125 feet (approx.)

Is any contaminated soil (unsaturated or saturated) in contact with the bedrock? ☐ Yes ☒ No

List all contaminants found in soil (regardless of ch. NR 720 standards/attach table if necessary)

Benzene; Ethylbenzene; MTBE; Toluene; 1,2,4-TMB; 1,3,5-TMB; Xylenes; GRO; DRO

Measurable Free Product? ☒ Yes ☐ No Depth/ Location: On water table surface at MW-2

4. SOIL REMEDIATION INFORMATION

Remedial Action Completed? ☒ Yes ☐ No s. NR 720.19 Analysis? ☐ Yes ☒ No If yes, attach supporting documentation.

Were Immediate or Interim Actions Conducted? ☐ Yes ☒ No If yes, what action was taken? _____

Brief Description of Remedial Action Taken: Installation and operation of an SVE system.

Were Soils Excavated? ☒ Yes ☐ No Quantity: 980 tons Disposal Method: Madison Prairie Landfill

Final Confirmation Sample Collection Methods: No soil samples collected. Residual impacted soils are covered by concrete/asphalt.

Final Soil/Drill Cuttings Disposal Location: N/A

Estimated volume and depth of in situ soils exceeding ch. NR 720 Table RCLs or site specific RCLs: 3,500 cu. yds.; 4.5 ft. depth

Estimated volume and depth of in situ soils exceeding ch. NR 746 Table 1 or Table 2 or site specific RCLs: 600 cu. yds, 4.5 ft depth

5. GROUNDWATER INFORMATION

Extent of Contamination Defined? ☒ Yes ☐ No ☐ N/A Remedial Action Completed? ☒ Yes ☐ No ☐ N/A

Brief Description of Remedial Action Taken: Installation and operation of a groundwater pump and treat system.

of Sample Rounds: 14 Depth(s) to Groundwater/Flow Direction(s): 4.5 feet bgs; southeast

Field Analyses? ☐ Yes ☒ No Lab Analyses? ☒ Yes ☐ No # of Sampling points: 9

WDNR BRRTS CASE # 03 - 13 - 000045WDNR SITE NAME 110 S. Paterson Street

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NR 141 Monitoring Wells Sampled: 9# Temporary Groundwater Sampling Points Sampled: 0# Recovery Sumps Sampled: 0 # Municipal Wells Sampled: 0 # Private Wells Sampled: 0

List all contaminants found in groundwater (regardless of ch. NR 140 standards/attach table if necessary)

Benzene; Ethylbenzene; MTBE; Toluene; Trimethylbenzene; Xylenes; Anthracene; Benzo(a)pyrene; Benzo(b)fluoranthene; Chrysene
Fluoranthene; Fluorene; Napthalene; PyreneHas DNR Been Notified of Substances in Groundwater w/o Standards? X Yes No If Yes, How Many? 2What Substances? GRO, DROPotable Wells Within 1200 Feet of Site? X Yes No Have They Been Sampled? X Yes No
[NOTE: Wells are to be included on map described in Item B8]Have Well Owners/Occupants Been Notified of Results? Yes X No Are notification letters attached? Yes X NoPreventive Action Limit Currently Exceeded? X Yes No If yes, identify location(s) MW-2Enforcement Standard Currently Exceeded? X Yes No If yes, identify location(s) MW-2Measurable Free Product Detected? X Yes No pre-remediation? X post-remediation?Was Free Product remediated? X Yes No Explain: Manual bailing and vacuum truck removal have been used, but
localized residual free product remains on site.**6. OTHER CONTAMINATED MEDIA INFORMATION**Have Other Media Been Impacted (either on-site or off-site)? Yes X No Briefly describe type and extent of all
contamination found in media other than soil or groundwater:Remedial Action Completed? Yes No X N/A Brief Description of Remedial Action Taken: # of Sample Rounds: Field Analyses? Yes No Lab Analyses? Yes No# of Sampling Points: Tables of Analytical Results for all contaminants Attached? Yes**7. PATHWAY TO CLOSURE PROPOSED AND ASSOCIATED SITE INFORMATION:****Soil** < s. NR 720.09/720.11 Generic RCLsX s. NR 720.19(2) Soil Performance Standards(SPS) s. NR 720.19(3) Site Specific Standards(SSRCLs)**Groundwater** < s. NR 140.10 Table 1 & Table 2 Values s. NR 140.28(2) PAL ExemptionX s. NR 726.05(2)(b), ≥ ES Natural Attenuation**Petroleum Storage Tank Soil Options for Closure:** s. NR 746.07 Soil Screening Levels/Post Investigation s. NR 746.08 Soil Screening/Post Remediation**Petroleum Storage Tank Groundwater Options for Closure:** s. NR 746.07 ≥PAL <ES Low Permeability Site/Post Investigation s. NR 746.07 ≥ES, Permeable Site, Post Investigation s. NR 746.08 ≥ES, Low Permeability Site, Post Remediation s. NR 746.08 ≥ES, Permeable Site, Post Remediation

WDNR BRRS CASE # 03 - 13 - 000045

WDNR SITE NAME 110 S. Paterson Street

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A. Enforcement Actions Closed Out? ☐ Yes ☐ No ☒ N/A Permits Closed Out? ☐ Yes ☐ No ☒ N/A

B. Proposed Post Remediation Land Use: ☐ Residential ☐ Commercial ☒ Industrial ☐ Other Specify: _____

C. Does Remedy Include Soil Performance Standard (SPS)? ☒ Yes ☐ No

Type: ☒ Cap ☐ Soil ☐ Building ☒ Natural Attenuation of Groundwater ☐ Other
Specify: concrete and asphalt surface cap.

Will the proposed post remediation land use be consistent with the maintenance of the SPS? ☒ Yes ☐ No
Why? _____

Proof of ch. NR 714 public notice attached? ☐ Yes ☒ No (Proof can be either the actual entire page of the newspaper with the notice OR a "Proof of Publication" from the Newspaper Publisher)

Maps and photos attached documenting the cap area, construction, and/or the integrity of the cap? ☒ Yes ☐ No ☐ N/A

A maintenance plan is attached for the performance standard per ss. NR 720.19(2) and 724.13(2), Wis. Adm. Code? ☒ Yes ☐ No

D. Does Remedy include SSRCLs? ☐ Yes ☒ No

Is post-remedial land use industrial? ☒ Yes ☐ No

Is zoning change required or completed? ☐ Yes ☒ No If yes, have you attached verification of the zoning for affected properties? ☐ Yes ☐ No

Complete assumptions and calculations for SSRCLs attached with justification? ☐ Yes ☐ No

If using EPA Soil Screening Level Model as justification for closure of sites with residual contaminated soils, are the numbers used: (circle one) site specific inputs or defaults and are calculations and results attached? ☐ Yes ☐ No

E. Does Remedy Include Natural Attenuation of Groundwater only? (i.e. there is no residual soil contamination?) ☐ Yes ☒ No
Mann-Kendall/Mann-Whitney U Results attached? ☒ Yes ☐ No (required for ch. NR 746 permeable sites)

F. Describe how the following pathways are protected:

1) Direct Contact Pathway: Entire site is paved.

2) Groundwater: Natural attenuation.

8. PROPOSED INSTITUTIONAL CONTROLS (See PUB. RR-606)

☐ Unrestricted

☒ Deed Restriction (required for industrial cleanup level/ and when performance standard requires maintenance plan)

☐ Deed Notice

☐ For public street or highway right of way contamination, provide notice as required See item (E) in the case summary checklist

☒ RR GIS Registry of Closed Sites

☐ Other

Copy of Draft Deed Document(s) attached? ☐ Yes ☒ No (see RR web site: <http://www.dnr.state.wi.us/org/aw/rr/index.html>)

FOR DEPARTMENT USE ONLY

PROJECT MANAGER: _____ Date Reviewed: _____

FIRST REVIEW DATE: _____ [] Approved [] Denied

(Signature) _____

(Signature) _____

(Signature) _____

(Signature) _____

SECOND REVIEW DATE: _____ [] Approved [] Denied

(Signature) _____

(Signature) _____

(Signature) _____

(Signature) _____

COMMITTEE RECOMMENDATION:

____ Closure Approved With:

- ____ No Restrictions
- ____ Listing on GIS Registry
- ____ Zoning Verification
- ____ Deed Restriction
- ____ Deed Notice
- ____ Site Specific Close Out Letter
- ____ Well Abandonment Documentation
- ____ Soil Disposal Documentation
- ____ Public Notice of soil performance standard remedy
- ____ NR 140 Exemption For: _____

____ Specific Comments: _____

____ Closure Denied, Needs More:

- ____ Investigation
 - ____ Groundwater Monitoring
 - ____ Soil Remediation
 - ____ Groundwater Remediation
 - ____ Documentation of Soil Landspreading or Biopile Destiny
 - ____ Specific Comments: _____
- _____
- _____
- _____

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ATTACHMENT A
CASE HISTORY

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Background

In August 1988, three underground petroleum product (one 500-gallon diesel, one 1,000-gallon unleaded gasoline, and one 2,000-gallon leaded gasoline) storage tanks were removed from the City of Madison Water Utility Operations Center located at 110 South Paterson Street in Madison. A location map of the site is shown in Figure B-1. Contaminated soils were encountered and excavated from the immediate area of the tanks. The contamination was determined to result from a hole in the unleaded gas tank. Soil samples were not collected for analysis, and the Wisconsin Department of Natural Resources (WDNR) indicated at the time that no further soil excavation was required.

Three new 2,000-gallon underground fiberglass tanks were installed in the same excavation that had been used for the former tanks. During installation of the new tanks, four leak detection wells (LD-1 through LD-4, see Figure B-2) were constructed in the backfill material. As a follow-up to the soil excavation work, the WDNR required the water utility to periodically collect groundwater samples from the four leak detection monitoring wells. Subsequently, as a result of documented groundwater contamination, the WDNR required the water utility to conduct a groundwater investigation to determine the extent of contamination.

Findings and Conclusions From Site Investigation

In October 1993, Eder Associates (now known as Gannett Fleming) installed and sampled three groundwater monitoring wells (MW-1 through MW-3, see Figure B-2) in an attempt to define the extent of contamination. Three monitoring wells, one leak detection well, and a monitoring well (MW-6, owned by Madison Gas & Electric [MG&E] and located on its property immediately south of the site) were sampled for gasoline range organics (GROs), volatile organic compounds (VOCs), and dissolved lead. Water levels were measured to determine the direction and gradient of groundwater flow.

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Contamination above NR 140 enforcement standards was measured in the two downgradient on-site monitoring wells, MW-2 and MW-3. In addition, while one of the downgradient monitoring wells was being drilled, a petroleum odor was noticed in the soil cuttings from the unsaturated zone. It was determined through a historical records search that an aboveground bulk petroleum storage facility had been located at this site as recently as 1959. The former location of the aboveground storage facility is shown in Figure B-4. The site was owned by Standard Oil Company in 1959.

Both the soil boring observations and the historical site information indicated that it was likely there were areas of petroleum-contaminated soil in and near the location of the former aboveground storage tanks that needed to be defined. The full extent of groundwater contamination could not be determined using the three monitoring wells installed in October 1993. As a result of these data gaps, a second phase of investigation was performed.

In October 1994, three additional on-site monitoring wells, MW-7 through MW-9, were installed to further define both the flow direction and the limits of groundwater contamination. Groundwater sample locations are shown in Figure B-4. In addition to installing the three new monitoring wells, we drilled 24 shallow boreholes in the area where the aboveground bulk petroleum storage facility had formerly been located. The locations of the boreholes are also shown in Figure B-4. One unsaturated soil sample was collected from each borehole between 2.5 and 4.5 feet below grade for analysis of GRO, diesel range organics (DRO), and petroleum volatile organic compounds (PVOCs).

This phase of the investigation identified DROs, polycyclic aromatic hydrocarbons (PAHs), GROs, PVOCs, and lead as the contaminants of concern and revealed that the most highly contaminated groundwater under the site was located in the area between the leak detection wells and two of the downgradient monitoring wells, MW-2 and MW-3.

The DRO and GRO soil contamination in the unsaturated zone appears to be widespread throughout the area where the aboveground storage tanks were formerly located. Soil

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contamination extends from near the ground surface to groundwater (5 to 6 feet) in most areas that were investigated. A geologic cross section depicting the pre-remedial extent of soil and groundwater contamination is shown in Figure B-5. The absence of any consistent pattern of contaminant levels indicates that releases were not limited to certain areas. It is very likely that the past use of this site as an aboveground bulk petroleum storage facility resulted in widespread contamination of on-site soils and groundwater. Based on the soil sample results, it appears that approximately 3,500 cubic yards of soil were potentially impacted by petroleum releases.

Subsurface conditions consist of sand and gravel fill to approximately 3 feet below ground surface (bgs), underlain by clayey silt to silty clay. Between 1993 and 1998, the average depth to groundwater was between 4 and 5 feet bgs, groundwater flow was to the southeast, and the average measured hydraulic gradient was approximately 0.008 ft/ft when the remediation system was not pumping groundwater. The hydraulic conductivity of the shallow aquifer is approximately 5×10^{-5} cm/sec. The average linear velocity of groundwater is less than 5 ft/year, assuming an effective porosity of 25 percent. The general groundwater flow direction, based on the latest groundwater elevation data (January 16, 2002), continues to be to the southeast (see Figure B-9).

Summary of Interim and Remedial Actions

The remediation system was designed and installed in phases. Between August and December 1996, two groundwater trenches (GWT-1 and GWT-2), eight soil venting trenches (VT-1 through VT-8), and associated underground piping were installed. Figure B-2 shows the layout of the groundwater and soil venting trenches. Approximately 980 tons of contaminated soil was excavated from the site when the trenches and piping were installed. The soil was disposed of at the Madison Prairie Landfill.

Pilot tests were conducted at the site between January and May 1997 to determine the design parameters for the permanent remediation system. Shortly after the pilot tests, the permanent remediation system was installed. The air stripper for treating the pumped

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groundwater from GWT-1 and GWT-2 and the vacuum blower used for bioventing in VT-1 through VT-8 are located in a remediation equipment building. GWT-1 and GWT-2 are both approximately 50 feet long and 13 feet deep and are designed to control and capture the petroleum-contaminated groundwater and free product at the site and to lower the water table to enhance the performance of the bioventing system. The bi-level bioventing trenches are screened at approximately 4 and 6 feet bgs.

The groundwater pump-and-treat system began operating full-time on February 16, 1998. When the remediation system was shut down permanently on May 9, 2000, about 2,776,000 gallons of contaminated groundwater were collected from GWT-1 and GWT-2, treated by the air stripper, and discharged to the storm sewer. The bioventing system was operated during the warm weather months between December 1998 and May 2000.

Periodic samples of the effluent from the air stripper were collected for naphthalene and PVOC analysis, according to WDNR guidelines. Results are on file with the WDNR, along with our monthly discharge monitoring reports (DMRs).

Since December 1995, MW-2 has contained up to 6.6 inches of free product. Free product thickness, along with estimated amounts of water/free product mixture recovered from MW-2, are shown in Table A-1 in Attachment A. The free product thickness data tabulated in Table A-1 is shown graphically in Figure A-1. As Figure A-1 shows, the thickness of the free product at MW-2 has decreased from over 6 inches when free product recovery started in December of 1995 to less than 1 inch. The estimated volume of water/free product mixture recovered from MW-2 is 90 gallons. Free product recovery was achieved primarily through manual bailing; however, a high-vac truck was used on two occasions to remove free product during July and December of 2001.

According to Theresa Peters of the City of Madison Water Utility (608-266-6209), there are no private drinking water wells within 1,200 feet of the site. The only potable well within 1,200 feet of the site is the City's Well No. 24 at 101 North Livingston Street. This well is screened over 700 feet bgs in a different aquifer from the one associated with

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this site. PVOCs associated with this site were non-detectable in the latest groundwater sample collected from this well. A copy of the latest sample results for PVOCs and PAHs for this well is included in Attachment A.

Justification for Closure

Soil samples collected in October 1994 at the site prior to remedial activities documented a widespread area with contaminant concentrations exceeding NR 720 soil cleanup standards (see Table C-1). In an effort to remediate impacted soils, the bioventing system was operated for about one and one-half years. However, the bioventing blower would not run for extended periods of time because it continued to pull in excessive condensate due to wet conditions. These conditions persisted because it took longer for the groundwater trenches to dewater the site than anticipated. The effectiveness of the bioventing system was likely hindered by the high percentage of fine-grained soils at the site.

Since the initial soil sampling during the site investigation, approximately 18 percent (980 tons) of the total estimated volume of contaminated soil was removed from the site during the installation of the groundwater recovery and bioventing systems. The remaining contaminated soil at the site is covered by a concrete and asphalt cap, which minimizes the direct contact risk associated with impacted soils.

The groundwater monitoring conducted at this site documents that the groundwater plume is stable or receding. Mann-Kendall trend analyses using the WDNR's Form 4400-215 were conducted for the PVOC groundwater monitoring data from MW-3, MW-4, and MW-8, as shown in Attachment D. The Mann-Kendall results for wells MW-3, MW-4, and MW-8 show that trends for benzene and MTBE are either decreasing or stable at the 80 percent confidence level. The only definitive increasing trend (i.e., at the 90 percent confidence level) was for toluene at MW-4, but the concentrations are well below the PAL. Contaminant concentrations in monitoring wells MW-1, MW-5, MW-6, MW-7, and MW-9 have always been below PALs for PVOCs and PAHs since

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monitoring began. Simple inspection of the monitoring data reveals that naphthalene concentrations, the primary PAH of concern, have decreased to below the PAL in MW-3, MW-4, and MW-8.

The only monitoring well on site with contamination exceeding PALs is MW-2. A small free product plume remains at MW-2, but it appears to be stable, and its measured thickness has decreased from over 6 inches when monitoring began to less than 1 inch (see Figure A-1). An estimated 90 gallons of water/free product mixture have been recovered from MW-2.

Three rounds of groundwater samples were collected and analyzed for remediation through natural attenuation (RNA) parameters in October 2000, May 2001, and January 2002. The last round of RNA sample results, shown in Table C-3 (3 of 4), was used to calculate the estimated assimilative capacity (EAC) of the aquifer at the site. The EAC was calculated in accordance with the WDNR's "Interim Guidance On Natural Attenuation For Petroleum Releases (PUB RR-614)." The calculation is shown in Table C-3 (4 of 4). The EAC based on the stoichiometry of BTEX degradation is 19.6 mg/l, which is eight times the dissolved-phase BTEX concentration of 2.44 mg/l in MW-2 on January 16, 2001.

Our proposed pathway to closure for soil and groundwater at the site is the maintenance of the concrete and asphalt surface cap and natural attenuation, respectively. Proposed institutional controls are a deed restriction for residual soil contamination and the listing of the site on the GIS Registry for residual groundwater contamination. A proposed maintenance plan for and photographs illustrating the current condition of the surface cap are included in Attachment A.

PROPOSED MAINTENANCE PLAN FOR SURFACE CAP

CITY OF MADISON WATER UTILITY

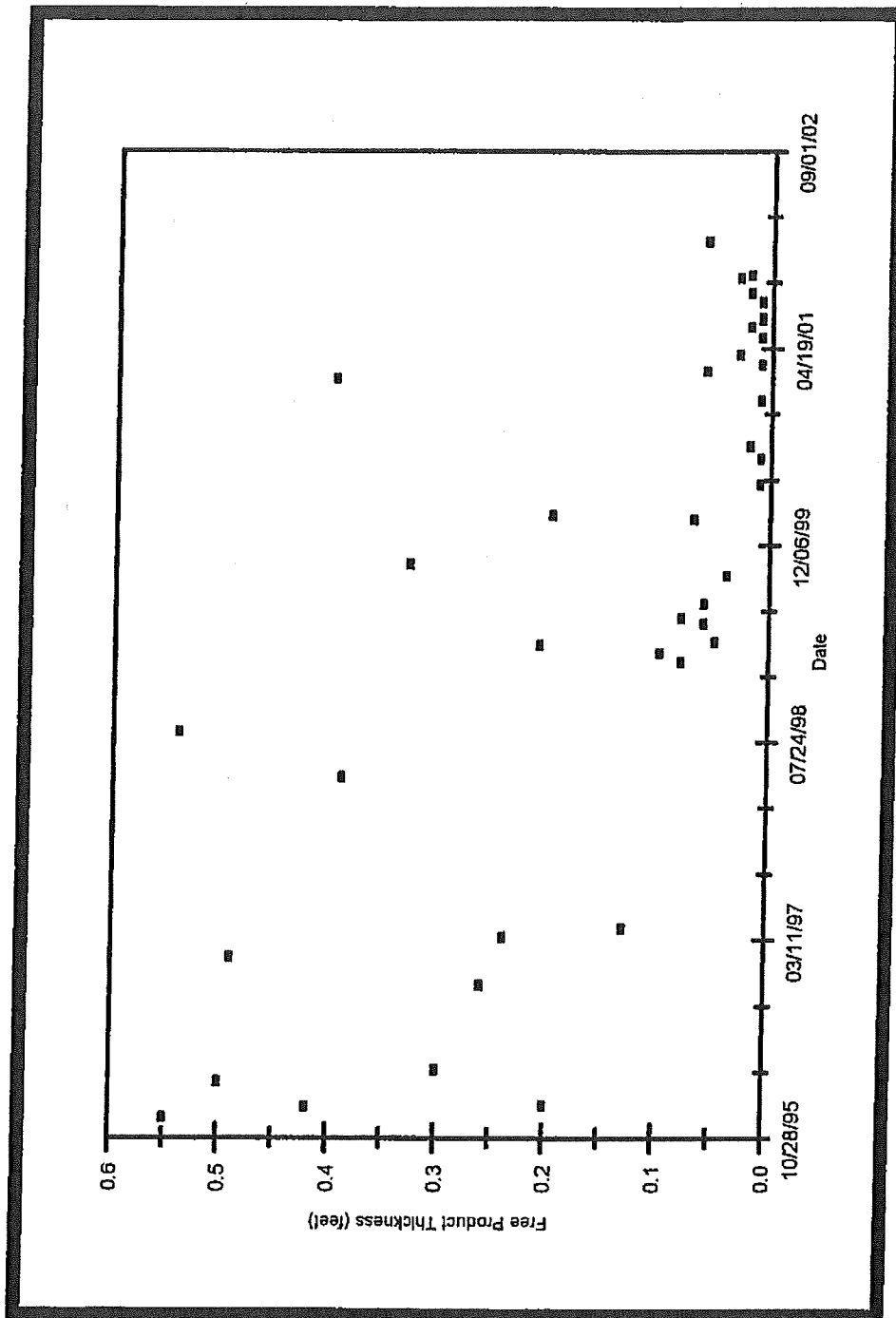
110 S. PATERSON STREET

(BRRTS CASE NO. 03-13-000045)

The owner of the property shall maintain the existing surface cap consisting of asphalt and concrete in such a manner as to prevent, to the extent practicable, the infiltration of storm water runoff into the soils in the areas of documented residual soil contamination. The areas of documented residual soil contamination are shown on Figure B-4 in Attachment B.

Maintenance of the cap shall consist of, but not be limited to, annual visual inspections to assess the integrity of the cap. Cracks, holes, erosion, or any other failure of the cap that will permit the infiltration of storm water shall be repaired as soon as possible after discovery.

A brief statement signed by the property owner stating the results of the annual inspection and any remedial measures taken shall be prepared annually and kept on file. Names and phone numbers of contractors used and dates of surface cap repair and/or maintenance shall be included in the annual statements. Statements shall be made available to the WDNR on request.



CITY OF MADISON WATER UTILITY
MADISON, WISCONSIN

TABLE A-1

FREE PRODUCT THICKNESS AT MW-2

Date	DTW (ft)	DTP (ft)	FP (ft)	Prod/Water Bailed (gal)	Cumulative Vol. Bailed (gallons)	Elevation (ft MSL)	
						Water 850.57	Product 850.57
12/20/95	5.66	5.11	0.55	1.37	1.37	844.91	845.46
01/16/96	6.35	5.93	0.42	1.24	2.60	844.22	844.64
01/18/96	5.77	5.57	0.20	1.29	3.90	844.80	845.00
03/19/96	NM	NM	0.50	1.00	4.90		
04/18/96	NM	NM	0.30	1.00	5.90		
11/18/96	6.04	5.78	0.26	1.26	7.16	844.53	844.79
01/30/97	7.53	7.04	0.49	1.05	8.21	843.04	843.53
03/20/97	6.70	6.46	0.24	1.15	9.36	843.87	844.11
04/11/97	6.50	6.37	0.13	1.16	10.52	844.07	844.20
04/28/98	5.44	5.05	0.39	1.38	11.90	845.13	845.52
08/21/98	6.84	6.30	0.54	1.17	13.08	843.73	844.27
02/16/99	6.15	6.07	0.08	1.21	14.29	844.42	844.50
03/10/99	6.63	6.53	0.10	1.14	15.43	843.94	844.04
03/29/99	6.77	6.56	0.21	1.13	16.56	843.80	844.01
04/06/99	6.45	6.40	0.05	1.16	17.72	844.12	844.17
05/24/99	5.49	5.43	0.06	1.32	19.04	845.08	845.14
06/07/99	5.80	5.72	0.08	1.27	20.31	844.77	844.85
07/13/99	6.05	5.99	0.06	1.23	21.53	844.52	844.58
09/22/99	5.34	5.30	0.04	1.34	22.87	845.23	845.27
10/21/99	8.02	7.69	0.33	0.95	23.82	842.55	842.88
11/03/99	NM	NM		1.00	24.82		
11/10/99	NM	NM		1.00	25.82		
02/10/00	7.70	7.63	0.07	0.50	26.32	842.87	842.94
02/22/00	8.40	8.20	0.20	0.86	27.18	842.17	842.37
03/03/00	NM	NM		2.00	29.18		
03/15/00	NM	NM		1.50	30.68		
04/12/00	NM	NM		1.50	32.18		
05/09/00	5.36	5.35	0.01	0.50	32.68	845.21	845.22
07/14/00	4.36	4.35	0.01		32.68	846.21	846.22
08/14/00	4.73	4.71	0.02		32.68	845.84	845.86
10/17/00	NM	NM		3.00	35.68		
10/30/00	6.68	6.68		0.50	36.18	843.89	843.89
12/07/00	6.71	6.70	0.01	0.50	36.68	843.86	843.87
02/02/01	9.37	8.97	0.40	0.50	37.18	841.20	841.60
02/21/01	8.41	8.35	0.06	0.50	37.68	842.16	842.22
03/08/01	8.00	7.99	0.01	1.50	39.18	842.57	842.58
04/04/01	6.89	6.86	0.03	1.00	40.18	843.68	843.71
05/17/01	5.61	5.60	0.01	1.29	41.47	844.96	844.97
06/12/01	4.41	4.39	0.02	2.50	43.97	846.16	846.18
07/03/01	5.06	5.05	0.01	15.00	58.97	845.51	845.52
07/06/01	5.43	5.42	0.01	0.00	58.97	845.14	845.15
08/16/01	4.91	4.90	0.01	0.00	58.97	845.66	845.67
09/07/01	5.18	5.16	0.02	0.00	58.97	845.39	845.41
10/16/01	5.73	5.70	0.03	3.00	61.97	844.84	844.87
10/23/01	4.78	4.76	0.02	25.00	86.97	845.79	845.81
01/16/02	7.21	7.15	0.06	4.00	90.97	843.36	843.42

NOTES:

Bold cell indicates that volume bailed was not recorded. Assumed bailed volume = purge volume.

Estimated total volume of free product = 55 gallons based on elliptical pool 25 ft long, 15 ft wide, 0.1 ft thick, and 30% porosity.

Free product was recovered by high-vac truck on 7/3/01 and 10/23/01.

NM = Not measured.

CITY OF MADISON WATER UTILITY
MADISON, WISCONSIN

TABLE A-2

VOLATILE ORGANIC COMPOUNDS (VOCs) ANALYTICAL RESULTS
FOR CITY WELL NO. 24 (2001 ANNUAL SAMPLE)

PARAMETERS	UNITS	MDL*	MCL	RESULT
Benzene	ug/l	0.15	5	undetected
Bromobenzene	ug/l	0.15	--	undetected
Bromochloromethane	ug/l	0.15	100	undetected
Bromodichloromethane	ug/l	0.15	--	0.82
Bromoform	ug/l	0.15	100	0.57
Bromomethane	ug/l	0.15	--	undetected
N-Butylbenzene	ug/l	0.15	--	undetected
Sec-Butylbenzene	ug/l	0.15	--	undetected
Tert-Butylbenzene	ug/l	0.15	--	undetected
Carbon Tetrachloride	ug/l	0.15	5	undetected
Chlorobenzene	ug/l	0.15	--	undetected
Chloroethane	ug/l	0.15	--	undetected
Chloroform	ug/l	0.15	100	0.47
Chloromethane	ug/l	0.15	--	undetected
2 - Chlorotoluene(o-)	ug/l	0.15	--	undetected
4 - Chlorotoluene(p-)	ug/l	0.15	--	undetected
Dibromochloromethane	ug/l	0.15	100	1.30
Dibromomethane	ug/l	0.15	--	undetected
1,2 - Dichlorobenzene	ug/l	0.15	600	undetected
1,3 - Dichlorobenzene	ug/l	0.15	--	undetected
1,4 - Dichlorobenzene	ug/l	0.15	75	undetected
Dichlorodifluoromethane	ug/l	0.20	--	undetected
1,1 - Dichloroethane	ug/l	0.15	--	undetected
1,2 - Dichloroethane	ug/l	0.15	5	undetected
1,1 - Dichloroethylene	ug/l	0.15	7	undetected
Cis-1,2 - Dichloroethylene	ug/l	0.15	70	undetected
Trans-1,2 - Dichloroethylene	ug/l	0.15	100	undetected
1,2 - Dichloropropane	ug/l	0.15	5	undetected
1,3 - Dichloropropane	ug/l	0.15	--	undetected
2,2 - Dichloropropane	ug/l	0.15	--	undetected
1,1 - Dichloropropene	ug/l	0.15	--	undetected
Cis-1,3-Dichloropropene	ug/l	0.15		undetected
Trans-1,3- Dichloropropene	ug/l	0.15		undetected
E thylbenzene	ug/l	0.15	100	undetected
Hexachlorobutadiene	ug/l	0.15		undetected
Isopropylbenzene	ug/l	0.15		undetected
P-Isopropyltoluzene	ug/l	0.15		undetected
Methylene Chloride	ug/l	0.15		undetected
Naphthalene	ug/l	0.15		undetected
N-Propylbenzene	ug/l	0.15		undetected
Styrene	ug/l	0.15	--	undetected
1,1,1,2 - Tetrachloroethane	ug/l	0.20	--	undetected
1,1,2,2 - Tetrachloroethane	ug/l	0.15	--	undetected
Tetrachloroethylene	ug/l	0.15	5	undetected
Toluene	ug/l	0.15	1000	undetected

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Table A-2 Continued . . .

PARAMETERS	UNITS	MDL*	MCL	RESULT
1,2,3 - Trichlorobenzene	ug/l	0.15		undetected
1,2,4 - Trichlorobenzene	ug/l	0.15	70	undetected
1,1,1 - Trichloroethane	ug/l	0.15	200	undetected
1,1,2 - Trichloroethane	ug/l	0.15	5	undetected
Trichloroethylene	ug/l	0.15	5	undetected
Trichlorofluoromethane	ug/l	0.15		undetected
1,2,3 - Trichloropropane	ug/l	0.15	--	undetected
1,2,4- Trimethylbenzene	ug/l	0.15		undetected
1,3,5- Trimethylbenzene	ug/l	0.15		undetected
Vinyl Chloride	ug/l		2	undetected
M / P -Xylene	ug/l	0.15		undetected
O - Xylene	ug/l	0.15	10000	undetected

NOTE:

(*) EHL has demonstrated it can achieve these report limits in reagent water, but cannot document them in all sample matrices.

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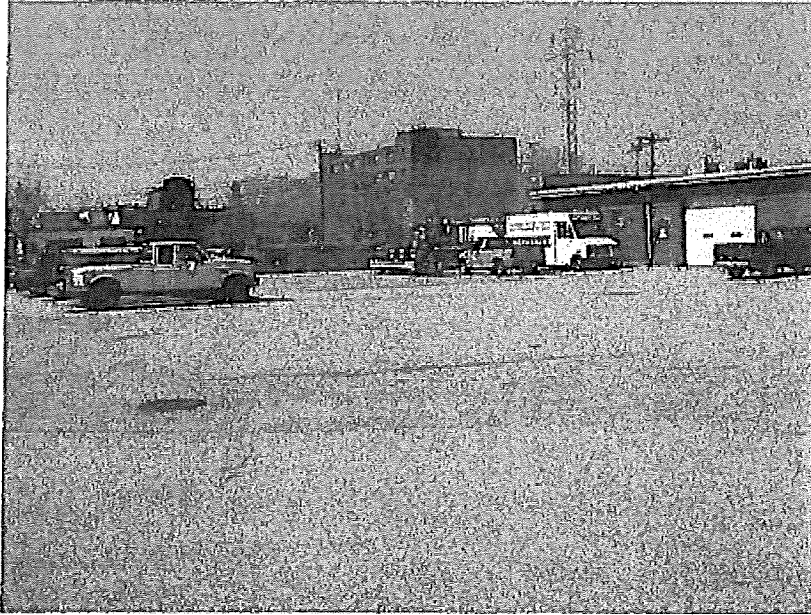
ATTACHMENT B

MAPS FOR CASE SUMMARY AND CLOSE OUT FORM

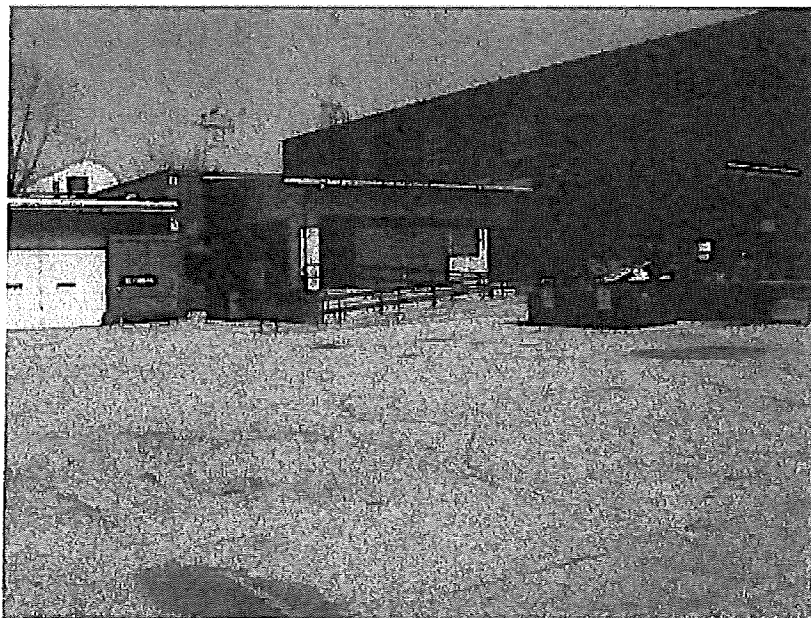
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Surface Cap Photos Taken on April 9, 2001
Madison Water Utility
110 S. Paterson Street
Madison, Wisconsin

Gannett Fleming
Figure A-2
Page 2 of 3



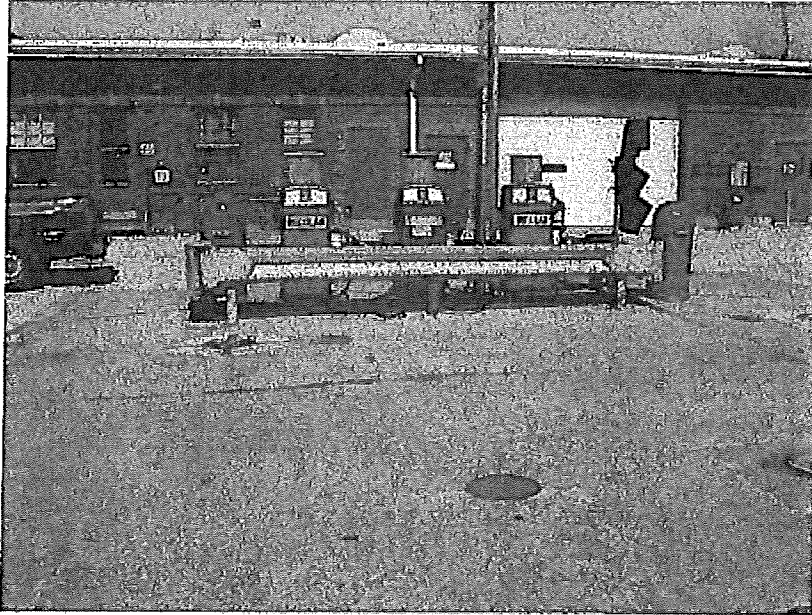
Looking northwest at the pump island.



Looking east at the main office entrance.

Surface Cap Photos Taken on April 9, 2001
Madison Water Utility
110 S. Paterson Street
Madison, Wisconsin

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Figure A-2
Page 3 of 3



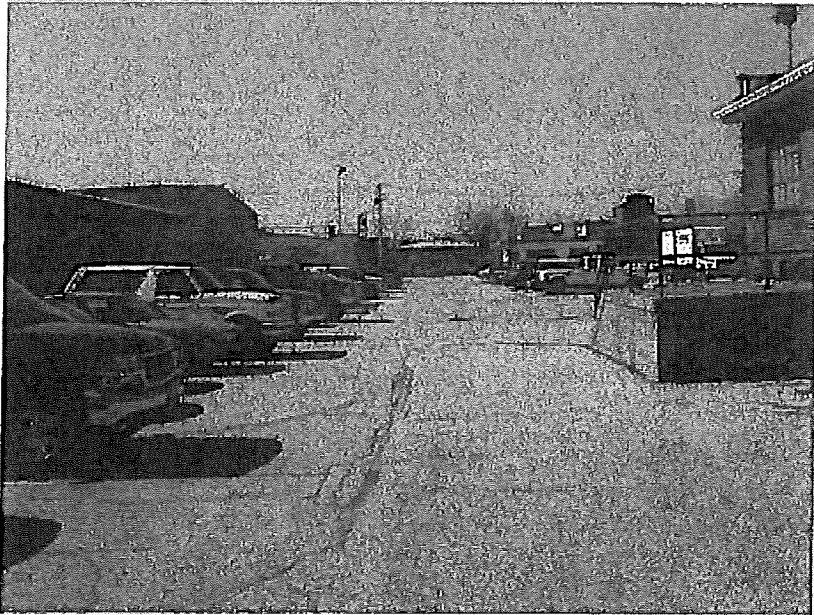
Looking north at the pump island.



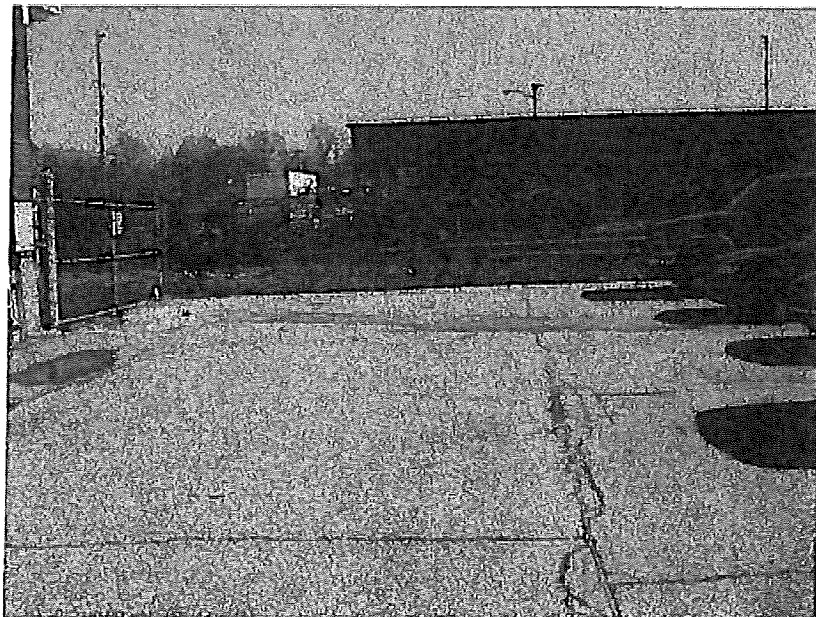
Looking north at the northwest corner of the parking lot.

Surface Cap Photos Taken on April 9, 2001
Madison Water Utility
110 S. Paterson Street
Madison, Wisconsin

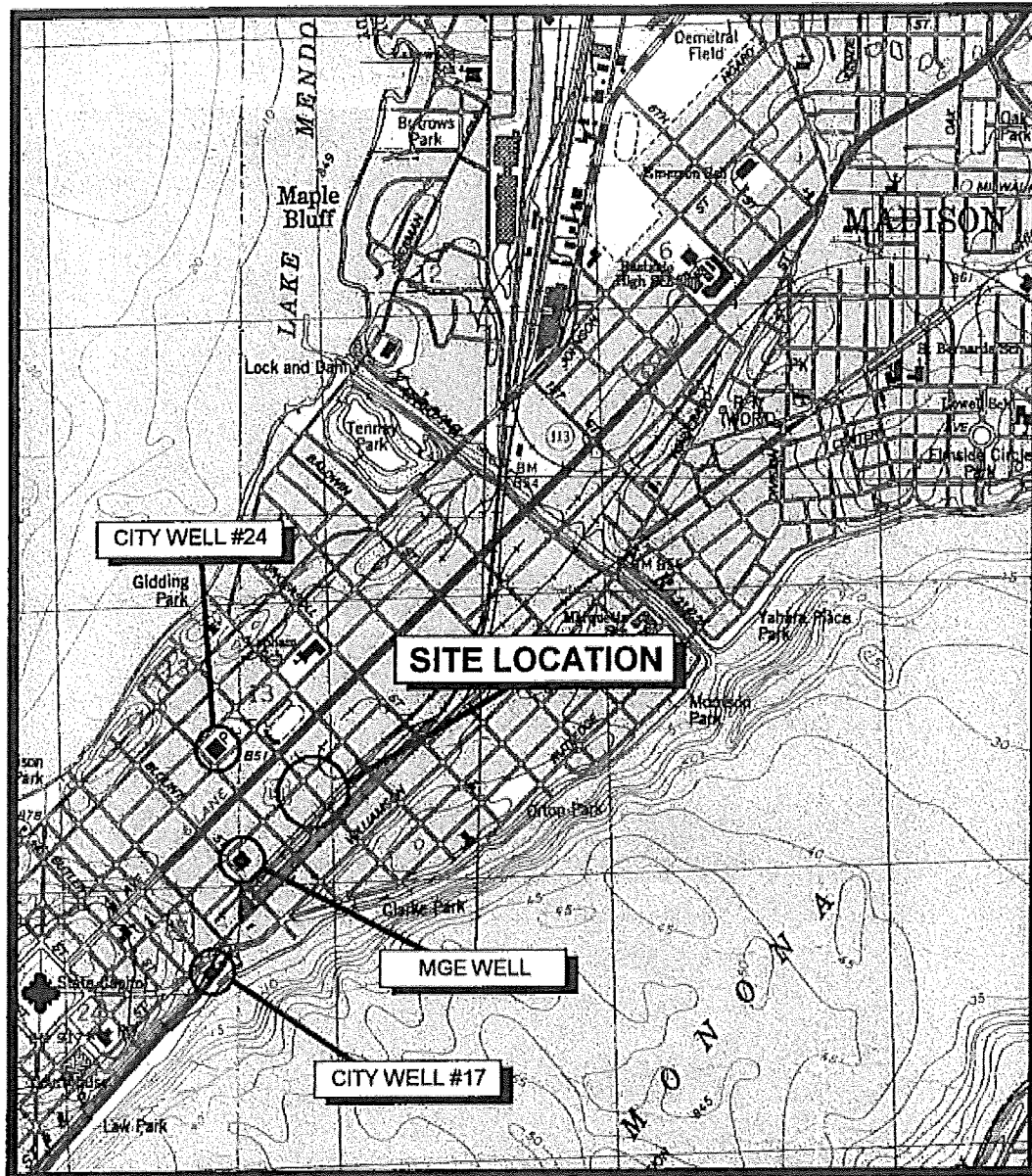
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Figure A-2
Page 1 of 3



Looking west from east end of parking lot.



Looking east from east end of parking lot.



SCALE: 1 INCH = 2000 FEET
CONTOUR INTERVAL = 10 FEET

7.5 MIN TOPOGRAPHIC MAPS
MADISON EAST, WISCONSIN
1983
MADISON WEST, WISCONSIN
1983



LOCATION MAP CITY OF MADISON WATER UTILITY MADISON, WISCONSIN



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SOUTH PATERSON STREET

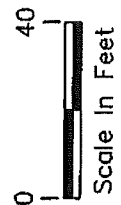
EAST MAIN STREET

MADISON WATER UTILITY
OPERATIONS CENTER
110 South Paterson Street

Underground Storage Tanks
Beneath Concrete Slab
Existing Pump Island

Remediation
Equipment
Building

USAC Property



Scale In Feet

SITE MAP

MADISON WATER UTILITY
MADISON, WISCONSIN

LEGEND

- VT-1 Horizontal Soil Venting Trench And Valve Box
- GWT-1 Groundwater Recovery Trench And Sump
- Estimated Extent Of Free Product
- MW-1 Monitoring Well
- LD-1 Leak Detection Well
- Storm Sewer Catch Basin
- Buried Piping To Soil Venting Trenches
- Buried Piping To Groundwater Recovery Trenches
- Buried Discharge Line To Storm Sewer
- Storm Sewer
- Sanitary Sewer
- Fence

NOTES

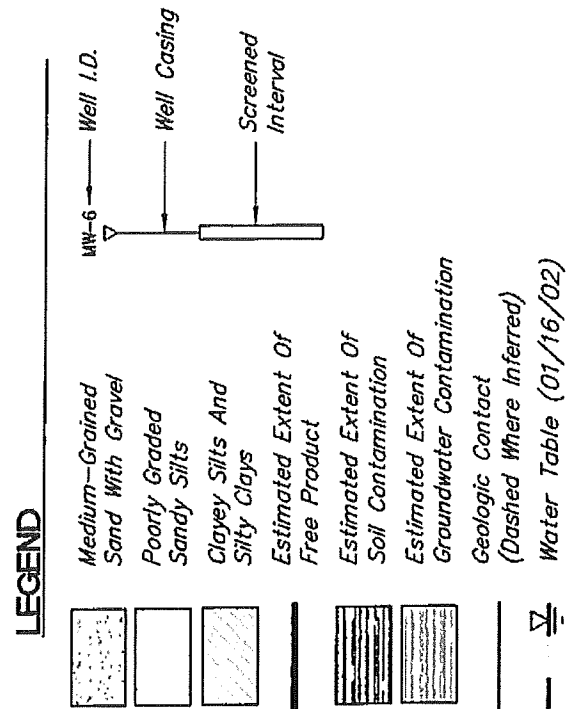
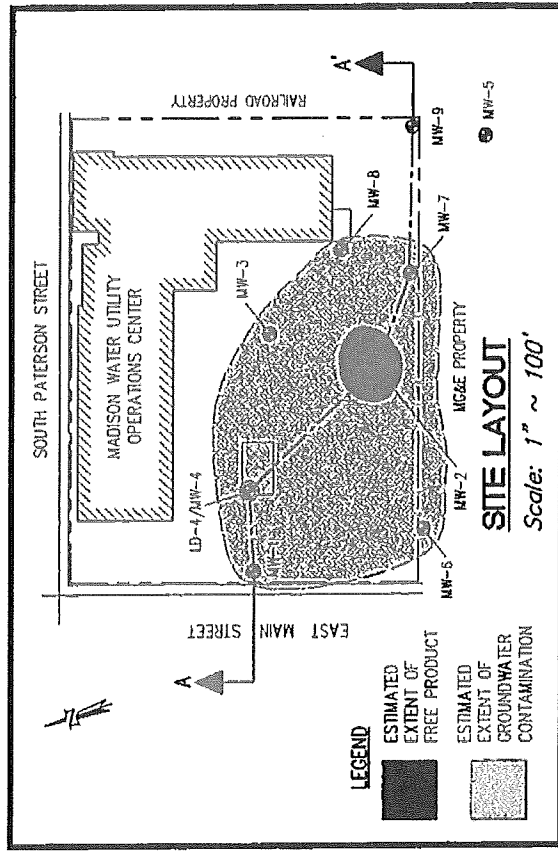
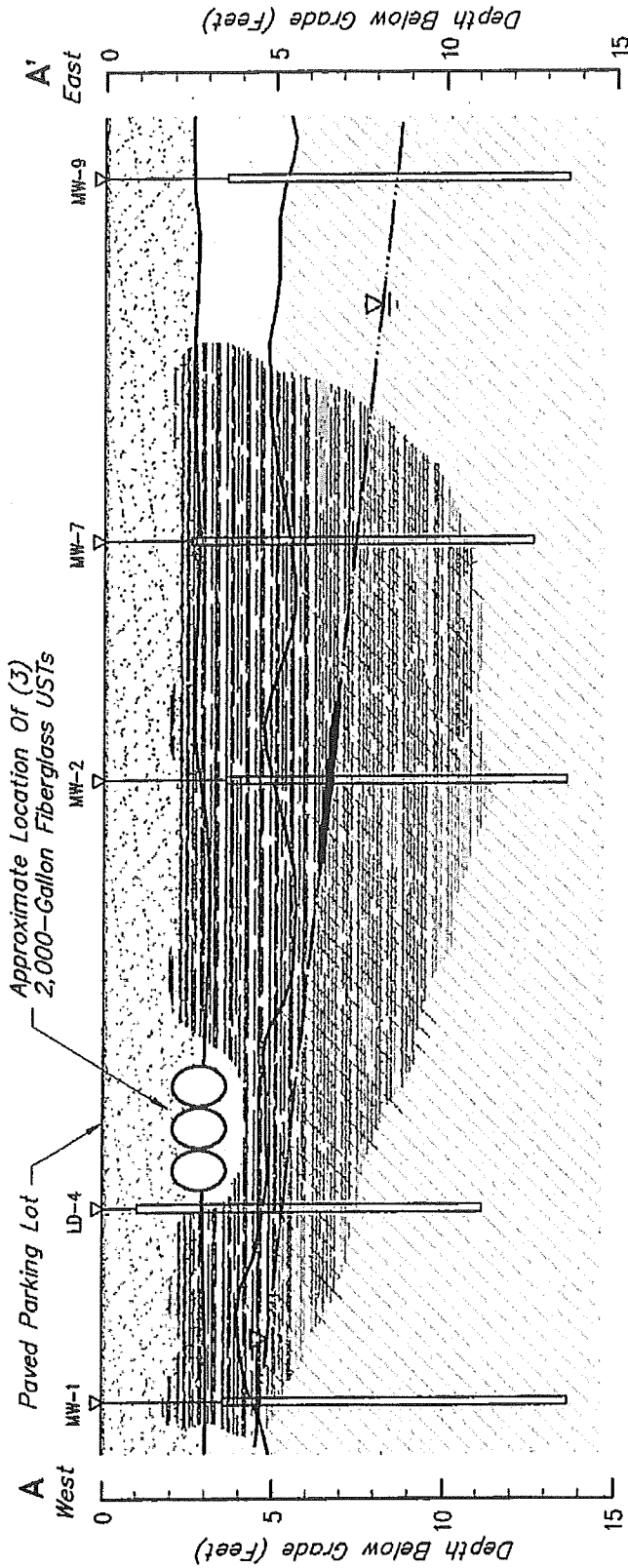
1. THE AVERAGE DEPTH TO GROUNDWATER IS APPROXIMATELY 4.5 FEET BELOW GROUND SURFACE (BGS) WHEN THE REMEDIATION SYSTEM IS NOT PUMPING GROUNDWATER.
2. SOIL SAMPLES COLLECTED IN OCTOBER 1994 DOCUMENTED THAT DRO/GRO CONCENTRATIONS WERE ABOVE THE NR 720 RESIDUAL CONTAMINANT LEVEL OF 100 mg/kg AT 20 OF 27 LOCATIONS BETWEEN 2.5 AND 4.5 FEET BGS ACROSS THE SOUTHERN HALF OF THE SITE.

Gannett Fleming
FIGURE B-2



PRE-REMEDIAL SOIL
SAMPLE LOCATION MAP
MADISON WATER UTILITY
MADISON, WISCONSIN

Scale in Feet



PRE-REMEDIAL CROSS SECTION A-A'

MADISON WATER UTILITY

MADISON, WISCONSIN

Horizontal Scale: 1"=40'

Vertical Scale: 1"=5'

Vertical Exaggeration: 8x

SOUTH PATERSON STREET

EAST MAIN STREET

MADISON WATER UTILITY
OPERATIONS CENTER
110 South Paterson Street

Underground Storage Tanks
Beneath Concrete Slab
Existing Pump Island

Remediation
Equipment
Building

LEGEND

- VT-1 Horizontal Soil Venting Trench And Valve Box
- GWT-1 Groundwater Recovery Trench And Sump
- Estimated Extent Of Free Product
- MW-1 Monitoring Well
- LD-1 Leak Detection Well
- Storm Sewer Catch Basin
- Buried Piping To Soil Venting Trenches
- Buried Piping To Groundwater Recovery Trenches
- Buried Discharge Line To Storm Sewer
- Storm Sewer
- Sanitary Sewer
- Fence

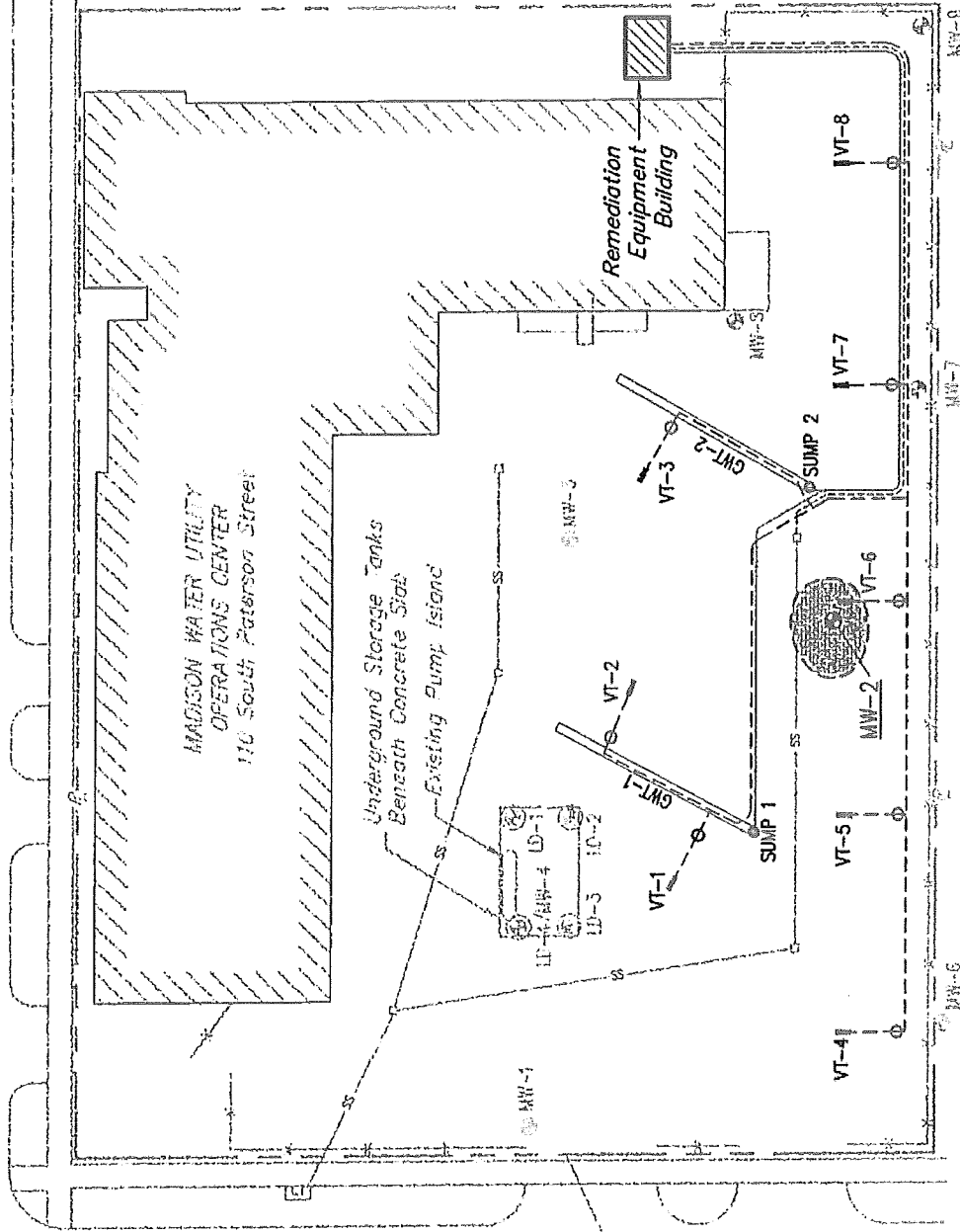
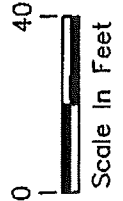
NOTES

1. THE AVERAGE DEPTH TO GROUNDWATER IS APPROXIMATELY 4.5 FEET BELOW GROUND SURFACE (BGS) WHEN THE REMEDIATION SYSTEM IS NOT PUMPING GROUNDWATER.
2. MONITORING WELLS SHOWN IN BOLD HAVE A PAL EXCEEDANCE AND WELLS SHOWN UNDERLINED HAVE AN ES EXCEEDANCE.

Gannett Fleming

FIGURE B-8

GROUNDWATER SAMPLE LOCATION MAP MADISON WATER UTILITY MADISON, WISCONSIN



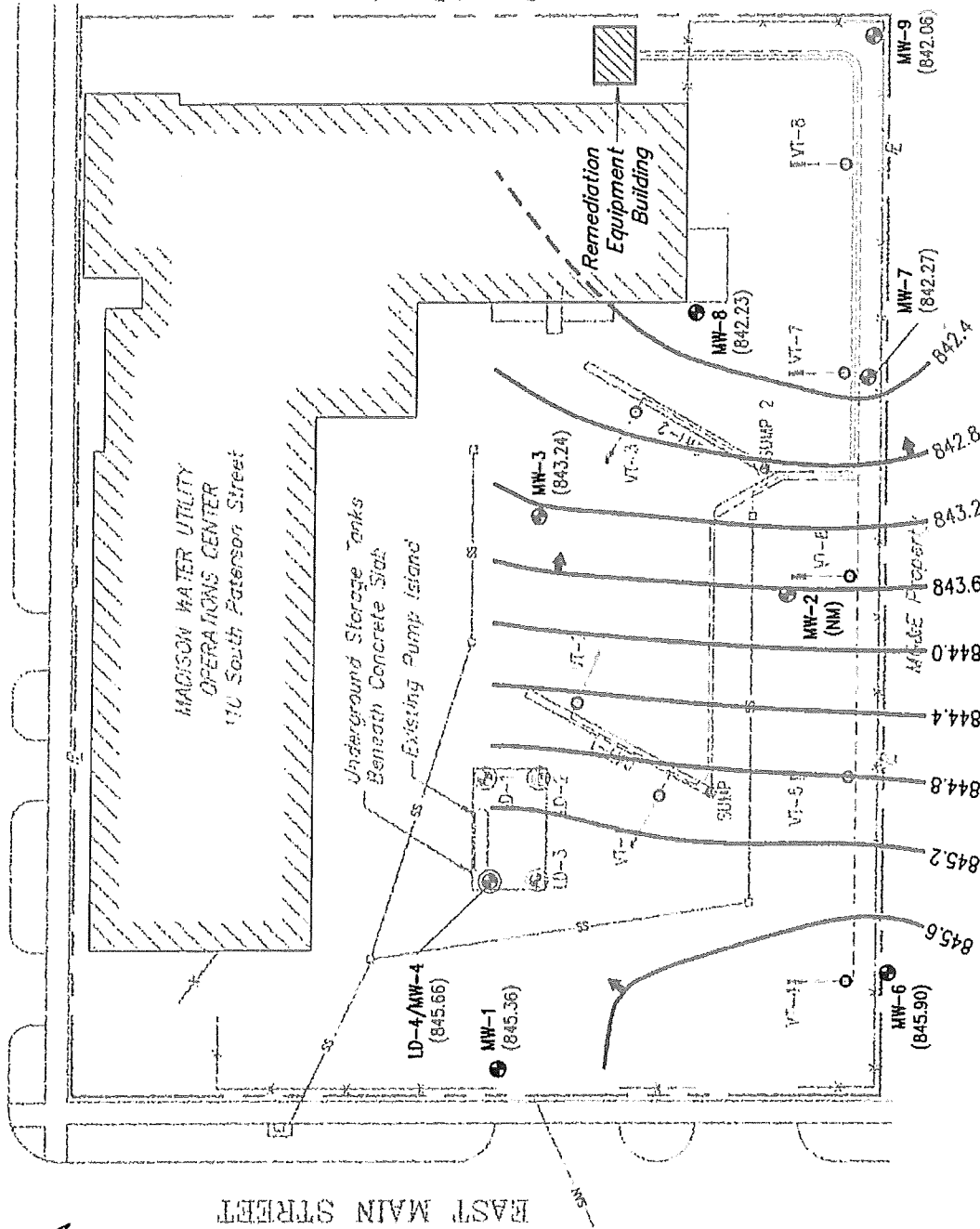
Model Property

Refined Property

MW-5



SOUTH PATERSON STREET



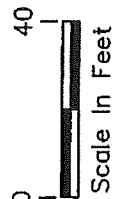
Connett Fleming
FIGURE B-9

MW-5
(842.23)

GROUNDWATER CONTOUR MAP

(JANUARY 16, 2002)

MADISON WATER UTILITY
MADISON, WISCONSIN



NOTE

1. GROUNDWATER CONTOURS BASED ON ELEVATIONS MEASURED ON 1/16/02.
2. GROUNDWATER ELEVATION NOT MEASURED IN MW-2 DUE TO PRESENCE OF FREE PRODUCT.

LEGEND

- Groundwater Contour With Flow Direction (Dashed Where Inferred)
- Groundwater Elevation (NM=Not Measured)
- Horizontal Soil Venting Trench And Valve Box
- Groundwater Recovery Trench And Sump
- Monitoring Well
- Leak Detection Well
- Storm Sewer Catch Basin
- Buried Piping To Soil Venting Trenches
- Buried Piping To Groundwater Recovery Trenches
- Buried Discharge Line To Storm Sewer
- Storm Sewer
- Sanitary Sewer
- Fence

Gannett Fleming

ATTACHMENT C

TABLES FOR CASE SUMMARY AND CLOSE OUT FORM

CITY OF MADISON WATER UTILITY
MADISON, WISCONSIN

TABLE A-1

FREE PRODUCT THICKNESS AT MW-2

Date	DTW (ft)	DTP (ft)	FP (ft)	Prod/Water Bailed (gal)	Cumulative Vol. Bailed (gallons)	Elevation (ft MSL)	
						Water 850.57	Product 850.57
12/20/95	5.66	5.11	0.55	1.37	1.37	844.91	845.46
01/16/96	6.35	5.93	0.42	1.24	2.60	844.22	844.64
01/18/96	5.77	5.57	0.20	1.29	3.90	844.80	845.00
03/19/96	NM	NM	0.50	1.00	4.90		
04/18/96	NM	NM	0.30	1.00	5.90		
11/18/96	6.04	5.78	0.26	1.26	7.16	844.53	844.79
01/30/97	7.53	7.04	0.49	1.05	8.21	843.04	843.53
03/20/97	6.70	6.46	0.24	1.15	9.36	843.87	844.11
04/11/97	6.50	6.37	0.13	1.16	10.52	844.07	844.20
04/28/98	5.44	5.05	0.39	1.38	11.90	845.13	845.52
08/21/98	6.84	6.30	0.54	1.17	13.08	843.73	844.27
02/16/99	6.15	6.07	0.08	1.21	14.29	844.42	844.50
03/10/99	6.63	6.53	0.10	1.14	15.43	843.94	844.04
03/29/99	6.77	6.56	0.21	1.13	16.56	843.80	844.01
04/06/99	6.45	6.40	0.05	1.16	17.72	844.12	844.17
05/24/99	5.49	5.43	0.06	1.32	19.04	845.08	845.14
06/07/99	5.80	5.72	0.08	1.27	20.31	844.77	844.85
07/13/99	6.05	5.99	0.06	1.23	21.53	844.52	844.58
09/22/99	5.34	5.30	0.04	1.34	22.87	845.23	845.27
10/21/99	8.02	7.69	0.33	0.95	23.82	842.55	842.88
11/03/99	NM	NM		1.00	24.82		
11/10/99	NM	NM		1.00	25.82		
02/10/00	7.70	7.63	0.07	0.50	26.32	842.87	842.94
02/22/00	8.40	8.20	0.20	0.86	27.18	842.17	842.37
03/03/00	NM	NM		2.00	29.18		
03/15/00	NM	NM		1.50	30.68		
04/12/00	NM	NM		1.50	32.18		
05/09/00	5.36	5.35	0.01	0.50	32.68	845.21	845.22
07/14/00	4.36	4.35	0.01		32.68	846.21	846.22
08/14/00	4.73	4.71	0.02		32.68	845.84	845.86
10/17/00	NM	NM		3.00	35.68		
10/30/00	6.68	6.68		0.50	36.18	843.89	843.89
12/07/00	6.71	6.70	0.01	0.50	36.68	843.86	843.87
02/02/01	9.37	8.97	0.40	0.50	37.18	841.20	841.60
02/21/01	8.41	8.35	0.06	0.50	37.68	842.16	842.22
03/08/01	8.00	7.99	0.01	1.50	39.18	842.57	842.58
04/04/01	6.89	6.86	0.03	1.00	40.18	843.68	843.71
05/17/01	5.61	5.60	0.01	1.29	41.47	844.96	844.97
06/12/01	4.41	4.39	0.02	2.50	43.97	846.16	846.18
07/03/01	5.06	5.05	0.01	15.00	58.97	845.51	845.52
07/06/01	5.43	5.42	0.01	0.00	58.97	845.14	845.15
08/16/01	4.91	4.90	0.01	0.00	58.97	845.66	845.67
09/07/01	5.18	5.16	0.02	0.00	58.97	845.39	845.41
10/16/01	5.73	5.70	0.03	3.00	61.97	844.84	844.87
10/23/01	4.78	4.76	0.02	25.00	86.97	845.79	845.81
01/16/02	7.21	7.15	0.06	4.00	90.97	843.36	843.42

NOTES:

Bold cell indicates that volume bailed was not recorded. Assumed bailed volume = purge volume.

Estimated total volume of free product = 55 gallons based on elliptical pool 25 ft long, 15 ft wide,
0.1 ft thick, and 30% porosity.

Free product was recovered by high-vac truck on 7/3/01 and 10/23/01.

NM = Not measured.

CITY OF MADISON WATER UTILITY
MADISON, WISCONSIN
TABLE C-1

PRE-REMEDIAL SOIL ANALYTICAL RESULTS (mg/kg)
(OCTOBER 1994)

Parameter	Sample I.D.														NR 720 Residual Contamination Levels
	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	
Benzene	<0.0014	<0.0015	<0.2	1.3	<2.6	5.3	<0.1	<0.09	<0.0016	<0.0021	0.58	0.14	<0.0034	<0.0015	0.0055
Ethylbenzene	<0.0075	<0.0077	0.6	6.1	5.3	1.9	<0.2	<0.18	<0.0081	<0.0110	2.36	<0.10	<0.0066	<0.0072	2.9
MTBE	<0.0140	<0.0150	<0.9	<1.3	<10.4	<1.2	<0.4	<0.36	<0.0160	<0.0210	<0.17	<0.19	<0.0140	<0.0150	NS
Toluene	<0.0140	<0.0150	<0.9	<1.3	<10.4	1.9	<0.4	<0.36	<0.0160	<0.0210	1.13	<0.19	<0.0140	<0.0150	1.5
1,2,4-TMB	<0.0075	<0.0077	0.7	6.0	<5.2	10.4	<0.2	<0.18	<0.0081	<0.0110	2.70	0.14	<0.0066	<0.0072	NS
1,3,5-TMB	<0.0175	<0.0077	0.5	6.9	<5.2	1.7	0.2	<0.18	<0.0081	<0.0110	0.89	<0.10	<0.0066	<0.0072	NS
Xylenes	<0.0150	<0.0144	<1.0	<4.7	<10.4	<9.0	0.8	<0.36	<0.0162	<0.0220	3.95	<0.20	<0.0132	<0.0144	4.1
GRO	<5.0	<5.0	902	7,190	614	810	69.9	69.6	<5.0	<5.0	182	<5.0	<5.0	<5.0	100
DRO	37.6	12.4	1,640	14,600	18.8	740	540	251	<5.0	9.68	1,130	390	142	319	100

NOTES:

The laboratory analytical results and NR 720 residual contaminants levels (RCLs) are in milligrams per kilogram (mg/kg) on a dry-weight basis.
Concentrations exceeding the NR 720 RCLs are in bold text.

All samples collected between 2.5 and 4.5 feet below grade.
Water table depth is approximately 4.5 feet below ground surface.

GRO = Gasoline range organics.

DRO = Diesel range organics.

NS = No standard established.

Table C-1 Continued ...

Parameter	Sample I.D.													NR 720 Residual Contaminant Levels
	B15	B16	B17	B18	B19	B20	B21	B22	B23	B24	MW7	MW8	MW9	
Benzene	0.0027	<0.002	<0.4	<0.0054	0.0072	0.9	1.2	<0.0037	<0.0049	<0.004	<0.0057	<0.0040	<0.0047	0.0055
Ethylbenzene	0.0125	<0.010	<0.8	<0.0110	0.0161	<0.2	2.5	<0.0074	0.0320	<0.008	<0.0120	<0.0081	<0.0090	2.9
MTBE	<0.0190	<0.020	<1.6	<0.0210	<0.0206	0.5	<2.1	<0.0150	<0.0190	<0.016	<0.0230	<0.0162	<0.0180	NS
Toluene	<0.0190	<0.020	2.2	<0.0210	<0.0206	<0.4	<2.1	<0.0150	<0.0190	<0.016	0.0309	<0.0162	<0.0180	1.5
1,2,4-TMB	0.0205	<0.010	0.9	<0.0110	<0.0103	<0.2	1.8	<0.0074	0.0882	<0.008	<0.0120	<0.0081	<0.0090	NS
1,3,5-TMB	0.0125	<0.010	<0.8	<0.0110	<0.0103	<0.2	<1.0	<0.0074	<0.0098	<0.008	<0.0120	<0.0081	<0.0090	NS
Xylenes	0.0381	<0.020	<1.6	<0.0220	<0.0206	<0.4	<2.6	<0.0148	0.0544	<0.016	<0.0266	<0.0162	<0.0180	4.1 ⁰⁰
GRO	<5.0	<5.0	178	<5.0	<5.0	72.5	485	6.7	9.6	<5.0	<5.0	<5.0	<5.0	100
DRO	597	<50	4,970	83.7	263	313	2,150	121	141	17.4	325	112	4,440	100

NOTES:

The laboratory analytical results and NR 720 residual contaminants levels (RCLs) are in milligrams per kilogram (mg/kg) on a dry-weight basis.
 Concentrations exceeding the NR 720 RCLs are in bold text.

All samples collected between 2.5 and 4.5 feet below grade.

Water table depth is approximately 4.5 feet below ground surface.

GRO = Gasoline range organics.

DRO = Diesel range organics.

NS = No standard established.

CITY OF MADISON WATER UTILITY
MADISON, WISCONSIN

TABLE C-3 (1 of 4)

GROUNDWATER CONTAMINANT CHEMISTRY DATA FOR PVOCs

Well ID	Parameter Concentration (µg/l)						
Sample Date	Benzene	Ethylbenzene	Methyl tert butyl ether	Toluene	Trimethylbenzenes	Xylenes	GRO
NR 140 ES	5	700	60	1,000	480	10,000	NS
NR 140 PAL	0.5	140	12	100	96	1,000	NS
MW-1							
11/09/93	<0.2	<1.0	<2.0	13.9	<2.0	<2.0	<50
10/11/94	<0.5	<1.0	<2.0	<2.0	<2.0	<2.3	<50
12/15/95	<0.5	<1.0	<2.0	<2.0	<2.0	<2.0	<50
03/19/96	<0.5	<1.0	<2.0	<2.0	<2.0	<2.0	<50
11/18/96	<0.5	<1.0	<1.0	<1.0	<2.0	<2.0	-
01/30/97	<0.5	<1.0	<1.0	<1.0	<2.0	<2.0	-
02/13/98	<0.20	<0.30	<0.20	0.20	<0.60	<0.90	-
08/21/98	<0.20	<0.30	<0.20	<0.20	<0.60	<0.90	-
02/16/99	<0.50	<1.0	<1.0	<1.0	<2.0	<2.0	-
10/17/00	<0.39	<0.4	<0.47	<0.37	<1.03	<1.4	-
01/16/02	<0.21	<0.22	<0.46	<0.41	<0.78	<0.69	-
MW-2							
11/09/93	875	225	<200	477	<200	1,549	157,000
10/11/94	FP	FP	FP	FP	FP	FP	FP
10/17/00	660	330	<47	300	700	500	-
05/16/01	700	220	<46	110	379	400	-
10/16/01	830	360	<23	190	550	620	-
01/16/02	1000	450	<46	340	590	650	-
MW-3							
11/09/93	10.0	21.6	<40	<40	<40.0	<65.8	5,210
10/11/94	1.5	1.0	<2.0	<2.0	<4.4	5.5	608
12/15/95	<0.5	<1.0	<2.0	<2.0	2.43	<2.66	837
03/19/96	1.71	<1.0	<2.0	<2.0	<2.0	<2.5	1,740
11/18/96	<0.5	<1.0	4.14	<1.0	2.40	5.42	-
01/30/97	<2.5	<5.0	19.6	<5.0	<10.0	<10.0	-
02/13/98	1.1	1.6	47	36	2.10	7.0	-
08/21/98	<0.20	2.3	2.3	32	<2.60	8.4	-
02/16/99	<0.5	<1.0	1.65	<1.0	<2.0	<2.59	-
10/21/99	0.254	<0.5	<0.3	<0.4	4.32	<1.17	-
05/09/00	<0.39	<0.4	<0.47	11	2.21	<1.43	-
10/17/00	<0.39	0.5	<0.47	21	2.5	<1.4	-
10/16/01	<0.21	<0.22	<0.46	18	2.18	2.6	-
01/16/02	<0.21	0.63	<0.46	42	<1.26	<0.69	-
LD-4/MW-4							
11/09/93	<0.2	<1.0	44.4	<2.0	<1.0	<2.0	205
10/11/94	1.2	<1.0	21.1	<2.0	<2.7	<2.0	143
12/15/95	8.52	<1.0	13.8	<2.0	<2.0	<2.0	168
03/19/96	<0.5	<1.0	24.4	<2.0	<2.0	<2.0	201
11/18/96	<0.5	<1.0	13.1	<1.0	<2.0	<2.0	-
01/30/97	1.08	<1.0	4.97	<1.0	<2.0	<2.0	-
02/13/98	0.20	0.40	9.7	1.0	11.0	<1.40	-
08/21/98	<0.20	<0.30	0.70	0.70	<0.60	<0.90	-
02/16/99	0.509	<1.0	<1.0	<1.0	<2.0	<2.0	-
10/17/00	<0.39	<0.4	<0.47	1.5	<1.03	<1.4	-
01/16/02	<0.21	<0.22	2.5	1.3	<0.60	<0.69	-

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Table C-3 (1 of 4) Continued...

Well ID/ Sample Date	Parameter Concentration (µg/l)						
	Benzene	Ethylbenzene	Methyl tert butyl ether	Toluene	Trimethylbenzenes	Xylenes	GRO
NR 140 ES	5	700	60	1,000	480	10,000	NS
NR 140 PAL	0.5	140	12	100	96	1,000	NS
MW-5							
11/09/93	<0.2	<1.0	<2.0	5.9	<1.0	<2.0	<50
10/11/94	<0.5	<1.0	<2.0	<2.0	<2.0	<2.0	<50
03/19/96	<0.5	<1.0	<2.0	<2.0	<2.0	<2.0	<50
11/18/96	<0.5	<1.0	<1.0	<1.0	<2.0	<2.0	-
01/30/97	<0.5	<1.0	<1.0	<1.0	<2.0	<2.0	-
02/13/98	<0.20	<0.30	<0.20	<0.20	<0.60	<0.90	-
08/21/98	<0.20	<0.30	<0.20	<0.20	<0.60	<0.90	-
02/16/99	<0.5	<1.0	<1.0	<1.0	<2.0	<2.0	-
10/17/00	<0.39	<0.4	<0.47	<0.37	<1.03	<1.4	-
MW-6							
10/11/94	<0.5	<1.0	<2.0	<2.0	<2.0	<2.0	<50
12/15/95	<0.5	<1.0	<2.0	<2.0	<2.0	<2.0	<50
03/19/96	<0.5	<1.0	<2.0	<2.0	<2.0	<2.0	<50
11/18/96	<0.5	<1.0	<1.0	<1.0	<2.0	<2.0	-
01/30/97	<0.5	<1.0	<1.0	<1.0	<2.0	<2.0	-
02/13/98	<0.20	<0.30	<0.20	<0.20	<0.60	<0.90	-
08/21/98	<0.20	<0.30	<0.20	<0.20	<0.60	<0.90	-
02/16/99	<0.5	<1.0	<1.0	<1.0	<2.0	<2.0	-
10/17/00	<0.39	<0.4	<0.47	<0.37	<1.03	<1.4	-
01/16/02	<0.21	0.2	<0.46	<0.41	<0.76	<0.69	-
MW-7							
10/11/94	<0.5	<1.0	<2.0	<2.0	<2.0	<2.0	<50
12/15/95	<0.5	<1.0	<2.0	<2.0	<2.0	<2.0	<50
03/19/96	<0.5	<1.0	<2.0	<2.0	<2.0	<2.0	<50
11/18/96	<0.5	<1.0	<1.0	<1.0	<2.0	<2.0	-
01/30/97	<0.5	<1.0	<1.0	<1.0	<2.0	<2.0	-
02/13/98	<0.20	<0.30	<0.20	<0.20	<0.60	<0.90	-
08/21/98	<0.20	<0.30	<0.20	<0.20	<0.60	<0.90	-
02/16/99	<0.5	<1.0	<1.0	<1.0	<2.0	<2.0	-
10/21/99	<0.15	<0.5	<0.3	<0.4	<0.55	<0.19	-
05/09/00	<0.39	<0.4	<0.47	<0.37	<1.03	<1.43	-
10/17/00	<0.39	<0.4	<0.47	<0.37	<1.03	<1.4	-
05/16/01	<0.21	<0.22	<0.46	<0.41	<0.60	<0.69	-
10/16/01	<0.21	<0.22	<0.46	<0.41	<0.60	<0.69	-
01/16/02	<0.21	<0.22	<0.46	<0.41	<0.60	<0.69	-
MW-8							
10/11/94	<0.5	3.1	<2.0	<2.0	<3.3	7.6	1,380
12/15/95	<0.5	<1.0	<2.0	<2.0	<2.0	<2.0	94.9
03/19/96	<0.5	<1.0	<2.0	2.36	<2.0	<2.0	264
11/18/96	<1.0	<5.0	<5.0	<5.0	<2.0	<10.0	-
01/30/97	<0.5	<1.0	<1.0	<1.0	<2.0	<2.0	-
02/13/98	<0.20	<0.30	<0.20	0.60	<0.60	<0.90	-
08/21/98	<0.20	<0.30	1.0	2.0	<0.60	<0.90	-
10/21/99	<0.15	<0.5	<0.3	<0.4	<0.55	<0.19	-
05/09/00	<0.39	<0.4	<0.47	<0.37	<1.03	<1.43	-
10/17/00	<0.39	<0.4	<0.47	2.7	<1.03	<1.4	-
05/16/01	<0.21	<0.22	<0.46	1	<0.60	<0.69	-
10/16/01	<0.21	<0.22	<0.46	<0.41	<0.60	<0.69	-
01/16/02	<0.21	<0.22	<0.46	3	<0.60	<0.69	-

SOUTH PATERSON STREET

MADISON WATER UTILITY
OPERATIONS CENTER
110 South Paterson Street

Underground Storage Tanks
Beneath Concrete Slab
Existing Pump Island

Railroad Property

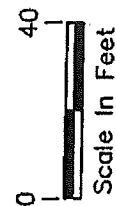
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010102 34450.dwg

EAST MAIN STREET

MG&E Property

MW-5

PRE-REMEDIAL SOIL SAMPLE LOCATION MAP MADISON WATER UTILITY MADISON, WISCONSIN



LEGEND

- Former Location Of Aboveground Storage Tank Systems (Approximate)
- Borehole Location (10/94)
- Monitoring Well
- Leak Detection Well
- Storm Sewer Catch Basin
- Storm Sewer
- Sanitary Sewer
- Fence

NOTE

1. SAMPLE LOCATIONS WHERE CONTAMINANT CONCENTRATIONS EXCEED NR 720 SOIL CLEANUP STANDARDS ARE IN **BOLD**.

Gannett Fleming

FIGURE B-4

SOUTH PATERSON STREET

EAST MAIN STREET

MADISON WATER UTILITY
OPERATIONS CENTER
110 South Paterson Street

Underground Storage Tanks
Beneath Concrete Slab
Existing Pump Island

Remediation
Equipment
Building

MO&E Property

Refined Property

LEGEND

- VT-1 Horizontal Soil Venting Trench And Valve Box
- GWT-1 Groundwater Recovery Trench And Sump
- Estimated Extent Of Free Product
- MW-1 Monitoring Well
- LD-1 Leak Detection Well
- Storm Sewer Catch Basin
- Buried Piping To Soil Venting Trenches
- Buried Piping To Groundwater Recovery Trenches
- Buried Discharge Line To Storm Sewer
- Storm Sewer
- Sanitary Sewer
- Fence

NOTES

1. THE AVERAGE DEPTH TO GROUNDWATER IS APPROXIMATELY 4.5 FEET BELOW GROUND SURFACE (BCS) WHEN THE REMEDIATION SYSTEM IS NOT PUMPING GROUNDWATER.
2. SOIL SAMPLES COLLECTED IN OCTOBER 1994 DOCUMENTED THAT DRO/GRO CONCENTRATIONS WERE ABOVE THE NR 720 RESIDUAL CONTAMINANT LEVEL OF 100 mg/kg AT 20 OF 27 LOCATIONS BETWEEN 2.5 AND 4.5 FEET BCS ACROSS THE SOUTHERN HALF OF THE SITE.

Connett Fleming

FIGURE B-2

SITE MAP
MADISON WATER UTILITY
MADISON, WISCONSIN

Scale In Feet
0 40

MW-5

MW-9

MW-7

MW-6

VT-4

VT-5

VT-6

VT-7

VT-8

MW-8

VT-3

GWT-2

VT-2

GWT-1

VT-1

LD-3

LD-2

LD-1

MW-4

MW-3

MW-1

LD-4

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CITY OF MADISON WATER UTILITY
MADISON, WISCONSIN

TABLE C-3 (4 of 4)

ESTIMATED ASSIMILATIVE CAPACITY OF THE AQUIFER ON JANUARY 16, 2002

Electron Acceptor/By-Product	Avg. Upgradient Concentration or Max. Conc. in Source Area (mg/l)	Minimum Source Zone Concentration (mg/l)	Difference (mg/l)	Utilization Factor (mg/mg)	Difference/Utilization Factor (mg/l)
Dissolved oxygen (DO)					
Nitrate	<1.0	<1.0 ⁽¹⁾	0	3.14	NA
Manganese	0.1	0.02	0.04	4.9	0.01
Ferrous dissolved iron	0.6	NA	0.6	17.1	0.03
Sulfate	11	NA	11	21.8	0.50
Methane	35.5	6	29.1	4.7	6.20
	10	NA	10	0.78	12.82
Total assimilative capacity of the aquifer based on the stoichiometry of BTEX degradation					
					19.6 ⁽²⁾

NOTES:

Difference

= Avg. Upgradient Concentration - Minimum Source Zone Concentration for dissolved oxygen, nitrate, and sulfate.
= Max. Conc. in Source Area for dissolved iron, manganese, and methane.

Utilization factor

= Numbers developed based on the stoichiometry of BTEX degradation, after the AFCEE technical protocol, as

recommended in WDNK guidance on remediation through natural attenuation.

NA

= Not Applicable

FOOTNOTES:

1. Assumed minimum source zone concentration for DO is <1.0 mg/l based on observed free product in MW-2.

2. This assimilative capacity is 8.0 times the dissolved-phase BTEX concentration of 2.44 mg/l in MW-2 on the date shown.

M:\CLERICAL\PROJECTS\34400\34490\Reports\Closeout\Table C-3 (3 & 4 of 4).xls\4 OF 4

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Table C-3 (1 of 4) Continued...

Well ID/ Sample Date	Parameter Concentration (µg/l)						
	Benzene	Ethylbenzene	Methyl tert butyl ether	Toluene	Trimethylbenzenes	Xylenes	GRO
NR 140 ES	5	700	60	1,000	480	10,000	NS
NR 140 PAL	0.5	140	12	100	96	1,000	NS
MTW-9							
10/11/94	<0.5	<1.0	<2.0	<2.0	<2.0	<2.0	<50
12/15/95	<0.5	<1.0	<2.0	<2.0	<2.0	<2.0	<50
03/19/96	<0.5	<1.0	<2.0	<2.0	<2.0	<2.0	<50
11/18/96	<0.5	<1.0	<1.0	<1.0	<2.0	<2.0	-
01/30/97	<0.5	<1.0	<1.0	<1.0	<2.0	<2.0	-
02/13/98	<0.20	<0.30	<0.20	<0.20	<0.60	<0.90	-
08/21/98	<0.20	<0.30	<0.20	<0.20	<0.60	<0.90	-
10/17/00	<0.39	<0.4	<0.47	<0.37	<1.03	<1.4	-

NOTES:

Analytical results are in micrograms per liter (µg/l).

Detected concentrations exceeding an NR 140 PAL are underlined. Detected concentrations exceeding an NR 140 ES are bold and underlined.

Remediation system operated from February 16, 1998, through last April/early May 2000.

GRO = Gasoline range organics

NR 140 PAL = NR 140 Preventative Action Limit, Wisconsin Administrative Code.

NR 140 ES = NR 140 Enforcement Standard, Wisconsin Administrative Code.

NS = No standard.

- = Not analyzed.

FP = Free product.

Laboratory analytical reports and chain of custody records for groundwater samples collected between October 17, 2000, and January 16, 2002, are included in Attachment H.

**CITY OF MADISON WATER UTILITY
MADISON, WISCONSIN**

TABLE C-3 (2 of 4)

GROUNDWATER MONITORING ANALYTICAL RESULTS FOR THE REGULATED POLYCYCLIC AROMATIC HYDROCARBONS AND DRO

Well ID	Parameter Concentration (pg/l)									
Sample Date	Anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Chrysene	Fluoranthene	Fluorene	Naphthalene	Pyrene	DRO	
NR 140 PAL	600	0.02	0.02	0.02	80	80	8	50	NS	
NR 140 ES	3,000	0.2	0.2	0.2	400	400	40	250	NS	
MW-1										
11/09/93	-	-	-	-	-	-	<1.0	-	-	
10/11/94	-	-	-	-	-	-	1.3	-	233	
12/15/95	<0.11	<0.1	<0.08	<0.06	<0.15	<0.08	<0.09	<0.15	<100	
03/19/96	<0.32	0.246	0.098	<0.06	<0.22	<0.12	<0.06	0.410	160	
11/18/96	<0.16	<0.07	<0.04	<0.03	<0.11	<0.06	<0.03	<0.09	161	
10/17/00	<0.01	<0.1	<0.065	<0.7	<0.36	<0.33	<0.22	<0.059	-	
01/16/02	<0.042	<0.028	<0.12	<0.13	<0.14	<0.24	0.41	<0.068	-	
MW-2										
11/09/93	-	-	-	-	-	-	366	-	-	
10/11/94	FP	FP	FP	FP	FP	FP	FP	FP	FP	
10/17/00	1.1	1.3	1.6	0.89	80	3.1	180	3.6	-	
05/16/01	2.4	0.79	0.79	1.1	3.1	3.6	180	2.3	-	
01/16/02	<0.042	<0.028	<0.12	<0.13	<0.14	<0.24	402	<0.068	-	
MW-3										
11/09/93	-	-	-	-	-	-	<20.0	-	-	
10/11/94	-	-	-	-	-	-	12.9	-	7,030	
12/15/95	<0.11	<0.1	<0.08	<0.06	<0.15	<0.08	0.702	<0.15	5,500	
03/19/96	<0.16	<0.07	<0.04	<0.03	<0.11	<0.06	<0.03	<0.09	7,870	
11/18/96	-	-	-	-	-	-	-	-	7,320	
10/21/99	-	-	-	-	-	-	<0.8	-	-	
05/09/00	-	-	-	-	-	-	1.2	-	-	
10/17/00	<0.01	<0.1	<0.065	<0.7	<0.36	<0.33	<0.22	<0.059	-	
01/16/02	<0.042	<0.028	<0.12	<0.13	<0.14	<0.24	<0.12	<0.068	-	
LW-4/MW-4										
11/09/93	-	-	-	-	-	-	<1.0	-	-	
10/11/94	-	-	-	-	-	-	14.0	-	2,220	
12/15/95	<0.11	<0.1	<0.08	<0.06	<0.15	<0.08	<0.09	<0.15	1,690	
03/19/96	<0.16	<0.07	<0.04	<0.03	<0.11	0.790	<0.03	<0.09	2,540	
11/18/96	-	-	-	-	-	-	-	-	2,280	
10/17/00	0.03	<0.1	<0.065	<0.7	0.69	0.65	<0.22	<0.059	-	
01/16/02	<0.042	<0.028	<0.12	<0.13	<0.14	<0.24	<0.12	<0.068	-	
MW-5										
11/09/93	-	-	-	-	-	-	<1.0	-	-	
10/11/94	-	-	-	-	-	-	<1.0	-	368	
03/19/96	<0.16	<0.07	<0.04	<0.03	<0.11	<0.06	<0.03	<0.09	253	
11/18/96	-	-	-	-	-	-	-	-	209	
10/17/00	<0.01	<0.1	<0.065	<0.7	<0.36	<0.33	<0.22	<0.059	-	
MW-6										
10/11/94	-	-	-	-	-	-	<1.0	-	1,430	
12/15/95	1.15	5.07	3.06	<0.06	8.82	0.240	<0.09	12.4	607	
03/19/96	7.16	<0.07	13.2	<0.03	41.8	1.72	<0.03	58.4	1,510	
11/18/96	-	-	-	-	-	-	-	-	410	
10/17/00	0.47	1.3	1.9	1.7	4.2	<0.33	<0.22	4.7	-	
01/16/02	<0.042	<0.028	<0.12	<0.13	<0.14	<0.24	<0.12	<0.068	-	

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Table C-3 (2 of 4) Continued...

Well ID	Parameter Concentration (µg/l)								
Sample Date	Anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Chrysene	Fluoranthene	Fluorene	Naphthalene	Pyrene	DRO
NR 140 PAL	600	0.02	0.02	0.02	80	80	8	50	NS
NR 140 ES	3,000	0.2	0.2	0.2	400	400	40	250	NS
MW-7									
10/11/94	-	-	-	-	-	-	<1.0	-	5,300
12/15/95	<0.11	0.160	<0.08	<0.06	<0.15	<0.08	<0.09	<0.15	340
03/19/96	<0.16	<0.07	0.130	<0.03	<0.11	0.195	<0.03	<0.09	1,440
11/18/96	<0.16	<0.07	0.132	<0.03	<0.11	<0.06	0.252	<0.09	191
10/21/99	-	-	-	-	-	-	<0.8	-	-
05/09/00	-	-	-	-	-	-	<0.53	-	-
10/17/00	0.02	<0.1	<0.065	<0.7	<0.36	<0.33	0.25	<0.059	-
05/16/01	<0.027	<0.014	<0.030	<0.017	<0.021	<0.029	<0.031	<0.024	-
01/16/02	<0.042	<0.028	<0.12	<0.13	<0.14	<0.24	<0.12	<0.068	-
MW-8									
10/11/94	-	-	-	-	-	-	<1.0	-	5,260
12/15/95	<0.11	0.122	<0.08	<0.06	<0.15	<0.08	<0.09	<0.15	675
03/19/96	<0.16	0.117	<0.04	<0.03	0.124	<0.06	<0.03	<0.09	1,470
11/18/96	<0.16	<0.07	0.063	<0.03	<0.11	<0.06	<0.03	<0.09	519
10/21/99	-	-	-	-	-	-	<0.8	-	-
05/09/00	-	-	-	-	-	-	<0.53	-	-
10/17/00	<0.01	<0.1	<0.065	<0.7	<0.36	<0.33	<0.22	<0.059	-
05/16/01	<0.027	<0.014	<0.030	<0.017	<0.021	<0.029	0.042	<0.024	-
01/16/02	<0.042	<0.028	<0.12	<0.13	<0.14	<0.24	<0.12	<0.068	-
MW-9									
10/11/94	-	-	-	-	-	-	1.6	-	37,500
12/15/95	<0.11	<0.1	<0.08	<0.06	0.190	<0.08	0.133	0.225	12,000
03/19/96	<0.16	<0.07	<0.04	<0.03	0.248	<0.06	<0.03	0.244	3,200
11/18/96	<0.16	<0.07	<0.04	<0.03	<0.11	<0.06	<0.03	<0.09	1,009
10/17/00	<0.01	<0.1	<0.065	<0.7	<0.36	<0.33	<0.22	<0.059	-

NOTES:

Analytical results are in micrograms per liter (µg/l).

Detected concentrations exceeding an NR 140 ES are bold. Detected concentrations exceeding an NR 140 PAL are underlined.

Remediation system operated from February 16, 1998, through last April/early May 2000.

DRO = Diesel range organics.

NR 140 PAL = NR 140 Preventative Action Limit, Wisconsin Administrative Code.

NR 140 ES = NR 140 Enforcement Standard, Wisconsin Administrative Code.

NS = No standard.

— = Not analyzed.

CITY OF MADISON WATER UTILITY
MADISON, WISCONSIN

TABLE C-3 (3 of 4)

NATURAL ATTENUATION PARAMETERS FOR GROUNDWATER (JANUARY 2002)

Parameters	MW-1	MW-2	MW-3	MW-4	MW-6	MW-7	MW-8
Dissolved oxygen (mg/l)	<1.0	-	<1.0	<1.0	<1.0	1.96	<1.0
Nitrate (mg/l)	<0.02	<0.02	0.21	<0.02	0.09	0.13	<0.02
Manganese (mg/l)	1.1	0.55	0.53	0.93	0.15	0.11	-
Ferrous iron (mg/l)	6.9	11	31	5.1	0.91	<0.139	-
Sulfate (mg/l)	13	6.4	560	130	58	63	60
Methane (µg/l)	350	10,000	1,700	770	360	11	1,300
Redox Potential (mV)	-10	-45	-35	-55	25	25	-
pH (standard units)	7.1	7.4	7.1	7.3	7.3	7.4	-
Alkalinity (mg/l as CaCO ₃)	891	665	497	709	384	295	473

NOTES:

Monitoring wells MW-1 and MW-6 are upgradient of and MW-2 is the only well inside the plume of petroleum-contaminated groundwater.

- = Not measured due to observed free product/sheen in well.

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TABLE C-4

GROUNDWATER DEPTH AND ELEVATION DATA

Elevation (ft MSL) of	MW-1	MW-2	MW-3	LD-4	MW-5	MW-6	MW-7	MW-8	MW-9
Top of PVC	850.59	850.57	850.45	850.83	851.15	851.96	850.69	851.07	850.96
Screen Top	847.09	847.07	846.95	NM	847.65	848.46	848.19	848.97	847.46
Screen Bottom	837.09	837.07	836.95	NM	837.65	838.46	838.19	838.97	837.46
Date	Depth to Water (ft)								
11/09/93	4.56	5.16	4.87	4.76	6.08	5.80	NI	NI	NI
10/11/94	4.02	FP	4.14	4.32	5.08	5.36	4.28	4.66	4.58
01/20/95	4.90	FP	6.09	5.18	NM	NM	7.35	7.67	8.15
12/15/95	4.74	FP	4.90	4.78	NM	5.84	4.74	5.14	5.91
03/19/96	5.01	FP	5.77	5.33	7.23	6.12	6.62	6.81	7.10
11/18/96	5.06	FP	6.11	8.54	6.61	5.86	5.24	6.40	6.50
01/30/97	6.03	FP	8.28	6.60	8.70	6.23	8.52	9.12	8.20
02/21/97	5.22	FP	7.46	6.66	NM	NM	NM	6.74	6.71
03/20/97	4.82	FP	6.80	6.11	NM	NM	7.14	7.66	6.83
04/11/97	4.55	FP	6.48	5.46	NM	NM	NM	7.58	6.45
05/08/97	4.12	FP	5.92	4.52	NM	NM	4.52	4.97	4.82
02/13/98	5.02	FP	7.38	5.50	9.00	6.08	7.50	9.08	8.94
08/21/98	4.38	FP	6.12	4.77	6.26	5.65	4.94	5.51	6.20
02/16/99	5.20	FP	6.50	6.44	6.26	6.04	5.03	6.45	5.47
10/21/99	5.39	FP	7.98	6.24	NM	NM	7.67	8.30	8.40
11/10/99	5.90	FP	7.81	6.39	8.50	6.14	7.89	8.40	8.38
05/09/00	4.52	FP	5.56	4.90	6.48	5.60	4.76	5.24	6.22
10/17/00	4.72	FP	5.91	4.68	7.30	5.67	6.18	6.73	7.91
05/16/01	4.31	FP	6.21	4.51	7.24	NM	4.57	6.56	6.77
10/16/01	4.42	FP	4.61	4.48	5.72	NM	4.69	5.11	5.59
01/16/02	5.23	FP	7.21	5.17	8.92	6.06	8.42	8.84	8.90
Date	Groundwater Elevation (ft MSL)								
11/09/93	846.03	845.41	845.58	846.07	845.07	846.16	NI	NI	NI
10/11/94	846.57	FP	846.31	846.51	846.07	846.60	846.41	846.41	846.38
01/20/95	845.69	FP	844.36	845.65	NM	NM	843.34	843.40	842.81
12/15/95	845.85	FP	845.55	846.05	NM	846.12	845.95	845.93	845.05
03/19/96	845.58	FP	844.68	845.50	843.92	845.84	844.07	844.26	843.86
11/18/96	845.53	FP	844.34	842.29	844.54	846.10	845.45	844.67	844.46
01/30/97	844.56	FP	842.17	844.23	842.45	845.73	842.17	841.95	842.76
02/21/97	845.37	FP	842.99	844.17	NM	NM	NM	844.33	844.25
03/20/97	845.77	FP	843.65	844.72	NM	NM	843.55	843.41	844.13
04/11/97	846.04	FP	843.97	845.37	NM	NM	NM	843.49	844.51
05/08/97	846.47	FP	844.53	846.31	NM	NM	846.17	846.10	846.14
02/13/98	845.57	FP	843.07	845.33	842.15	845.88	843.19	841.99	842.02
08/21/98	846.21	FP	844.33	846.06	844.89	846.31	845.75	845.56	844.76
02/16/99	845.39	FP	843.95	844.39	844.89	845.92	845.66	844.62	845.49
10/21/99	845.20	FP	842.47	844.59	NM	NM	843.02	842.77	842.56
11/10/99	844.69	FP	842.64	844.44	842.65	845.82	842.80	842.67	842.58
05/09/00	846.07	FP	844.89	845.93	844.67	846.36	845.93	845.83	844.74
10/17/00	845.87	FP	844.54	846.15	843.85	846.29	844.51	844.34	843.05
05/16/01	846.28	FP	844.24	846.32	843.91	NM	846.12	844.51	844.19
10/16/01	846.17	FP	845.84	846.35	845.43	NM	846.00	845.96	845.37
01/16/02	845.36	FP	843.24	845.66	842.23	845.90	842.27	842.23	842.06

NOTES:

Top nut of fire hydrant (elevation = 853.33 ft MSL) located at corner of Main and Paterson used as benchmark.

MSL is the elevation in feet relative to mean sea level.

NM = Not measured.

NI = Not installed.

FP = Free product.

Gannett Fleming

ATTACHMENT D

**GRAPHS AND STATISTICAL ANALYSES FOR
CASE SUMMARY AND CLOSE OUT FORM**

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State of Wisconsin

Department of Natural Resources

Remediation and Redevelopment Program

Notice: This form is the DNR supplied spreadsheet referenced in Appendices A of Comm 46 and NR 746, Wis. Adm. Code. It is provided to consultants as an optional tool for groundwater contaminant trend analysis to support site closure requests under s. Comm 46.07, Comm 46.08, NR 746.07, NR 746.08, Wis. Adm. Code. Use this form or a manual method when seeking case closure under those rules. Earlier versions of this form should not be used.

Instructions: Do not change formulas or other information in cells with a blue background, only cells with a yellow background are used for data entry. To use the spreadsheet, provide at least four rounds and not more than ten rounds of data that is not seasonally affected. Use consistent units. The spreadsheet contains several error checks, and a data entry error may cause "DATA ERR" or "DATE ERR" to be displayed. Dates that are not consecutive will show an error message and will not display the test results. The spreadsheet tests the data for both increasing and decreasing trends at both 80 percent and 90 percent confidence levels. If a declining trend is present at 80 percent but not at 90 percent, a site is still eligible for closure under Comm 46 and NR 746 provided that other conditions in those rules are met. If an increasing or decreasing trend is not present, an additional coefficient of variation test is used to test for stability, as proposed by Wiedemeier et al, 1999. For additional information, refer to the Interim Guidance on Natural Attenuation for Petroleum Releases, dated October 1999. Refer to the guidance for recommendations on data entry for non-detect values.

Site Name = 10 S. Paterson, Madison Water Utility

BRTS No. =

Well Number = MW-3

Event Number	Compound -> Sampling Date (most recent last)	Benzene				Toluene		Ethylbenzene		Total Xylenes		Total TMB		MTBE	
		Concentration (leave blank if no data)				Concentration (leave blank if no data)		Concentration (leave blank if no data)		Concentration (leave blank if no data)		Concentration (leave blank if no data)		Concentration (leave blank if no data)	
1	11-Oct-94	1.50	0.01	0.01	0.01	1.00	5.50	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
2	30-Jan-97	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
3	13-Feb-98	1.10	36.00	36.00	36.00	1.60	7.00	7.00	2.10	2.10	2.10	2.10	2.10	2.10	2.10
4	21-Aug-98	0.01	32.00	32.00	32.00	2.30	8.40	8.40	0.01	0.01	0.01	0.01	0.01	0.01	0.01
5	16-Feb-99	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
6	21-Oct-99	0.25	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
7	09-May-00	0.01	11.00	11.00	11.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
8	17-Oct-00	0.01	21.00	21.00	21.00	0.50	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
9	16-Oct-01	0.01	18.00	18.00	18.00	0.01	2.60	2.60	2.18	2.18	2.18	2.18	2.18	2.18	2.18
10	16-Jan-02	0.01	42.00	42.00	42.00	0.63	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Mann Kendall Statistic (S) =		-16.0	15.0	15.0	15.0	-5.0	-10.0	-10.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Number of Rounds (n) =		10	10	10	10	10	10	10	10	10	10	10	10	10	10
Average =		0.29	16.00	16.00	16.00	0.61	2.36	2.36	1.34	1.34	1.34	1.34	1.34	1.34	1.34
Standard Deviation =		0.545	16.360	16.360	16.360	0.803	3.351	3.351	1.532	1.532	1.532	1.532	1.532	1.532	1.532
Coefficient of Variation(CV)=		1.863	1.022	1.022	1.022	1.320	1.422	1.422	1.146	1.146	1.146	1.146	1.146	1.146	1.146

Error Check, Blank if No Errors Detected

Trend $\geq 80\%$ Confidence Level	DECREASING	INCREASING	No Trend	No Trend	No Trend	INCREASING	DECREASING
Trend $\geq 90\%$ Confidence Level	DECREASING	No Trend	No Trend	No Trend	No Trend	No Trend	DECREASING
Stability Test, if No Trend Exists at 80% Confidence Level	NA	NA	CV > 1	NON-STABLE	CV > 1	NON-STABLE	NA
Data Entry By = AJH		Date = 20-Mar-02		Checked By =		NA	

Mann-Kendall Statistical Test
Form 4400-215 (2/2001)

State of Wisconsin

Department of Natural Resources

Remediation and Redevelopment Program

Notice: This form is the DNR supplied spreadsheet referenced in Appendices A of Comm 46 and NR 746, Wis. Adm. Code. It is provided to consultants as an optional tool for groundwater contaminant trend analysis to support site closure requests under s. Comm 46.07, Comm 46.08, NR 746.07, NR 746.08, Wis. Adm. Code. Use this form or a manual method when seeking case closure under those rules. Earlier versions of this form should not be used.

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Site Name = 110 S. Paterson, Madison Water Utility

BRTS No. =

Well Number = MW-4

Compound ->

Event Number	Sampling Date (most recent last)	Benzene Concentration (leave blank if no data)	Toluene Concentration (leave blank if no data)	Ethylbenzene Concentration (leave blank if no data)	Total Xylenes Concentration (leave blank if no data)	Total TMB Concentration (leave blank if no data)	MTBE Concentration (leave blank if no data)
1	11-Oct-94	1.20	0.01	0.01	0.01	0.01	21.10
2	15-Dec-95	8.52	0.01	0.01	0.01	0.01	13.80
3	19-Mar-96	0.01	0.01	0.01	0.01	0.01	24.40
4	18-Nov-96	0.01	0.01	0.01	0.01	0.01	13.10
5	30-Jan-97	1.08	0.01	0.01	0.01	0.01	4.97
6	13-Feb-98	0.20	1.00	0.40	0.01	11.00	9.70
7	21-Aug-98	0.01	0.70	0.01	0.01	0.01	0.70
8	16-Feb-99	0.51	0.01	0.01	0.01	0.01	0.01
9	17-Oct-00	0.01	1.50	0.01	0.01	0.01	0.01
10	16-Jan-02	0.01	1.30	0.01	0.01	0.01	2.50
Mann Kendall Statistic (S) =		-17.0	22.0	1.0	0.0	1.0	-32.0
Number of Rounds (n) =		10	10	10	10	10	10
Average =		1.16	0.46	0.05	0.01	1.11	9.03
Standard Deviation =		2.628	0.610	0.123	0.000	3.475	8.900
Coefficient of Variation(CV)=		2.273	1.338	2.517	0.000	3.134	0.986

Error Check, Blank if No Errors Detected

Trend ≥ 80% Confidence Level	DECREASING	INCREASING	No Trend	No Trend	No Trend	DECREASING
Trend ≥ 90% Confidence Level	DECREASING	INCREASING	No Trend	No Trend	No Trend	DECREASING
Stability Test, if No Trend Exists at 80% Confidence Level	NA	NA	CV > 1	CV ≤ 1	NON-STABLE	NA
Data Entry By = AJH		Date = 20-Mar-02		Checked By =		

Mann-Kendall Statistical Test
Form 4400-215 (2/2001)

State of Wisconsin

Department of Natural Resources

Remediation and Redevelopment Program

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Site Name = 110 S. Paterson, Madison Water Utility

BRTS No. =

Well Number = MW-8

Event Number	Compound -> Sampling Date (most recent last)	Benzene				Toluene		Ethylbenzene		Total Xylenes		Total TMB		MTBE	
		Concentration (leave blank if no data)		Concentration (leave blank if no data)		Concentration (leave blank if no data)		Concentration (leave blank if no data)		Concentration (leave blank if no data)		Concentration (leave blank if no data)		Concentration (leave blank if no data)	
1	11-Oct-94	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
2	18-Nov-96	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
3	30-Jan-97	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
4	13-Feb-98	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
5	21-Aug-98	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
6	21-Oct-99	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
7	09-May-00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
8	17-Oct-00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
9	16-May-01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
10	16-Oct-01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

Mann Kendall Statistic (S) =		0.0	10.0	-9.0	-9.0	-9.0	-9.0	-1.0
Number of Rounds (n) =		10	10	10	10	10	10	10
Average =		0.01	0.64	0.32	0.77	0.01	0.11	0.11
Standard Deviation =		0.000	0.978	0.977	2.400	0.000	0.313	0.313
Coefficient of Variation(CV)=		0.000	1.537	3.063	3.121	0.000	2.872	2.872

Error Check, Blank if No Errors Detected

Trend ≥ 80% Confidence Level	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Trend ≥ 90% Confidence Level	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level	CV ≤ 1 STABLE	CV > 1 NON-STABLE	CV > 1 NON-STABLE	CV > 1 NON-STABLE	CV > 1 NON-STABLE	CV ≤ 1 STABLE	CV > 1 NON-STABLE	CV > 1 NON-STABLE
Data Entry By = AJH		Date = 20-Mar-02		Checked By =				

Mann-Kendall Statistical Test
Form 4400-215 (2/2001)

Gannett Fleming

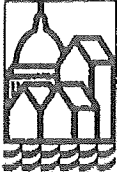
ATTACHMENTS E AND F

SIGNED STATEMENT BY THE RESPONSIBLE PARTY AND
COPY OF MOST RECENT DEED

M:\CLERICAL\PROJECTS\34400\34490\Reports\Closeout\AttachA.doc

Madison Water Utility

City of
Madison



David Denig-Chakroff, General Manager

523 East Main Street
Madison, Wisconsin 53703
Telephone: 608 266 4651
FAX: 608 266 4426
E-mail: water@ci.madison.wi.us

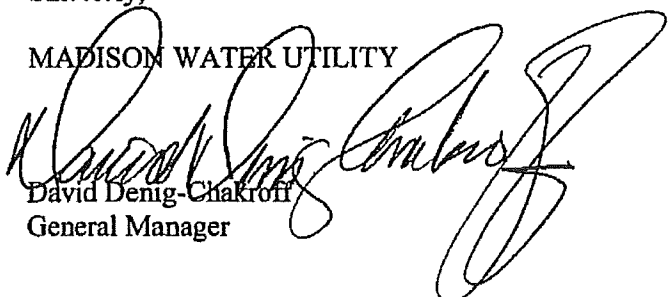
April 4, 2002

To Whom It May Concern:

The attached deed represents all Madison Water Utility property known to be within or partially within the contaminated site boundary for which closure is being sought.

Sincerely,

MADISON WATER UTILITY


David Denig-Chakroff
General Manager

DOCUMENT NO.

1481091

VOL 735 PAGE 484

STATE BAR OF WISCONSIN - FORM 2

WARRANTY DEED

THIS SPACE RESERVED FOR RECORDING DATA
Office of Register of Deeds
Dane County, WisconsinBY THIS DEED, Frank Liquor Co., Inc.Received for Record... Oct. 14...
76... at 10:45... at 10:45...
Dated and recorded in vol. 735...
Records...
Register...Grantor conveys and warrants to The City of Madison, Wisconsinfor a valuable consideration \$170,500.00

Grantee

the following described real estate in Dane County, State of Wisconsin:

RETURN TO

Tax Key #

This is not homestead property.

Lots 7, 8, 9, 10, 11 and 12,

Block 145, in the City of Madison.

Exception to warranties:

Easements and restrictions of record

Executed at Madison, Wisconsinthis 14th day of October, 19 76.FRANK LIQUOR CO., INC.

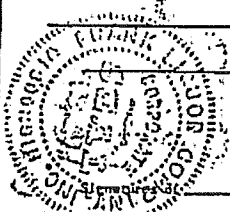
SIGNED AND SEALED IN PRESENCE OF

ATTESTED:

Hershel RotterHershel Rotter, SecretaryBY: Sidney Frank, Executive Vice-
President
(SEAL)

(SEAL)

(SEAL)

I authenticated this 14th day of October, 19 76.Title: Member State Bar of Wisconsin or Other Party
Authorized under Sec. 706.06 viz.

STATE OF WISCONSIN

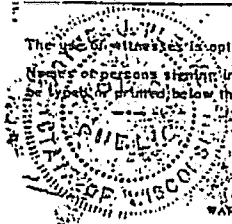
Dane County, ss.Personally came before me, this 14th day of October, 19 76,
the above named Sidney Frank and Hershel Rotterto me known to be the person S who executed the foregoing instrument and acknowledged the same.

This instrument was drafted by

ATTY. CHARLES W. GIESEN

Joyce J. PlenskeNotary Public Dane County, Wis.My Commission (Expires) (Is) 12/19/76

The use of witnesses is optional.

Names of persons signing in any capacity should
be printed in full below their signatures.FEE
2
EXEMPT

FURNISHED BY



WARRANTY DEED-STATE BAR OF WISCONSIN, FORM NO 2 - 1973

To be used in Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Wisconsin and Wyoming.

This Indenture Witnesseth: That the grantor, the STANDARD OIL COMPANY, a corporation organized and existing under and by virtue of the laws of the State of Indiana, for and in consideration of the sum of TEN DOLLARS and other good and valuable consideration (\$10.00), to it in hand paid, conveys and warrants to A. J. HARR

Dana and State of Wisconsin, of the County of Dana, the following described real estate, situated in the County of Dana and State of Wisconsin to-wit:

Lots Seven (7), Eight (8), Nine (9), Ten (10), Eleven (11) and Twelve (12) in Block One Hundred Forty-five (145), in the City of Madison, according to the recorded plat thereof;

Subject to taxes and special assessments, if any, against the said premises; also subject to zoning laws and municipal regulations, if any; building line restrictions and building restrictions of record, if any; and to any party wall agreements of record.

The grantee, herein hereby covenants and agreed for himself, his heirs, executors and assigns, that no part of the real estate herein conveyed shall be used by said grantee, his heirs, executors, grantees, or assigns, for the purpose of conducting or carrying on the business of selling, handling or dealing in gasoline, kerosene, benzol, naphtha, greases, lubricating oils, or any fuel to be used for internal combustion engines, or lubricants in any form. This covenant shall run with the land and be binding on said grantee, his heirs, executors, grantees and assigns, and inure to the benefit of the grantor herein, its successors and assigns.

The foregoing restrictions shall not apply to the sale, handling or dealing in petroleum products furnished by the grantor herein and in any event shall terminate and be of no further force and effect 20 years from the date hereof.

In Witness Whereof, the said STANDARD OIL COMPANY has caused this instrument to be signed by its Manager, Real Estate and its corporate seal to be hereto affixed and attested by its Assistant Secretary, all this 14th day of November, 1960.

Signed, Sealed and Delivered in the presence of:

F. A. Schwartz
V. M. Ellis

STANDARD OIL COMPANY

By [Signature]
Attest: [Signature]

Approved as to Form:

[Signature]

Attorney for Standard Oil Company.

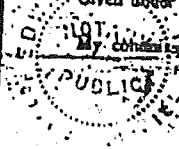
[Signature]
Secretary

STATE OF ILLINOIS,
COUNTY OF COOK

I, Edward J. Musial, a Notary Public in and for said
County and State, do hereby certify that F. M. Long
and Ayle B. Dady personally
known to me to be the single persons whose names are subscribed to the foregoing instrument as Manager
Real Estate and Assistant Secretary of the STANDARD OIL COMPANY, an
Indiana corporation, appeared before me this day in person and acknowledged that they signed, sealed with the cor-
porate seal of said corporation, and delivered the said instrument as their own free and voluntary act, and as the free
and voluntary act of said corporation, for the uses and purposes therein set forth, and that they were duly author-
ized to execute the said instrument by the Board of Directors of said corporation.

Given under my hand and seal, this 15th day of November, 1960

My commission expires June 27, 1963



Edward J. Musial
Edward J. Musial, Notary Public

The following acknowledgments should be said for Iowa, Michigan, Minnesota and Wyoming.

STATE OF ILLINOIS,
COUNTY OF COOK

On this _____ day of _____, 19____, before me, a Notary
Public in and for said County and State, personally appeared _____
to me personally known, who, being by me duly sworn, did say that he is the _____ of
the STANDARD OIL COMPANY, an Indiana corporation, that the seal affixed to the foregoing instrument is the
corporate seal of said corporation and that said instrument was signed, sealed and executed in behalf of said corpora-
tion by authority of its Board of Directors; and said _____ acknowledged the
execution of said instrument to be the free and voluntary act and deed of said corporation, by it voluntarily executed.

My commission expires _____

Notary Public

1016521

W Deed

Standard Oil Co.

to

Haen

COMPANY

File of Notary of Ill. Co. 1st
State of Ill. Co. 1st, Wisconsin
Notary Seal for Richard J. Haen
A. D. 1961 at Wheat Ridge
and recorded in vol. 719
of Standard Oil Co.
Harold R. Haen

G. J. Haen

1066-1111111111111111

P. J. Haen

VOL 10212 PAGE 38

KNOW ALL MEN BY THESE PRESENTS that the City of Madison, a municipal corporation located in Dane County, Wisconsin, being the owner of the property hereinafter described, in consideration of the sum of ONE (\$1.00) DOLLAR and other good and valuable consideration, the receipt whereof is hereby acknowledged, does grant, sell, set over and convey unto Madison Gas and Electric Company an underground electric easement over the following described land:

Three strips of land, one being fifteen (15) feet in width, and the others being ten (10) feet in width, located in Lots 1 and 18, Block 157 and Lot 10, Block 145, Original Town of Madison Plac. lying in part of the SE-1/4 of Section 13, T7N-R9E, City of Madison, Dane County, Wisconsin, said strips being more particularly described as follows:

The southwesterly most 15 feet of Lots 1 and 18, Block 157.

Also, the southeast 10 feet of the southwesterly 40 feet of said Lot 18, Block 157.

Also, the northwest 10 feet of the northeast 5.5 feet of the southeast 76 feet of said Lot 10, Block 145.

IN WITNESS WHEREOF, the undersigned hereunto set their hands and seals this 14 day of December, 1987.

CITY OF MADISON

By: F. Joseph Sensenbrenner, Jr., Mayor

By: Andre Blum
Andre Blum, City Clerk

State of Wisconsin)
County of Dane) ss.

Personally came before me this 14 day of December, 1987, the above named F. Joseph Sensenbrenner, Jr., Mayor, and Andre Blum, City Clerk, to me known to be the persons who executed the foregoing instrument and acknowledged the same.

This instrument drafted by
City of Madison
Real Estate Section

Gene M. Robinson
Notary Public, State of Wisconsin
My Commission: 12-1-91



IR:jae/22.2(782)

10. UNFO 11 11 30

Gannett Fleming

ATTACHMENT H

LABORATORY ANALYTICAL REPORTS AND CHAIN OF CUSTODY FORMS
FOR SAMPLES COLLECTED BETWEEN 10/17/00 AND 01/16/02

U.S. Analytical Lab

CLIFF WRIGHT
GANNETT FLEMING
8025 EXCELSIOR DR.
MADISON, WI 53717-1900

RECEIVED GANNETT FLEMING, INC. MADISON, WI			
FEB 11 2002			
FILE NO.	34490.001	CCW	X
TLH	JBL	RJS	
DPK	AWL	JJK	
DJD	JEC		

Project # 34490.001
Project Name CITY OF MADISON WATER
Invoice # E36814

Report Date 07-Feb-02

Madison Water Utility

Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code	5036814A					Sample Type	Water		
Sample ID	MW-1					Sample Date	1/16/2002		

Inorganic

General

Alkalinity	891	mg/l	15.5	50	5	1/21/2002	310.2	DAW	1
Nitrogen (Nitrate-Nitrite)	< 0.02	mg/l	0.02	0.07	10	1/29/2002	300.0	JDB	1
Sulfate	13	mg/l	2.4	7.9	100	1/29/2002	300.0	JDB	1

Metals

Iron Dissolved	6.9	mg/l	0.139	0.46	1	1/24/2002	6010B	JLA	1
Manganese Dissolved	1.1	mg/l	0.017	0.057	1	1/24/2002	6010B	JLA	1

Organic

General

Methane	350	ug/l	0.5	1.5	1	1/29/2002	8015	JSF	1
---------	-----	------	-----	-----	---	-----------	------	-----	---

PAH's

Acenaphthene	< 0.28	ug/l	0.28	0.93	1	1/26/2002	8310	TMS	1
Acenaphthylene	< 0.32	ug/l	0.32	1.1	1	1/26/2002	8310	TMS	1
Anthracene	< 0.042	ug/l	0.042	0.14	1	1/26/2002	8310	TMS	1
Benzo(a)anthracene	< 0.24	ug/l	0.24	0.79	1	1/26/2002	8310	TMS	1
Benzo(a)pyrene	< 0.028	ug/l	0.028	0.093	1	1/26/2002	8310	TMS	1
Benzo(b)fluoranthene	< 0.12	ug/l	0.12	0.4	1	1/26/2002	8310	TMS	1
Benzo(g,h,i)perylene	< 0.078	ug/l	0.078	0.26	1	1/26/2002	8310	TMS	1
Benzo(k)fluoranthene	< 0.24	ug/l	0.24	0.8	1	1/26/2002	8310	TMS	1
Chrysene	< 0.13	ug/l	0.13	0.42	1	1/26/2002	8310	TMS	1
Dibenzo(a,h)anthracene	< 0.14	ug/l	0.14	0.48	1	1/26/2002	8310	TMS	1
Fluoranthene	< 0.14	ug/l	0.14	0.47	1	1/26/2002	8310	TMS	1
Fluorene	< 0.24	ug/l	0.24	0.8	1	1/26/2002	8310	TMS	1
Indeno(1,2,3-cd)pyrene	< 0.17	ug/l	0.17	0.57	1	1/26/2002	8310	TMS	1
1-Methyl naphthalene	0.34	ug/l	0.17	0.57	1	1/26/2002	8310	TMS	1
2-Methyl naphthalene	0.47	ug/l	0.15	0.51	1	1/26/2002	8310	TMS	1
Naphthalene	0.41	ug/l	0.12	0.39	1	1/26/2002	8310	TMS	5
Phenanthrene	< 0.096	ug/l	0.096	0.32	1	1/26/2002	8310	TMS	1
Pyrene	< 0.068	ug/l	0.068	0.23	1	1/26/2002	8310	TMS	1

SVOC

Benzene	< 0.21	ug/l	0.21	0.67	1	1/23/2002	GRO95	CAH	1 72
Ethylbenzene	< 0.22	ug/l	0.22	0.7	1	1/23/2002	GRO95	CAH	1 72
MTBE	< 0.46	ug/l	0.46	1.5	1	1/23/2002	GRO95	CAH	1 72
Toluene	< 0.41	ug/l	0.41	1.3	1	1/23/2002	GRO95	CAH	1 72
1,2,4-Trimethylbenzene	0.44 "J"	ug/l	0.26	0.84	1	1/23/2002	GRO95	CAH	1 72

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8025 EXCELSIOR DR.
MADISON, WI 53717-1900

Project # 34490.001
Project Name CITY OF MADISON WATER
Invoice # E36814

Report Date 07-Feb-02

Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code 5036814A						Sample Type Water			
Sample ID MW-1						Sample Date 1/16/2002			
1,3,5-Trimethylbenzene	< 0.34	ug/l	0.34	1.1	1	1/23/2002	GRO95	CAH	172
Xylene's	< 0.69	ug/l	0.69	2.2	1	1/23/2002	GRO95	CAH	172
Lab Code 5036814B						Sample Type Water			
Sample ID MW-2						Sample Date 1/16/2002			

Inorganic

General

Alkalinity	665	mg/l	15.5	50	5	1/21/2002	310.2	DAW	1
Nitrogen (Nitrate-Nitrite)	< 0.02	mg/l	0.02	0.07	10	1/29/2002	300.0	JDB	1
Sulfate	6.4	mg/l	0.24	0.79	10	2/1/2002	300.0	JDB	1

Metals

Iron Dissolved	11	mg/l	0.139	0.46	1	1/24/2002	6010B	JLA	1
Manganese Dissolved	0.55	mg/l	0.017	0.057	1	1/24/2002	6010B	JLA	1

Organic

General

Methane	10000	ug/l	10	30	20	1/29/2002	8015	JSF	1
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PAH's

Acenaphthene	< 0.38	ug/l	0.28	0.93	1	1/26/2002	8310	TMS	1
Acenaphthylene	< 0.32	ug/l	0.32	1.1	1	1/26/2002	8310	TMS	1
Anthracene	< 0.042	ug/l	0.042	0.14	1	1/26/2002	8310	TMS	1
Benzo(a)anthracene	< 0.24	ug/l	0.24	0.79	1	1/26/2002	8310	TMS	1
Benzo(a)pyrene	< 0.028	ug/l	0.028	0.093	1	1/26/2002	8310	TMS	1
Benzo(b)fluoranthene	< 0.12	ug/l	0.12	0.4	1	1/26/2002	8310	TMS	1
Benzo(g,h,i)perylene	< 0.078	ug/l	0.078	0.26	1	1/26/2002	8310	TMS	1
Benzo(k)fluoranthene	< 0.24	ug/l	0.24	0.8	1	1/26/2002	8310	TMS	1
Chrysene	< 0.13	ug/l	0.13	0.42	1	1/26/2002	8310	TMS	1
Dibenzo(a,h)anthracene	< 0.14	ug/l	0.14	0.48	1	1/26/2002	8310	TMS	1
Fluoranthene	< 0.14	ug/l	0.14	0.47	1	1/26/2002	8310	TMS	1
Fluorene	< 0.24	ug/l	0.24	0.8	1	1/26/2002	8310	TMS	1
Indeno(1,2,3-cd)pyrene	< 0.17	ug/l	0.17	0.57	1	1/26/2002	8310	TMS	1
1-Methyl naphthalene	456	ug/l	34	114	200	1/28/2002	8310	TMS	1
2-Methyl naphthalene	873	ug/l	30	102	200	1/28/2002	8310	TMS	1
Naphthalene	402	ug/l	2.4	7.8	20	1/28/2002	8310	TMS	5
Phenanthrene	< 0.096	ug/l	0.096	0.32	1	1/26/2002	8310	TMS	1
Pyrene	< 0.068	ug/l	0.068	0.23	1	1/26/2002	8310	TMS	1

PVOC

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Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code 5036814B	Sample Type Water								
Sample ID MW-2	Sample Date 1/16/2002								
Benzene	1000	ug/l	21	67	100	1/24/2002	GRO95	CAH	1 72
Ethylbenzene	450	ug/l	22	70	100	1/24/2002	GRO95	CAH	1 72
MTBE	< 46	ug/l	46	150	100	1/24/2002	GRO95	CAH	1 72
Toluene	340	ug/l	41	130	100	1/24/2002	GRO95	CAH	1 72
1,2,4-Trimethylbenzene	490	ug/l	26	84	100	1/24/2002	GRO95	CAH	1 72
1,3,5-Trimethylbenzene	100 "J"	ug/l	34	110	100	1/24/2002	GRO95	CAH	1 72
Xylene's	650	ug/l	69	220	100	1/24/2002	GRO95	CAH	1 72
Lab Code 5036814C	Sample Type Water								
Sample ID MW-3	Sample Date 1/16/2002								

Inorganic

General

Alkalinity	497	mg/l	15.5	50	5	1/21/2002	310.2	DAW	1
Nitrogen (Nitrate-Nitrite)	0.21	mg/l	0.02	0.07	10	1/29/2002	300.0	JDB	1
Sulfate	560	mg/l	24	79	1000	2/5/2002	300.0	JDB	1

Metals

Iron Dissolved	31	mg/l	0.139	0.46	1	1/24/2002	6010B	JLA	1
Manganese Dissolved	0.53	mg/l	0.017	0.057	1	1/24/2002	6010B	JLA	1

Organic

General

Methane	1700	ug/l	2.5	7.5	5	1/29/2002	8015	JSF	1
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PAH's

Acenaphthene	< 0.28	ug/l	0.28	0.93	1	1/26/2002	8310	TMS	1
Acenaphthylene	< 0.32	ug/l	0.32	1.1	1	1/26/2002	8310	TMS	1
Anthracene	< 0.042	ug/l	0.042	0.14	1	1/26/2002	8310	TMS	1
Benzo(a)anthracene	< 0.24	ug/l	0.24	0.79	1	1/26/2002	8310	TMS	1
Benzo(a)pyrene	< 0.028	ug/l	0.028	0.093	1	1/26/2002	8310	TMS	1
Benzo(b)fluoranthene	< 0.12	ug/l	0.12	0.4	1	1/26/2002	8310	TMS	1
Benzo(g,h,i)perylene	< 0.078	ug/l	0.078	0.26	1	1/26/2002	8310	TMS	1
Benzo(k)fluoranthene	< 0.24	ug/l	0.24	0.8	1	1/26/2002	8310	TMS	1
Chrysene	< 0.13	ug/l	0.13	0.42	1	1/26/2002	8310	TMS	1
Dibenzo(a,h)anthracene	< 0.14	ug/l	0.14	0.48	1	1/26/2002	8310	TMS	1
Fluoranthene	< 0.14	ug/l	0.14	0.47	1	1/26/2002	8310	TMS	1
Fluorene	< 0.24	ug/l	0.24	0.8	1	1/26/2002	8310	TMS	1
Indeno(1,2,3-cd)pyrene	< 0.17	ug/l	0.17	0.57	1	1/26/2002	8310	TMS	1
1-Methyl naphthalene	< 0.17	ug/l	0.17	0.57	1	1/26/2002	8310	TMS	1

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Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code 5036814C						Sample Type Water			
Sample ID MW-3						Sample Date 1/16/2002			
2-Methyl naphthalene	< 0.15	ug/l	0.15	0.51	1	1/26/2002	8310	TMS	1
Naphthalene	< 0.12	ug/l	0.12	0.39	1	1/26/2002	8310	TMS	5
Phenanthrene	< 0.096	ug/l	0.096	0.32	1	1/26/2002	8310	TMS	1
Pyrene	< 0.068	ug/l	0.068	0.23	1	1/26/2002	8310	TMS	1
PVOC									
Benzene	< 0.21	ug/l	0.21	0.67	1	1/25/2002	GRO95	CAH	1
Ethylbenzene	0.63 "J"	ug/l	0.22	0.7	1	1/25/2002	GRO95	CAH	1
MTBE	< 0.46	ug/l	0.46	1.5	1	1/25/2002	GRO95	CAH	1
Toluene	42	ug/l	0.41	1.3	1	1/25/2002	GRO95	CAH	1
1,2,4-Trimethylbenzene	< 0.26	ug/l	0.26	0.84	1	1/25/2002	GRO95	CAH	1
1,3,5-Trimethylbenzene	1 "J"	ug/l	0.34	1.1	1	1/25/2002	GRO95	CAH	1
Xylene's	< 0.69	ug/l	0.69	2.2	1	1/25/2002	GRO95	CAH	1
Lab Code 5036814D						Sample Type Water			
Sample ID MW-4						Sample Date 1/16/2002			

Inorganic

General

Alkalinity	709	mg/l	15.5	50	5	1/21/2002	310.2	DAW	1
Nitrogen (Nitrate-Nitrite)	< 0.02	mg/l	0.02	0.07	10	1/29/2002	300.0	JDB	1
Sulfate	130	mg/l	2.4	7.9	100	2/1/2002	300.0	JDB	1

Metals

Iron Dissolved	5.1	mg/l	0.139	0.46	1	1/24/2002	6010B	JLA	1
Manganese Dissolved	0.93	mg/l	0.017	0.057	1	1/24/2002	6010B	JLA	1

Organic

General

Methane	770	ug/l	0.5	1.5	1	1/29/2002	8015	JSF	1
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PAH's

Acenaphthene	< 0.28	ug/l	0.28	0.93	1	1/26/2002	8310	TMS	1
Acenaphthylene	< 0.32	ug/l	0.32	1.1	1	1/26/2002	8310	TMS	1
Anthracene	< 0.042	ug/l	0.042	0.14	1	1/26/2002	8310	TMS	1
Benzo(a)anthracene	< 0.24	ug/l	0.24	0.79	1	1/26/2002	8310	TMS	1
Benzo(a)pyrene	< 0.028	ug/l	0.028	0.093	1	1/26/2002	8310	TMS	1
Benzo(b)fluoranthene	< 0.12	ug/l	0.12	0.4	1	1/26/2002	8310	TMS	1
Benzo(g,h,i)perylene	< 0.078	ug/l	0.078	0.26	1	1/26/2002	8310	TMS	1
Benzo(k)fluoranthene	< 0.24	ug/l	0.24	0.8	1	1/26/2002	8310	TMS	1
Chrysene	< 0.13	ug/l	0.13	0.42	1	1/26/2002	8310	TMS	1

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Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code 5036814D						Sample Type Water			
Sample ID MW-4						Sample Date 1/16/2002			

Dibenzo(a,h)anthracene	< 0.14	ug/l	0.14	0.48	1	1/26/2002	8310	TMS	1
Fluoranthene	< 0.14	ug/l	0.14	0.47	1	1/26/2002	8310	TMS	1
Fluorene	< 0.24	ug/l	0.24	0.8	1	1/26/2002	8310	TMS	1
Indeno(1,2,3-cd)pyrene	< 0.17	ug/l	0.17	0.57	1	1/26/2002	8310	TMS	1
1-Methyl naphthalene	< 0.17	ug/l	0.17	0.57	1	1/26/2002	8310	TMS	1
2-Methyl naphthalene	< 0.15	ug/l	0.15	0.51	1	1/26/2002	8310	TMS	1
Naphthalene	< 0.12	ug/l	0.12	0.39	1	1/26/2002	8310	TMS	5
Phenanthrene	< 0.096	ug/l	0.096	0.32	1	1/26/2002	8310	TMS	1
Pyrene	< 0.068	ug/l	0.068	0.23	1	1/26/2002	8310	TMS	1

PVOC

Benzene	< 0.21	ug/l	0.21	0.67	1	1/25/2002	GRO95	CAH	1
Ethylbenzene	< 0.22	ug/l	0.22	0.7	1	1/25/2002	GRO95	CAH	1
MTBE	2.5	ug/l	0.46	1.5	1	1/25/2002	GRO95	CAH	1
Toluene	1.3 "J"	ug/l	0.41	1.3	1	1/25/2002	GRO95	CAH	1
1,2,4-Trimethylbenzene	< 0.26	ug/l	0.26	0.84	1	1/25/2002	GRO95	CAH	1
1,3,5-Trimethylbenzene	< 0.34	ug/l	0.34	1.1	1	1/25/2002	GRO95	CAH	1
Xylene's	< 0.69	ug/l	0.69	2.2	1	1/25/2002	GRO95	CAH	1

Lab Code 5036814E						Sample Type Water			
Sample ID MW-6						Sample Date 1/16/2002			

Inorganic

General

Alkalinity	384	mg/l	3.1	10	1	1/21/2002	310.2	DAW	1
Nitrogen (Nitrate-Nitrite)	0.09	mg/l	0.02	0.07	10	1/29/2002	300.0	JDB	1
Sulfate	58	mg/l	2.4	7.9	100	2/1/2002	300.0	JDB	1

Metals

Iron Dissolved	0.91	mg/l	0.139	0.46	1	1/24/2002	6010B	JLA	1
Manganese Dissolved	0.15	mg/l	0.017	0.057	1	1/24/2002	6010B	JLA	1

Organic

General

Methane	360	ug/l	0.5	1.5	1	1/29/2002	8015	JSF	1
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PAH's

Acenaphthene	< 0.28	ug/l	0.28	0.93	1	1/26/2002	8310	TMS	1
Acenaphthylene	< 0.32	ug/l	0.32	1.1	1	1/26/2002	8310	TMS	1
Anthracene	< 0.042	ug/l	0.042	0.14	1	1/26/2002	8310	TMS	1
Benzo(a)anthracene	< 0.24	ug/l	0.24	0.79	1	1/26/2002	8310	TMS	1

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MADISON, WI 53717-1900

Project # 34490.001
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Invoice # E36814

Report Date 07-Feb-02

Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code 5036814E Sample ID MW-6 Sample Type Water Sample Date 1/16/2002									
Benzo(a)pyrene	< 0.028	ug/l	0.028	0.093	1	1/26/2002	8310	TMS	1
Benzo(b)fluoranthene	< 0.12	ug/l	0.12	0.4	1	1/26/2002	8310	TMS	1
Benzo(g,h,i)perylene	< 0.078	ug/l	0.078	0.26	1	1/26/2002	8310	TMS	1
Benzo(k)fluoranthene	< 0.24	ug/l	0.24	0.8	1	1/26/2002	8310	TMS	1
Chrysene	< 0.13	ug/l	0.13	0.42	1	1/26/2002	8310	TMS	1
Dibenzo(a,h)anthracene	< 0.14	ug/l	0.14	0.48	1	1/26/2002	8310	TMS	1
Fluoranthene	< 0.14	ug/l	0.14	0.47	1	1/26/2002	8310	TMS	1
Fluorene	< 0.24	ug/l	0.24	0.8	1	1/26/2002	8310	TMS	1
Indeno(1,2,3-cd)pyrene	< 0.17	ug/l	0.17	0.57	1	1/26/2002	8310	TMS	1
1-Methyl naphthalene	< 0.17	ug/l	0.17	0.57	1	1/26/2002	8310	TMS	1
2-Methyl naphthalene	< 0.15	ug/l	0.15	0.51	1	1/26/2002	8310	TMS	1
Naphthalene	< 0.12	ug/l	0.12	0.39	1	1/26/2002	8310	TMS	5
Phenanthrene	< 0.096	ug/l	0.096	0.32	1	1/26/2002	8310	TMS	1
Pyrene	< 0.068	ug/l	0.068	0.23	1	1/26/2002	8310	TMS	1
PVOC									
Benzene	< 0.21	ug/l	0.21	0.67	1	1/25/2002	GRO95	CAH	1
Ethylbenzene	0.23 "J"	ug/l	0.22	0.7	1	1/25/2002	GRO95	CAH	1
MTBE	< 0.46	ug/l	0.46	1.5	1	1/25/2002	GRO95	CAH	1
Toluene	< 0.41	ug/l	0.41	1.3	1	1/25/2002	GRO95	CAH	1
1,2,4-Trimethylbenzene	0.42 "J"	ug/l	0.26	0.84	1	1/25/2002	GRO95	CAH	1
1,3,5-Trimethylbenzene	< 0.34	ug/l	0.34	1.1	1	1/25/2002	GRO95	CAH	1
Xylene's	< 0.69	ug/l	0.69	2.2	1	1/25/2002	GRO95	CAH	1

Lab Code 5036814F Sample ID MW-7 Sample Type Water Sample Date 1/16/2002									
Inorganic									
General									
Alkalinity	295	mg/l	3.1	10	1	1/21/2002	310.2	DAW	1
Nitrogen (Nitrate-Nitrite)	0.13	mg/l	0.02	0.07	10	1/29/2002	300.0	JDB	1
Sulfate	63	mg/l	2.4	7.9	100	2/1/2002	300.0	JDB	1
Metals									
Iron Dissolved	< 0.139	mg/l	0.139	0.46	1	1/24/2002	6010B	JLA	1
Manganese Dissolved	0.11	mg/l	0.017	0.057	1	1/24/2002	6010B	JLA	1
Organic									
General									
Methane	11	ug/l	0.5	1.5	1	1/29/2002	8015	JSF	1

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Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code 5036814F						Sample Type Water			
Sample ID MW-7						Sample Date 1/16/2002			

PAH's

Acenaphthene	< 0.28	ug/l	0.28	0.93	1	1/26/2002	8310	TMS	1
Acenaphthylene	< 0.32	ug/l	0.32	1.1	1	1/26/2002	8310	TMS	1
Anthracene	< 0.042	ug/l	0.042	0.14	1	1/26/2002	8310	TMS	1
Benzo(a)anthracene	< 0.24	ug/l	0.24	0.79	1	1/26/2002	8310	TMS	1
Benzo(a)pyrene	< 0.028	ug/l	0.028	0.093	1	1/26/2002	8310	TMS	1
Benzo(b)fluoranthene	< 0.12	ug/l	0.12	0.4	1	1/26/2002	8310	TMS	1
Benzo(g,h,i)perylene	< 0.078	ug/l	0.078	0.26	1	1/26/2002	8310	TMS	1
Benzo(k)fluoranthene	< 0.24	ug/l	0.24	0.8	1	1/26/2002	8310	TMS	1
Chrysene	< 0.13	ug/l	0.13	0.42	1	1/26/2002	8310	TMS	1
Dibenzo(a,h)anthracene	< 0.14	ug/l	0.14	0.48	1	1/26/2002	8310	TMS	1
Fluoranthene	< 0.14	ug/l	0.14	0.47	1	1/26/2002	8310	TMS	1
Fluorene	< 0.24	ug/l	0.24	0.8	1	1/26/2002	8310	TMS	1
Indeno(1,2,3-cd)pyrene	< 0.17	ug/l	0.17	0.57	1	1/26/2002	8310	TMS	1
1-Methyl naphthalene	< 0.17	ug/l	0.17	0.57	1	1/26/2002	8310	TMS	1
2-Methyl naphthalene	< 0.15	ug/l	0.15	0.51	1	1/26/2002	8310	TMS	1
Naphthalene	< 0.12	ug/l	0.12	0.39	1	1/26/2002	8310	TMS	5
Phenanthrene	< 0.096	ug/l	0.096	0.32	1	1/26/2002	8310	TMS	1
Pyrene	< 0.068	ug/l	0.068	0.23	1	1/26/2002	8310	TMS	1

PVOC

Benzene	< 0.21	ug/l	0.21	0.67	1	1/23/2002	GRO95	CAH	1 72
Ethylbenzene	< 0.22	ug/l	0.22	0.7	1	1/23/2002	GRO95	CAH	1 72
MTBE	< 0.46	ug/l	0.46	1.5	1	1/23/2002	GRO95	CAH	1 72
Toluene	< 0.41	ug/l	0.41	1.3	1	1/23/2002	GRO95	CAH	1 72
1,2,4-Trimethylbenzene	< 0.26	ug/l	0.26	0.84	1	1/23/2002	GRO95	CAH	1 72
1,3,5-Trimethylbenzene	< 0.34	ug/l	0.34	1.1	1	1/23/2002	GRO95	CAH	1 72
Xylene's	< 0.69	ug/l	0.69	2.2	1	1/23/2002	GRO95	CAH	1 72

Lab Code 5036814G						Sample Type Water			
Sample ID MW-8						Sample Date 1/16/2002			

Inorganic

General

Alkalinity	473	mg/l	3.1	10	1	1/21/2002	310.2	DAW	1
Nitrogen (Nitrate-Nitrite)	< 0.02	mg/l	0.02	0.07	10	1/29/2002	300.0	JDB	1
Sulfate	60	mg/l	2.4	7.9	100	2/1/2002	300.0	JDB	1

Organic

U.S. Analytical Lab

CLIFF WRIGHT
GANNETT FLEMING
8025 EXCELSIOR DR.
MADISON, WI 53717-1900

Project # 34490.001
Project Name CITY OF MADISON WATER
Invoice # E36814

Report Date 07-Feb-02

Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code 5036814G						Sample Type Water			
Sample ID MW-8						Sample Date 1/16/2002			

General

Methane	1300	ug/l	2.5	7.5	5	1/29/2002	8015	JSF	1
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PAH's

Acenaphthene	< 0.28	ug/l	0.28	0.93	1	1/26/2002	8310	TMS	1
Acenaphthylene	< 0.32	ug/l	0.32	1.1	1	1/26/2002	8310	TMS	1
Anthracene	< 0.042	ug/l	0.042	0.14	1	1/26/2002	8310	TMS	1
Benzo(a)anthracene	< 0.24	ug/l	0.24	0.79	1	1/26/2002	8310	TMS	1
Benzo(a)pyrene	< 0.028	ug/l	0.028	0.093	1	1/26/2002	8310	TMS	1
Benzo(b)fluoranthene	< 0.12	ug/l	0.12	0.4	1	1/26/2002	8310	TMS	1
Benzo(g,h,i)perylene	< 0.078	ug/l	0.078	0.26	1	1/26/2002	8310	TMS	1
Benzo(k)fluoranthene	< 0.24	ug/l	0.24	0.8	1	1/26/2002	8310	TMS	1
Chrysene	< 0.13	ug/l	0.13	0.42	1	1/26/2002	8310	TMS	1
Dibenzo(a,h)anthracene	< 0.14	ug/l	0.14	0.48	1	1/26/2002	8310	TMS	1
Fluoranthene	< 0.14	ug/l	0.14	0.47	1	1/26/2002	8310	TMS	1
Fluorene	< 0.24	ug/l	0.24	0.8	1	1/26/2002	8310	TMS	1
Indeno(1,2,3-cd)pyrene	< 0.17	ug/l	0.17	0.57	1	1/26/2002	8310	TMS	1
1-Methyl naphthalene	< 0.17	ug/l	0.17	0.57	1	1/26/2002	8310	TMS	1
2-Methyl naphthalene	< 0.15	ug/l	0.15	0.51	1	1/26/2002	8310	TMS	1
Naphthalene	< 0.12	ug/l	0.12	0.39	1	1/26/2002	8310	TMS	5
Phenanthrene	< 0.096	ug/l	0.096	0.32	1	1/26/2002	8310	TMS	1
Pyrene	< 0.068	ug/l	0.068	0.23	1	1/26/2002	8310	TMS	1

PVOC

Benzene	< 0.21	ug/l	0.21	0.67	1	1/23/2002	GRO95	CAH	1
Ethylbenzene	< 0.22	ug/l	0.22	0.7	1	1/23/2002	GRO95	CAH	1
MTBE	< 0.46	ug/l	0.46	1.5	1	1/23/2002	GRO95	CAH	1
Toluene	3.1	ug/l	0.41	1.3	1	1/23/2002	GRO95	CAH	1
1,2,4-Trimethylbenzene	< 0.26	ug/l	0.26	0.84	1	1/23/2002	GRO95	CAH	1
1,3,5-Trimethylbenzene	< 0.34	ug/l	0.34	1.1	1	1/23/2002	GRO95	CAH	1
Xylene's	< 0.69	ug/l	0.69	2.2	1	1/23/2002	GRO95	CAH	1

Lab Code 5036814H	Sample Type Water
Sample ID MW-8 DUP	Sample Date 1/16/2002

Organic

PVOC

Benzene	< 0.21	ug/l	0.21	0.67	1	1/23/2002	GRO95	CAH	1
Ethylbenzene	< 0.22	ug/l	0.22	0.7	1	1/23/2002	GRO95	CAH	1

U.S. Analytical Lab

CLIFF WRIGHT
GANNETT FLEMING
8025 EXCELSIOR DR.
MADISON, WI 53717-1900

Project # 34490.001
Project Name CITY OF MADISON WATER
Invoice # E36814

Report Date 07-Feb-02

Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code 5036814H									
Sample ID MW-8 DUP									
						Sample Type	Water		
						Sample Date	1/16/2002		
MTBE	< 0.46	ug/l	0.46	1.5	1	1/23/2002	GRO95	CAH	1
Toluene	1.7	ug/l	0.41	1.3	1	1/23/2002	GRO95	CAH	1
1,2,4-Trimethylbenzene	< 0.26	ug/l	0.26	0.84	1	1/23/2002	GRO95	CAH	1
1,3,5-Trimethylbenzene	< 0.34	ug/l	0.34	1.1	1	1/23/2002	GRO95	CAH	1
Xylene's	< 0.69	ug/l	0.69	2.2	1	1/23/2002	GRO95	CAH	1

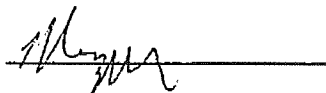
LOD Limit of Detection

"J" Flag: Analyte detected between LOD and LOQ

LOQ Limit of Quantitation

Code	Comment
1	All laboratory QC requirements were met for this sample.
5	The blank failed to meet acceptable QC limits.
72	Sample pH greater than 2.0

Authorized Signature



CHAIN OF CUSTODY RECORD

Analytical Lab

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Av. Date: 12-17-99

Chain # N^o 27022

Page 1 of 1

Lab I.D. # 5036814
Account No.:
Quote No.: PLCTA

Project #: 34490.021
Sampler: (signature) David D. Dole
Project (Name / Location): City of Madison, Wisconsin
Reports To: Cliff Wiegand Invoice To: City of Madison
Company: General Engineering Company: City of Madison, Wisconsin
Address: 8625 Lytle Street Address: 523 Lincoln Street
City/State/Zip: Madison, WI 53717 City/State/Zip: Madison, WI 53703
Phone: 608-836-1500 Phone: 608-836-1500

Sample Integrity - To be completed by receiving lab.
Method of Shipment: Cooler Temp. of Temp. Blank: ✓ °C On Ice: ✓
Cooler seal intact upon receipt: ✓ Yes ✓ No
Labced By: GAU

Lab I.D.	Sample I.D.	Collection		No. of Containers Size and Type	Description*	Preservation	Analysis Requested												Other Analysis																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
		Date	Time				DRO (Mod/TPH)	GRO (Mod/TPH)	PVOC (EPA 8021)	BTEX (EPA 8021)	VOC (EPA 8021)	VOC (EPA 8260)	VOC DW (EPA 524.2)	O&G (EPA 413.1)	PAH (EPA 8310)	Pb	Flash Point	Leachate + Nitrates	Distilled H ₂ O	Microbe	GC/MS ID/TPH																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
A	mw-1	11-16-03	11:00	11	GW																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		</

Department Use Only
Split Samples: Offered? Yes No
Accepted? Yes No
Accepted By: GAU

Comments/ Special Instructions
*Specify groundwater "GW", Drinking Water "DW", Waste Water "WW", Soil "S", Air "A", etc.
Relinquished By: (sign) David D. Dole Time 8:30 Date 1-17-02 Received By: (sign) Geo Huan Time 3:45 Date 1-17-02
Received in Laboratory By: (sign) Geo Huan Time 6:30 Date 1-17-02

Department Use Optional for Soil Samples
Disposition of unused portion of sample
Lab Should:
Dispose Retain for days
Return Other

U.S. Analytical Lab

RECEIVED
GANNETT FLEMING, INC.
MADISON, WI

CLIFF WRIGHT
GANNETT FLEMING
8025 EXCELSIOR DR.
MADISON, WI 53717-1900

OCT 31 2001

34490.001 / 1027-23

Project # 34490.001
Project Name CITY OF MADISON-WATER
Invoice # E35086

Utility

Report Date 26-Oct-01

Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code	5035086A								
Sample ID	MW-2								
Sample Type	Water								
Sample Date	10/16/01								

Organic

PVOC

Benzene	830	ug/l	11	34	50	10/23/01	GRO95	CAH	1
Ethylbenzene	360	ug/l	11	35	50	10/23/01	GRO95	CAH	1
MTBE	< 23	ug/l	23	75	50	10/23/01	GRO95	CAH	1
Toluene	190	ug/l	21	65	50	10/23/01	GRO95	CAH	1
1,2,4-Trimethylbenzene	450	ug/l	13	42	50	10/23/01	GRO95	CAH	1
1,3,5-Trimethylbenzene	100	ug/l	17	55	50	10/23/01	GRO95	CAH	1
Xylene's	620	ug/l	35	110	50	10/23/01	GRO95	CAH	1

Lab Code	5035086B								
Sample ID	MW-3								
Sample Type	Water								
Sample Date	10/16/01								

Organic

PVOC

Benzene	< 0.21	ug/l	0.21	0.67	1	10/23/01	GRO95	SJV	1
Ethylbenzene	< 0.22	ug/l	0.22	0.7	1	10/23/01	GRO95	SJV	1
MTBE	< 0.46	ug/l	0.46	1.5	1	10/23/01	GRO95	SJV	1
Toluene	18	ug/l	0.41	1.3	1	10/23/01	GRO95	SJV	1
1,2,4-Trimethylbenzene	1.8	ug/l	0.26	0.84	1	10/23/01	GRO95	SJV	1
1,3,5-Trimethylbenzene	0.38 "J"	ug/l	0.34	1.1	1	10/23/01	GRO95	SJV	1
Xylene's	2.6	ug/l	0.69	2.2	1	10/23/01	GRO95	SJV	1

Lab Code	5035086C								
Sample ID	MW-7								
Sample Type	Water								
Sample Date	10/16/01								

Organic

PVOC

Benzene	< 0.21	ug/l	0.21	0.67	1	10/22/01	GRO95	CAH	1
Ethylbenzene	< 0.22	ug/l	0.22	0.7	1	10/22/01	GRO95	CAH	1
MTBE	< 0.46	ug/l	0.46	1.5	1	10/22/01	GRO95	CAH	1
Toluene	< 0.41	ug/l	0.41	1.3	1	10/22/01	GRO95	CAH	1
1,2,4-Trimethylbenzene	< 0.26	ug/l	0.26	0.84	1	10/22/01	GRO95	CAH	1
1,3,5-Trimethylbenzene	< 0.34	ug/l	0.34	1.1	1	10/22/01	GRO95	CAH	1
Xylene's	< 0.69	ug/l	0.69	2.2	1	10/22/01	GRO95	CAH	1

U.S. Analytical Lab

CLIFF WRIGHT
GANNETT FLEMING
8025 EXCELSIOR DR.
MADISON, WI 53717-1900

Project # 34490.001
Project Name CITY OF MADISON-WATER
Invoice # E35086

Report Date 26-Oct-01

Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code 5035086D	Sample Type Water								
Sample ID MW-8	Sample Date 10/16/01								

Organic PVOC

Benzene	< 0.21	ug/l	0.21	0.67	1	10/22/01	GRO95	CAH	1
Ethylbenzene	< 0.22	ug/l	0.22	0.7	1	10/22/01	GRO95	CAH	1
MTBE	< 0.46	ug/l	0.46	1.5	1	10/22/01	GRO95	CAH	1
Toluene	< 0.41	ug/l	0.41	1.3	1	10/22/01	GRO95	CAH	1
1,2,4-Trimethylbenzene	< 0.26	ug/l	0.26	0.84	1	10/22/01	GRO95	CAH	1
1,3,5-Trimethylbenzene	< 0.34	ug/l	0.34	1.1	1	10/22/01	GRO95	CAH	1
Xylene's	< 0.69	ug/l	0.69	2.2	1	10/22/01	GRO95	CAH	1

LOD Limit of Detection

"J" Flag: Analyte detected between LOD and LOQ

LOQ Limit of Quantitation

Code Comment

1 All laboratory QC requirements were met for this sample.

Authorized Signature



CHAIN OF CUSTODY RECORD



US Analytical Lab

1090 Kennedy Ave. • Kimberly, WI 54136
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Rev. Date: 12-17-98

Chain # **Nº 24074**

Page 1 of 1

Lab I.D. # 5035086
Account No.: PELFA
Quote No.: PELFA

Project #: 34490.0231

Sampler: (signature) Daveil Johnson

Project (Name / Location): City of Madison Water Utility

Reports To: Chris Wright Invoice To: City of Madison

Company Greenleaf Energy

Address 8025 Emerald Dr

City State Zip Madison WI 53717

Phone 608 436 7520

City State Zip Madison WI 53703

Phone 608 436 7520

Sample Integrity - To be completed by receiving lab.

Method of Shipment: Cooler Temp. of Temp. Blank: X °C On Ice: X

Cooler seal intact upon receipt: X Yes No Labcoded By:

Sample Handling Request

Rush Analysis Date Required

X Normal Turn Around

Analysis Requested

Other Analysis

Pb

PAH (EPA 8310)

O&G (EPA 413.1)

VOC DW (EPA 524.2)

VOC (EPA 8260)

VOC (EPA 8021)

BTEX (EPA 8021)

PVOC (EPA 8021)

GRO (Mod/TPH)

DRO (Mod/TPH)

Flash Point

PID/ FID

Department Use Only

Split Samples: Offered? Yes No

Accepted? Yes No

Accepted By:

Department Use Optional for Soil Samples

Disposition of unused portion of sample

Lab Should:

Dispose Retain for days

Return Other

Comments/ Special Instructions

*Specify groundwater "GW", Drinking Water "DW", Waste Water "WW", Soil "S", Air "A", etc.

Relinquished By: (sign)

Time 10:20 Date 10/18/01

Received By: (sign)

Time 5:10 Date 10/18/01

Received in Laboratory By: Christine Miller

Time: 17:10 Date: 10/18/01

U.S. Analytical Lab

RECEIVED
GANNETT FLEMING, INC.
MADISON, WI

JUN 6 2001

FILE NO. 34490/1027-2.1
WJC JBL CCW
JFK AWM RJS
LJO JEC JJK

CLIFF WRIGHT
GANNETT FLEMING
8025 EXCELSIOR DR.
MADISON, WI 53717-1900

Project # 34490.001/1027.21
Project Name CITY OF MADISON
Invoice # E33384

Report Date 31-May-01

Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code	5033384A								
Sample ID	MW-1								
						Sample Type	Water		
						Sample Date	5/16/01		

Inorganic

General

Alkalinity as CaCO ₃	830	mg/l	1.5	5	1	5/25/01	310.1	JDB	1
Nitrogen (Nitrate-Nitrite)	0.071	mg/l	0.02	0.07	10	5/22/01	300.0	CLR	1
Sulfate	27	mg/l	2.4	7.9	100	5/22/01	300.0	CLR	1

Metals

Iron Dissolved	15	mg/l	0.139	0.46	1	5/23/01	6010B	JLA	1
Manganese Dissolved	1.1	mg/l	0.017	0.057	1	5/23/01	6010B	JLA	1

Organic

General

Methane	520	ug/l	0.5	1.5	1	5/22/01	8015	RTE	1
---------	-----	------	-----	-----	---	---------	------	-----	---

Lab Code	5033384B								
Sample ID	MW-2								
						Sample Type	Water		
						Sample Date	5/16/01		

Inorganic

General

Alkalinity as CaCO ₃	400	mg/l	1.5	5	1	5/25/01	310.1	JDB	1
Nitrogen (Nitrate-Nitrite)	0.073	mg/l	0.02	0.07	10	5/22/01	300.0	CLR	1
Sulfate	57	mg/l	2.4	7.9	100	5/22/01	300.0	CLR	1

Metals

Iron Dissolved	16	mg/l	0.139	0.46	1	5/23/01	6010B	JLA	1
Manganese Dissolved	0.83	mg/l	0.017	0.057	1	5/23/01	6010B	JLA	1

Organic

General

Methane	7800	ug/l	5	15	10	5/22/01	8015	RTE	1
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PAH's

Acenaphthene	2.4	ug/l	0.54	1.7	1	5/21/01	8270C	EEL	1 61
Acenaphthylene	1.9 "J"	ug/l	0.64	2	1	5/21/01	8270C	EEL	1 61
Anthracene	1.1	ug/l	0.54	1.7	1	5/21/01	8270C	EEL	1 61
Benzo(a)anthracene	2.2	ug/l	0.52	1.7	1	5/21/01	8270C	EEL	1 61
Benzo(a)pyrene	0.79	ug/l	0.28	0.89	1	5/21/01	8270C	EEL	1 61
Benzo(b)fluoranthene	0.79	ug/l	0.6	1.9	1	5/21/01	8270C	EEL	1 61
Benzo(g,h,i)perylene	0.49	ug/l	0.3	0.96	1	5/21/01	8270C	EEL	1 61
Benzo(k)fluoranthene	< 0.38	ug/l	0.38	1.2	1	5/21/01	8270C	EEL	1 61
Chrysene	1.1	ug/l	0.34	1.1	1	5/21/01	8270C	EEL	1 61

U.S. Analytical Lab

CLIFF WRIGHT
GANNETT FLEMING
8025 EXCELSIOR DR.
MADISON, WI 53717-1900

Project # 34490.001/1027.21
Project Name CITY OF MADISON
Invoice # E33384

Report Date 31-May-01

Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code 5033384B									
Sample ID MW-2									
						Sample Type	Water		
						Sample Date	5/16/01		
Dibenzo(a,h)anthracene	< 0.40	ug/l	0.4	1.3	1	5/21/01	8270C	EEL	1 61
Fluoranthene	3.1	ug/l	0.42	1.3	1	5/21/01	8270C	EEL	1 61
Fluorene	3.6	ug/l	0.58	1.8	1	5/21/01	8270C	EEL	1 61
Indeno(1,2,3-cd)pyrene	0.46	ug/l	0.44	1.4	1	5/21/01	8270C	EEL	1 61
1-Methyl naphthalene	300	ug/l	48	150	1	5/21/01	8270C	EEL	1 61
2-Methyl naphthalene	550	ug/l	53	170	1	5/21/01	8270C	EEL	1 61
Naphthalene	180	ug/l	50	160	1	5/21/01	8270C	EEL	1 61
Phenanthrene	6.4	ug/l	0.56	1.8	1	5/21/01	8270C	EEL	1 61
Pyrene	2.3	ug/l	0.48	1.5	1	5/21/01	8270C	EEL	1 61
PVOC									
Benzene	700	ug/l	21	67	100	5/22/01	GRO95	CJR	1
Ethylbenzene	220	ug/l	22	70	100	5/22/01	GRO95	CJR	1
MTBE	< 46	ug/l	46	150	100	5/22/01	GRO95	CJR	1
Toluene	110 "J"	ug/l	41	130	100	5/22/01	GRO95	CJR	1
1,2,4-Trimethylbenzene	290	ug/l	26	84	100	5/22/01	GRO95	CJR	1
1,3,5-Trimethylbenzene	89 "J"	ug/l	34	110	100	5/22/01	GRO95	CJR	1
Xylene's	400	ug/l	69	220	100	5/22/01	GRO95	CJR	1
Lab Code 5033384C									
Sample ID MW-3									
						Sample Type	Water		
						Sample Date	5/16/01		

Inorganic

General

Alkalinity as CaCO3	760	mg/l	1.5	5	1	5/25/01	310.1	JDB	1
Nitrogen (Nitrate-Nitrite)	0.074	mg/l	0.02	0.07	10	5/22/01	300.0	CLR	1
Sulfate	230	mg/l	2.4	7.9	100	5/22/01	300.0	CLR	1

Metals

Iron Dissolved	25	mg/l	0.139	0.46	1	5/23/01	6010B	JLA	1
Manganese Dissolved	0.66	mg/l	0.017	0.057	1	5/23/01	6010B	JLA	1

Organic

General

Methane	2500	ug/l	5	15	10	5/22/01	8015	RTE	1
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U.S. Analytical Lab

CLIFF WRIGHT
GANNETT FLEMING
8025 EXCELSIOR DR.
MADISON, WI 53717-1900

Project # 34490.001/1027.21
Project Name CITY OF MADISON
Invoice # E33384

Report Date 31-May-01

Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code 5033384D									
Sample ID MW-4									
						Sample Type Water			
						Sample Date 5/16/01			

Inorganic

General

Alkalinity as CaCO3	630	mg/l	1.5	5	1	5/25/01	310.1	JDB	1
Nitrogen (Nitrate-Nitrite)	0.075	mg/l	0.02	0.07	10	5/22/01	300.0	CLR	1
Sulfate	240	mg/l	2.4	7.9	100	5/22/01	300.0	CLR	1

Metals

Iron Dissolved	4.2	mg/l	0.139	0.46	1	5/23/01	6010B	JLA	1
Manganese Dissolved	1.1	mg/l	0.017	0.057	1	5/23/01	6010B	JLA	1

Organic

General

Methane	230	ug/l	0.5	1.5	1	5/22/01	8015	RTE	1
---------	-----	------	-----	-----	---	---------	------	-----	---

Lab Code 5033384E									
Sample ID MW-7									
						Sample Type Water			
						Sample Date 5/16/01			

Inorganic

General

Alkalinity as CaCO3	250	mg/l	1.5	5	1	5/25/01	310.1	JDB	1
Nitrogen (Nitrate-Nitrite)	3.1	mg/l	0.02	0.07	10	5/22/01	300.0	CLR	1
Sulfate	54	mg/l	2.4	7.9	100	5/22/01	300.0	CLR	1

Metals

Iron Dissolved	< 0.139	mg/l	0.139	0.46	1	5/23/01	6010B	JLA	1
Manganese Dissolved	< 0.017	mg/l	0.017	0.057	1	5/23/01	6010B	JLA	1

Organic

General

Methane	< 0.5	ug/l	0.5	1.5	1	5/22/01	8015	RTE	1
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PAH's

Acenaphthene	< 0.027	ug/l	0.027	0.086	1	5/21/01	8270C	EEL	1 61
Acenaphthylene	< 0.032	ug/l	0.032	0.1	1	5/21/01	8270C	EEL	1 61
Anthracene	< 0.027	ug/l	0.027	0.086	1	5/21/01	8270C	EEL	1 61
Benzo(a)anthracene	< 0.026	ug/l	0.026	0.083	1	5/21/01	8270C	EEL	1 61
Benzo(a)pyrene	< 0.014	ug/l	0.014	0.045	1	5/21/01	8270C	EEL	1 61
Benzo(b)fluoranthene	< 0.030	ug/l	0.03	0.096	1	5/21/01	8270C	EEL	1 61
Benzo(g,h,i)perylene	< 0.015	ug/l	0.015	0.048	1	5/21/01	8270C	EEL	1 61
Benzo(k)fluoranthene	< 0.019	ug/l	0.019	0.061	1	5/21/01	8270C	EEL	1 61
Chrysene	< 0.017	ug/l	0.017	0.054	1	5/21/01	8270C	EEL	1 61

U.S. Analytical Lab

CLIFF WRIGHT
GANNETT FLEMING
8025 EXCELSIOR DR.
MADISON, WI 53717-1900

Project # 34490.001/1027.21
Project Name CITY OF MADISON
Invoice # E33384

Report Date 31-May-01

Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code 5033384E Sample ID MW-7 Sample Type Water Sample Date 5/16/01									
Dibenzo(a,h)anthracene	< 0.020	ug/l	0.02	0.064	1	5/21/01	8270C	EEL	1 61
Fluoranthene	< 0.021	ug/l	0.021	0.067	1	5/21/01	8270C	EEL	1 61
Fluorene	< 0.029	ug/l	0.029	0.092	1	5/21/01	8270C	EEL	1 61
Indeno(1,2,3-cd)pyrene	< 0.022	ug/l	0.022	0.07	1	5/21/01	8270C	EEL	1 61
1-Methyl naphthalene	< 0.03	ug/l	0.03	0.096	1	5/21/01	8270C	EEL	1 61
2-Methyl naphthalene	0.033 "J"	ug/l	0.033	0.11	1	5/21/01	8270C	EEL	1 61
Naphthalene	< 0.031	ug/l	0.031	0.099	1	5/21/01	8270C	EEL	1 61
Phenanthrene	< 0.028	ug/l	0.028	0.089	1	5/21/01	8270C	EEL	1 61
Pyrene	< 0.024	ug/l	0.024	0.076	1	5/21/01	8270C	EEL	1 61
PVOC									
Benzene	< 0.21	ug/l	0.21	0.67	1	5/21/01	GRO95	CJR	1
Ethylbenzene	< 0.22	ug/l	0.22	0.7	1	5/21/01	GRO95	CJR	1
MTBE	< 0.46	ug/l	0.46	1.5	1	5/21/01	GRO95	CJR	1
Toluene	< 0.41	ug/l	0.41	1.3	1	5/21/01	GRO95	CJR	1
1,2,4-Trimethylbenzene	< 0.26	ug/l	0.26	0.84	1	5/21/01	GRO95	CJR	1
1,3,5-Trimethylbenzene	< 0.34	ug/l	0.34	1.1	1	5/21/01	GRO95	CJR	1
Xylene's	< 0.69	ug/l	0.69	2.2	1	5/21/01	GRO95	CJR	1
Lab Code 5033384F Sample ID MW-8 Sample Type Water Sample Date 5/16/01									

Inorganic

General

Alkalinity as CaCO3	510	mg/l	1.5	5	1	5/25/01	310.1	JDB	1
Nitrogen (Nitrate-Nitrite)	0.15	mg/l	0.02	0.07	10	5/22/01	300.0	CLR	1
Sulfate	130	mg/l	2.4	7.9	100	5/22/01	300.0	CLR	1

Metals

Iron Dissolved	0.18 "J"	mg/l	0.139	0.46	1	5/23/01	6010B	JLA	1
Manganese Dissolved	0.33	mg/l	0.017	0.057	1	5/23/01	6010B	JLA	1

Organic

General

Methane	760	ug/l	0.5	1.5	1	5/22/01	8015	RTE	1
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PAH's

Acenaphthene	< 0.027	ug/l	0.027	0.096	1	5/21/01	8270C	EEL	1 61
Acenaphthylene	< 0.032	ug/l	0.032	0.1	1	5/21/01	8270C	EEL	1 61
Anthracene	< 0.027	ug/l	0.027	0.086	1	5/21/01	8270C	EEL	1 61
Benzo(a)anthracene	< 0.026	ug/l	0.026	0.083	1	5/21/01	8270C	EEL	1 61

U.S. Analytical Lab

CLIFF WRIGHT
GANNETT FLEMING
8025 EXCELSIOR DR.
MADISON, WI 53717-1900

Project # 34490.001/1027.21
Project Name CITY OF MADISON
Invoice # E33384

Report Date 31-May-01

Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code 5033384F									
Sample ID MW-8									
						Sample Type	Water		
						Sample Date	5/16/01		
Benzo(a)pyrene	< 0.014	ug/l	0.014	0.045	1	5/21/01	8270C	EEL	1 61
Benzo(b)fluoranthene	< 0.030	ug/l	0.03	0.096	1	5/21/01	8270C	EEL	1 61
Benzo(g,h,i)perylene	< 0.015	ug/l	0.015	0.048	1	5/21/01	8270C	EEL	1 61
Benzo(k)fluoranthene	< 0.019	ug/l	0.019	0.061	1	5/21/01	8270C	EEL	1 61
Chrysene	< 0.017	ug/l	0.017	0.054	1	5/21/01	8270C	EEL	1 61
Dibenzo(a,h)anthracene	< 0.020	ug/l	0.02	0.064	1	5/21/01	8270C	EEL	1 61
Fluoranthene	< 0.021	ug/l	0.021	0.067	1	5/21/01	8270C	EEL	1 61
Fluorene	< 0.029	ug/l	0.029	0.092	1	5/21/01	8270C	EEL	1 61
Indeno(1,2,3-cd)pyrene	< 0.022	ug/l	0.022	0.07	1	5/21/01	8270C	EEL	1 61
1-Methyl naphthalene	< 0.03	ug/l	0.03	0.096	1	5/21/01	8270C	EEL	1 61
2-Methyl naphthalene	< 0.033	ug/l	0.033	0.11	1	5/21/01	8270C	EEL	1 61
Naphthalene	0.042 "J"	ug/l	0.031	0.099	1	5/21/01	8270C	EEL	1 61
Phenanthrene	< 0.028	ug/l	0.028	0.089	1	5/21/01	8270C	EEL	1 61
Pyrene	< 0.024	ug/l	0.024	0.076	1	5/21/01	8270C	EEL	1 61
PVOC									
Benzene	< 0.21	ug/l	0.21	0.67	1	5/21/01	GRO95	CJR	1
Ethylbenzene	< 0.22	ug/l	0.22	0.7	1	5/21/01	GRO95	CJR	1
MTBE	< 0.46	ug/l	0.46	1.5	1	5/21/01	GRO95	CJR	1
Toluene	1 "J"	ug/l	0.41	1.3	1	5/21/01	GRO95	CJR	1
1,2,4-Trimethylbenzene	< 0.26	ug/l	0.26	0.84	1	5/21/01	GRO95	CJR	1
1,3,5-Trimethylbenzene	< 0.34	ug/l	0.34	1.1	1	5/21/01	GRO95	CJR	1
Xylene's	< 0.69	ug/l	0.69	2.2	1	5/21/01	GRO95	CJR	1

LOD Limit of Detection

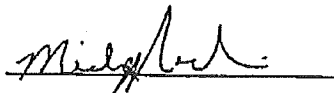
"J" Flag: Analyte detected between LOD and LOQ

LOQ Limit of Quantitation

Code Comment

1 All laboratory QC requirements were met for this sample.
61 Analysis performed by sub contract lab.

Authorized Signature



CHAIN OF CUSTODY RECORD



US Environmental Lab

1090 Kennedy Ave. • Kimberly, WI 54136
(920) 735-8295 • FAX 920-739-1738 • 800-490-4902
LAB@USOIL.COM

Chain #No 27255

Page 1 of 1

Lab I.D. # 5033384
Account No.: Quote No.:

Project #: 3490001/1021-21
Sampler: (signature)
Project (Name / Location): City of Madison
Reports To: Cliff Gentry
Company: Gannett Fleming
Address: 8025 Executive Dr.
City State Zip: Madison, WI 53717
Phone: 608-836-1500
Invoice To: Sam Balz
Company: City of Madison (Water Utility)
Address: 523 E Main St
City State Zip: Madison, WI 53703
Phone: 608-836-1500

Sample Integrity - To be completed by receiving lab.
Method of Shipment: Cooler Temp. of Temp. Blank: 4 °C On Ice: ✓
Cooler seal intact upon receipt: ✓ Yes ✓ No
Laboored By: _____

Lab I.D.	Sample I.D.	Collection		No. of Containers Size and Type	Description*	Preservation	Analysis Requested																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
		Date	Time				DRO (M)	GRO (M)	PVOC ()	BTEX ()	VOC (E)	VOC (E)	VOC DW	OR&G (E)	PAH (EF)	Pb	Flash Pct	Me/Th	Dis. Fe	Sulfate/Alkal	Nitrate	PID/ FID																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
5033384A	mw-1	5-16	9:40		GW	HCl/H ₂ SO ₄ /HNO ₃ /H ₂ O ₂ /m.Rs																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				

Comments/ Special Instructions
*Specify groundwater "GW", Drinking Water "DW", Waste Water "WW", Soil "S", Air "A", etc.

Relinquished By: (sign) _____ Time _____ Date _____
Received By: (sign) _____ Time 5:30 Date 5-17-01
Disposition of unused portion of sample
Lab Should: Dispose Retain for _____ days
Return _____ Other _____

Received in Laboratory By: Katherine Toman Time 5:30 Date 5-17-01

U.S. Analytical Lab

CLIFF WRIGHT
GANNETT FLEMING
8025 EXCELSIOR DR.
MADISON, WI 53717-1900

RECEIVED		
GANNETT FLEMING, INC.		
MADISON, WI		
NOV 02 2000		
FILE NO.	1027-2-1	
WJC	JSL	CCW
CFK	AWA	RJS
QJG	JEC	JJK

Project # 34490.001
Project Name CITY OF MADISON WATER U
Invoice # E31157

Report Date 30-Oct-00

Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code 5031157A						Sample Type Water			
Sample ID MW-1						Sample Date 10/17/00			

Inorganic

General

Alkalinity as CaCO3	2800	mg/l	1.5	5	1	10/26/00	310.1	SAD	1
Nitrogen (Nitrate-Nitrite)	< 0.02	mg/l	0.02	0.07	10	10/24/00	300.0	TJW	1
Sulfate	18	mg/l	0.24	0.79	10	10/20/00	300.0	TJW	1

Metals

Iron Dissolved	16	mg/l	0.139	0.46	1	10/26/00	6010B	JLA	1
Manganese Dissolved	1.0	mg/l	0.017	0.057	1	10/26/00	6010B	JLA	1

Organic

General

Methane	900	ug/l	5	15	10	10/26/00	8015	RTE	1
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PAH's

Acenaphthene	< 0.17	ug/l	0.17	0.55	1	10/20/00	8310	TJW	1
Acenaphthylene	< 1	ug/l	1	3.2	1	10/20/00	8310	TJW	1
Anthracene	< 0.01	ug/l	0.01	0.033	1	10/20/00	8310	TJW	1
Benzo(a)anthracene	< 0.074	ug/l	0.074	0.25	1	10/20/00	8310	TJW	1
Benzo(a)pyrene	< 0.1	ug/l	0.1	0.34	1	10/20/00	8310	TJW	2
Benzo(b)fluoranthene	< 0.065	ug/l	0.065	0.22	1	10/20/00	8310	TJW	1
Benzo(g,h,i)perylene	< 0.52	ug/l	0.52	1.7	1	10/20/00	8310	TJW	1
Benzo(k)fluoranthene	< 0.01	ug/l	0.01	0.033	1	10/20/00	8310	TJW	1
Chrysene	< 0.7	ug/l	0.7	2.4	1	10/20/00	8310	TJW	1
Dibenzo(a,h)anthracene	< 0.42	ug/l	0.42	1.4	1	10/20/00	8310	TJW	1
Fluoranthene	< 0.36	ug/l	0.36	1.2	1	10/20/00	8310	TJW	1
Fluorene	< 0.33	ug/l	0.33	1.1	1	10/20/00	8310	TJW	1
Indeno(1,2,3-cd)pyrene	< 0.59	ug/l	0.59	2	1	10/20/00	8310	TJW	1
1-Methyl naphthalene	< 0.21	ug/l	0.21	0.7	1	10/20/00	8310	TJW	1
2-Methyl naphthalene	< 0.2	ug/l	0.2	0.67	1	10/20/00	8310	TJW	1
Naphthalene	< 0.22	ug/l	0.22	0.74	1	10/20/00	8310	TJW	1
Phenanthrene	< 0.037	ug/l	0.037	0.12	1	10/20/00	8310	TJW	1
Pyrene	< 0.059	ug/l	0.059	0.2	1	10/20/00	8310	TJW	1

PVOC

Benzene	< 0.39	ug/l	0.39	1.3	1	10/19/00	GRO95	CAH	1
Ethylbenzene	< 0.4	ug/l	0.4	1.3	1	10/19/00	GRO95	CAH	1
MTBE	< 0.47	ug/l	0.47	1.6	1	10/19/00	GRO95	CAH	1
Toluene	< 0.37	ug/l	0.37	1.2	1	10/19/00	GRO95	CAH	1
1,2,4-Trimethylbenzene	< 0.4	ug/l	0.4	1.3	1	10/19/00	GRO95	CAH	1

U.S. Analytical Lab

CLIFF WRIGHT
GANNETT FLEMING
8025 EXCELSIOR DR.
MADISON, WI 53717-1900

Project # 34490.001
Project Name CITY OF MADISON WATER U
Invoice # E31157

Report Date 30-Oct-00

Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code 5031157A						Sample Type Water			
Sample ID MW-1						Sample Date 10/17/00			
1,3,5-Trimethylbenzene	< 0.63	ug/l	0.63	2.1	1	10/19/00	GRO95	CAH	1
Xylene's	< 1.4	ug/l	1.4	4.8	1	10/19/00	GRO95	CAH	1
Lab Code 5031157B						Sample Type Water			
Sample ID MW-2						Sample Date 10/17/00			

Inorganic

General

Alkalinity as CaCO3	570	mg/l	1.5	5	1	10/26/00	310.1	SAD	1
Nitrogen (Nitrate-Nitrite)	< 0.02	mg/l	0.02	0.07	10	10/24/00	300.0	TJW	1
Sulfate	1.3	mg/l	0.024	0.079	1	10/20/00	300.0	TJW	1

Metals

Iron Dissolved	20	mg/l	0.139	0.46	1	10/26/00	6010B	JLA	1 59
Manganese Dissolved	0.87	mg/l	0.017	0.057	1	10/26/00	6010B	JLA	1 59

Organic

General

Methane	11000	ug/l	10	30	20	10/26/00	8015	RTE	1
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PAH's

Acenaphthene	6.9	ug/l	0.17	0.55	1	10/20/00	8310	TJW	1
Acenaphthylene	< 1	ug/l	1	3.2	1	10/20/00	8310	TJW	1
Anthracene	1.1	ug/l	0.01	0.033	1	10/20/00	8310	TJW	1
Benzo(a)anthracene	1.7	ug/l	0.074	0.25	1	10/20/00	8310	TJW	1
Benzo(a)pyrene	1.3	ug/l	0.1	0.34	1	10/20/00	8310	TJW	2
Benzo(b)fluoranthene	1.6	ug/l	0.065	0.22	1	10/20/00	8310	TJW	1
Benzo(g,h,i)perylene	2.3	ug/l	0.52	1.7	1	10/20/00	8310	TJW	1
Benzo(k)fluoranthene	0.59	ug/l	0.01	0.033	1	10/20/00	8310	TJW	1
Chrysene	0.89 "J"	ug/l	0.7	2.4	1	10/20/00	8310	TJW	1
Dibenzo(a,h)anthracene	1.4 "J"	ug/l	0.42	1.4	1	10/20/00	8310	TJW	1
Fluoranthene	80	ug/l	3.6	12	10	10/20/00	8310	TJW	1
Fluorene	3.1	ug/l	0.33	1.1	1	10/20/00	8310	TJW	1
Indeno(1,2,3-cd)pyrene	6.7	ug/l	0.59	2	1	10/20/00	8310	TJW	1
1-Methyl naphthalene	150	ug/l	2.1	7	10	10/20/00	8310	TJW	1
2-Methyl naphthalene	270	ug/l	2	6.7	10	10/20/00	8310	TJW	1
Naphthalene	180	ug/l	2.2	7.4	10	10/20/00	8310	TJW	1
Phenanthrene	10	ug/l	0.037	0.12	1	10/20/00	8310	TJW	1
Pyrene	3.6	ug/l	0.059	0.2	1	10/20/00	8310	TJW	1

PVOC

U.S. Analytical Lab

CLIFF WRIGHT
GANNETT FLEMING
8025 EXCELSIOR DR.
MADISON, WI 53717-1900

Project # 34490.001
Project Name CITY OF MADISON WATER U
Invoice # E31157

Report Date 30-Oct-00

Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code 5031157B	Sample Type Water								
Sample ID MW-2	Sample Date 10/17/00								
Benzene	660	ug/l	39	130	100	10/20/00	GRO95	CAH	1
Ethylbenzene	330	ug/l	40	130	100	10/20/00	GRO95	CAH	1
MTBE	< 47	ug/l	47	160	100	10/20/00	GRO95	CAH	1
Toluene	300	ug/l	37	120	100	10/20/00	GRO95	CAH	1
1,2,4-Trimethylbenzene	550	ug/l	40	130	100	10/20/00	GRO95	CAH	1
1,3,5-Trimethylbenzene	150 "J"	ug/l	63	210	100	10/20/00	GRO95	CAH	1
Xylene's	500	ug/l	140	480	100	10/20/00	GRO95	CAH	1

Lab Code 5031157C	Sample Type Water								
Sample ID MW-3	Sample Date 10/17/00								

Inorganic

General

Alkalinity as CaCO3	420	mg/l	1.5	5	1	10/26/00	310.1	SAD	1
Nitrogen (Nitrate-Nitrite)	< 0.02	mg/l	0.02	0.07	10	10/24/00	300.0	TJW	1
Sulfate	1500	mg/l	24	79	1000	10/20/00	300.0	TJW	1

Metals

Iron Dissolved	196	mg/l	0.139	0.46	1	10/26/00	6010B	JLA	1
Manganese Dissolved	3.3	mg/l	0.034	0.114	2	10/26/00	6010B	JLA	1

Organic

General

Methane	870	ug/l	5	15	10	10/26/00	8015	RTE	1
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PAH's

Acenaphthene	< 0.17	ug/l	0.17	0.55	1	10/20/00	8310	TJW	1
Acenaphthylene	< 1	ug/l	1	3.2	1	10/20/00	8310	TJW	1
Anthracene	< 0.01	ug/l	0.01	0.033	1	10/20/00	8310	TJW	1
Benzo(a)anthracene	< 0.074	ug/l	0.074	0.25	1	10/20/00	8310	TJW	1
Benzo(a)pyrene	< 0.1	ug/l	0.1	0.34	1	10/20/00	8310	TJW	2
Benzo(b)fluoranthene	< 0.065	ug/l	0.065	0.22	1	10/20/00	8310	TJW	1
Benzo(g,h,i)perylene	< 0.52	ug/l	0.52	1.7	1	10/20/00	8310	TJW	1
Benzo(k)fluoranthene	< 0.01	ug/l	0.01	0.033	1	10/20/00	8310	TJW	1
Chrysene	< 0.7	ug/l	0.7	2.4	1	10/20/00	8310	TJW	1
Dibenzo(a,h)anthracene	< 0.42	ug/l	0.42	1.4	1	10/20/00	8310	TJW	1
Fluoranthene	< 0.36	ug/l	0.36	1.2	1	10/20/00	8310	TJW	1
Fluorene	< 0.33	ug/l	0.33	1.1	1	10/20/00	8310	TJW	1
Indeno(1,2,3-cd)pyrene	< 0.59	ug/l	0.59	2	1	10/20/00	8310	TJW	1
1-Methyl naphthalene	< 0.21	ug/l	0.21	0.7	1	10/20/00	8310	TJW	1

U.S. Analytical Lab

CLIFF WRIGHT
GANNETT FLEMING
8025 EXCELSIOR DR.
MADISON, WI 53717-1900

Project # 34490.001
Project Name CITY OF MADISON WATER U
Invoice # E31157

Report Date 30-Oct-00

Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code 5031157C						Sample Type Water			
Sample ID MW-3						Sample Date 10/17/00			
2-Methyl naphthalene	< 0.2	ug/l	0.2	0.67	1	10/20/00	8310	TJW	1
Naphthalene	< 0.22	ug/l	0.22	0.74	1	10/20/00	8310	TJW	1
Phenanthrene	< 0.037	ug/l	0.037	0.12	1	10/20/00	8310	TJW	1
Pyrene	< 0.059	ug/l	0.059	0.2	1	10/20/00	8310	TJW	1
PVOC									
Benzene	< 0.39	ug/l	0.39	1.3	1	10/19/00	GRO95	CAH	1
Ethylbenzene	0.5 "J"	ug/l	0.4	1.3	1	10/19/00	GRO95	CAH	1
MTBE	< 0.47	ug/l	0.47	1.6	1	10/19/00	GRO95	CAH	1
Toluene	21	ug/l	0.37	1.2	1	10/19/00	GRO95	CAH	1
1,2,4-Trimethylbenzene	1.5	ug/l	0.4	1.3	1	10/19/00	GRO95	CAH	1
1,3,5-Trimethylbenzene	1 "J"	ug/l	0.63	2.1	1	10/19/00	GRO95	CAH	1
Xylene's	< 1.4	ug/l	1.4	4.8	1	10/19/00	GRO95	CAH	1
Lab Code 5031157D						Sample Type Water			
Sample ID MW-4						Sample Date 10/17/00			

Inorganic

General

Alkalinity as CaCO3	620	mg/l	1.5	5	1	10/26/00	310.1	SAD	1
Nitrogen (Nitrate-Nitrite)	0.068 "J"	mg/l	0.02	0.07	10	10/24/00	300.0	TJW	1
Sulfate	470	mg/l	2.4	7.9	100	10/24/00	300.0	TJW	1

Metals

Iron Dissolved	11	mg/l	0.139	0.46	1	10/26/00	6010B	JLA	1
Manganese Dissolved	1.5	mg/l	0.017	0.057	1	10/26/00	6010B	JLA	1

Organic

General

Methane	140	ug/l	0.5	1.5	1	10/26/00	8015	RTE	1
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PAH's

Acenaphthene	0.62	ug/l	0.17	0.55	1	10/21/00	8310	TJW	1
Acenaphthylene	< 1	ug/l	1	3.2	1	10/21/00	8310	TJW	1
Anthracene	0.03 "J"	ug/l	0.01	0.033	1	10/21/00	8310	TJW	1
Benzo(a)anthracene	< 0.074	ug/l	0.074	0.25	1	10/21/00	8310	TJW	1
Benzo(a)pyrene	< 0.1	ug/l	0.1	0.34	1	10/21/00	8310	TJW	2
Benzo(b)fluoranthene	< 0.065	ug/l	0.065	0.22	1	10/21/00	8310	TJW	1
Benzo(g,h,i)perylene	< 0.52	ug/l	0.52	1.7	1	10/21/00	8310	TJW	1
Benzo(k)fluoranthene	< 0.01	ug/l	0.01	0.033	1	10/21/00	8310	TJW	1
Chrysene	< 0.7	ug/l	0.7	2.4	1	10/21/00	8310	TJW	1

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8025 EXCELSIOR DR.
MADISON, WI 53717-1900

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Project Name CITY OF MADISON WATER U
Invoice # E31157

Report Date 30-Oct-00

Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code 5031157D Sample ID MW-4 Sample Type Water Sample Date 10/17/00									
Dibenzo(a,h)anthracene	< 0.42	ug/l	0.42	1.4	1	10/21/00	8310	TJW	1
Fluoranthene	0.69 "J"	ug/l	0.36	1.2	1	10/21/00	8310	TJW	1
Fluorene	0.65 "J"	ug/l	0.33	1.1	1	10/21/00	8310	TJW	1
Indeno(1,2,3-cd)pyrene	< 0.59	ug/l	0.59	2	1	10/21/00	8310	TJW	1
1-Methyl naphthalene	< 0.21	ug/l	0.21	0.7	1	10/21/00	8310	TJW	1
2-Methyl naphthalene	< 0.2	ug/l	0.2	0.67	1	10/21/00	8310	TJW	1
Naphthalene	< 0.22	ug/l	0.22	0.74	1	10/21/00	8310	TJW	1
Phenanthrene	0.038 "J"	ug/l	0.037	0.12	1	10/21/00	8310	TJW	1
Pyrene	< 0.059	ug/l	0.059	0.2	1	10/21/00	8310	TJW	1
PVOC									
Benzene	< 0.39	ug/l	0.39	1.3	1	10/19/00	GRO95	CAH	1
Ethylbenzene	< 0.4	ug/l	0.4	1.3	1	10/19/00	GRO95	CAH	1
MTBE	< 0.47	ug/l	0.47	1.6	1	10/19/00	GRO95	CAH	1
Toluene	1.5	ug/l	0.37	1.2	1	10/19/00	GRO95	CAH	1
1,2,4-Trimethylbenzene	< 0.4	ug/l	0.4	1.3	1	10/19/00	GRO95	CAH	1
1,3,5-Trimethylbenzene	< 0.63	ug/l	0.63	2.1	1	10/19/00	GRO95	CAH	1
Xylene's	< 1.4	ug/l	1.4	4.8	1	10/19/00	GRO95	CAH	1
Lab Code 5031157E Sample ID MW-5 Sample Type Water Sample Date 10/17/00									

Inorganic

General

Alkalinity as CaCO3	520	mg/l	1.5	5	1	10/26/00	310.1	SAD	1
Nitrogen (Nitrate-Nitrite)	< 0.02	mg/l	0.02	0.07	10	10/24/00	300.0	TJW	1
Sulfate	63	mg/l	0.24	0.79	10	10/20/00	300.0	TJW	1

Metals

Iron Dissolved	0.90	mg/l	0.139	0.46	1	10/26/00	6010B	JLA	1
Manganese Dissolved	0.27	mg/l	0.017	0.057	1	10/26/00	6010B	JLA	1

Organic

General

Methane	3.1	ug/l	0.5	1.5	1	10/26/00	8015	RTE	1
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PAH's

Acenaphthene	< 0.17	ug/l	0.17	0.55	1	10/21/00	8310	TJW	1
Acenaphthylene	< 1	ug/l	1	3.2	1	10/21/00	8310	TJW	1
Anthracene	< 0.01	ug/l	0.01	0.033	1	10/21/00	8310	TJW	1
Benzo(a)anthracene	< 0.074	ug/l	0.074	0.25	1	10/21/00	8310	TJW	1

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MADISON, WI 53717-1900

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Report Date 30-Oct-00

Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code 5031157E Sample ID MW-5 Sample Type Water Sample Date 10/17/00									
Benzo(a)pyrene	< 0.1	ug/l	0.1	0.34	1	10/21/00	8310	TJW	2
Benzo(b)fluoranthene	< 0.065	ug/l	0.065	0.22	1	10/21/00	8310	TJW	1
Benzo(g,h,i)perylene	< 0.52	ug/l	0.52	1.7	1	10/21/00	8310	TJW	1
Benzo(k)fluoranthene	< 0.01	ug/l	0.01	0.033	1	10/21/00	8310	TJW	1
Chrysene	< 0.7	ug/l	0.7	2.4	1	10/21/00	8310	TJW	1
Dibenzo(a,h)anthracene	< 0.42	ug/l	0.42	1.4	1	10/21/00	8310	TJW	1
Fluoranthene	< 0.36	ug/l	0.36	1.2	1	10/21/00	8310	TJW	1
Fluorene	< 0.33	ug/l	0.33	1.1	1	10/21/00	8310	TJW	1
Indeno(1,2,3-cd)pyrene	< 0.59	ug/l	0.59	2	1	10/21/00	8310	TJW	1
1-Methyl naphthalene	< 0.21	ug/l	0.21	0.7	1	10/21/00	8310	TJW	1
2-Methyl naphthalene	< 0.2	ug/l	0.2	0.67	1	10/21/00	8310	TJW	1
Naphthalene	< 0.22	ug/l	0.22	0.74	1	10/21/00	8310	TJW	1
Phenanthrene	< 0.037	ug/l	0.037	0.12	1	10/21/00	8310	TJW	1
Pyrene	< 0.059	ug/l	0.059	0.2	1	10/21/00	8310	TJW	1
PVOC									
Benzene	< 0.39	ug/l	0.39	1.3	1	10/19/00	GRO95	CAH	1
Ethylbenzene	< 0.4	ug/l	0.4	1.3	1	10/19/00	GRO95	CAH	1
MTBE	< 0.47	ug/l	0.47	1.6	1	10/19/00	GRO95	CAH	1
Toluene	< 0.37	ug/l	0.37	1.2	1	10/19/00	GRO95	CAH	1
1,2,4-Trimethylbenzene	< 0.4	ug/l	0.4	1.3	1	10/19/00	GRO95	CAH	1
1,3,5-Trimethylbenzene	< 0.63	ug/l	0.63	2.1	1	10/19/00	GRO95	CAH	1
Xylene's	< 1.4	ug/l	1.4	4.8	1	10/19/00	GRO95	CAH	1

Lab Code	5031157F	Sample Type	Water
Sample ID	MW-6	Sample Date	10/17/00

Inorganic

General

Alkalinity as CaCO ₃	730	mg/l	1.5	5	1	10/26/00	310 I	SAD	1
Nitrogen (Nitrate-Nitrite)	< 0.02	mg/l	0.02	0.07	10	10/24/00	300.0	TJW	1
Sulfate	89	mg/l	0.24	0.79	10	10/20/00	300.0	TJW	1

Metals

Iron Dissolved	1.6	mg/l	0.139	0.46	1	10/26/00	6010B	JLA	1
Manganese Dissolved	0.16	mg/l	0.017	0.057	1	10/26/00	6010B	JLA	1

Organic

General

Methane	480	ug/l	0.5	1.5	1	10/26/00	8015	RTE	1
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MADISON, WI 53717-1900

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Invoice # E31157

Report Date 30-Oct-00

Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code 5031157F						Sample Type Water			
Sample ID MW-6						Sample Date 10/17/00			

PAH's

Acenaphthene	< 0.17	ug/l	0.17	0.55	1	10/21/00	8310	TJW	1
Acenaphthylene	< 1	ug/l	1	3.2	1	10/21/00	8310	TJW	1
Anthracene	0.47	ug/l	0.01	0.033	1	10/21/00	8310	TJW	1
Benzo(a)anthracene	2.3	ug/l	0.074	0.25	1	10/21/00	8310	TJW	1
Benzo(a)pyrene	1.3	ug/l	0.1	0.34	1	10/21/00	8310	TJW	2
Benzo(b)fluoranthene	1.9	ug/l	0.065	0.22	1	10/21/00	8310	TJW	1
Benzo(g,h,i)perylene	1.7	ug/l	0.52	1.7	1	10/21/00	8310	TJW	1
Benzo(k)fluoranthene	0.91	ug/l	0.01	0.033	1	10/21/00	8310	TJW	1
Chrysene	1.7 "J"	ug/l	0.7	2.4	1	10/21/00	8310	TJW	1
Dibenzo(a,h)anthracene	< 0.42	ug/l	0.42	1.4	1	10/21/00	8310	TJW	1
Fluoranthene	4.2	ug/l	0.36	1.2	1	10/21/00	8310	TJW	1
Fluorene	< 0.33	ug/l	0.33	1.1	1	10/21/00	8310	TJW	1
Indeno(1,2,3-cd)pyrene	1.3 "J"	ug/l	0.59	2	1	10/21/00	8310	TJW	1
1-Methyl naphthalene	< 0.21	ug/l	0.21	0.7	1	10/21/00	8310	TJW	1
2-Methyl naphthalene	< 0.2	ug/l	0.2	0.67	1	10/21/00	8310	TJW	1
Naphthalene	< 0.22	ug/l	0.22	0.74	1	10/21/00	8310	TJW	1
Phenanthrene	2.3	ug/l	0.037	0.12	1	10/21/00	8310	TJW	1
Pyrene	4.7	ug/l	0.059	0.2	1	10/21/00	8310	TJW	1

PVOC

Benzene	< 0.39	ug/l	0.39	1.3	1	10/19/00	GRO95	CAH	1
Ethylbenzene	< 0.4	ug/l	0.4	1.3	1	10/19/00	GRO95	CAH	1
MTBE	< 0.47	ug/l	0.47	1.6	1	10/19/00	GRO95	CAH	1
Toluene	< 0.37	ug/l	0.37	1.2	1	10/19/00	GRO95	CAH	1
1,2,4-Trimethylbenzene	< 0.4	ug/l	0.4	1.3	1	10/19/00	GRO95	CAH	1
1,3,5-Trimethylbenzene	< 0.63	ug/l	0.63	2.1	1	10/19/00	GRO95	CAH	1
Xylene's	< 1.4	ug/l	1.4	4.8	1	10/19/00	GRO95	CAH	1

Lab Code 5031157G						Sample Type Water			
Sample ID MW-7						Sample Date 10/17/00			

Inorganic

General

Alkalinity as CaCO3	5000	mg/l	1.5	5	1	10/26/00	310.1	SAD	1
Nitrogen (Nitrate-Nitrite)	0.18	mg/l	0.02	0.07	10	10/24/00	300.0	TJW	1
Sulfate	100	mg/l	0.24	0.79	10	10/20/00	300.0	TJW	1

Metals

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CLIFF WRIGHT
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MADISON, WI 53717-1900

Project # 34490.001
Project Name CITY OF MADISON WATER U
Invoice # E31157

Report Date 30-Oct-00

Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code 5031157G						Sample Type Water			
Sample ID MW-7						Sample Date 10/17/00			
Iron Dissolved	< 0.139	mg/l	0.139	0.46	1	10/26/00	6010B	JLA	1
Manganese Dissolved	0.098	mg/l	0.017	0.057	1	10/26/00	6010B	JLA	1
Organic									
General									
Methane	2.6	ug/l	0.5	1.5	1	10/26/00	8015	RTE	1
PAH's									
Acenaphthene	< 0.17	ug/l	0.17	0.55	1	10/21/00	8310	TJW	1
Acenaphthylene	< 1	ug/l	1	3.2	1	10/21/00	8310	TJW	1
Anthracene	0.02 "J"	ug/l	0.01	0.033	1	10/21/00	8310	TJW	1
Benzo(a)anthracene	< 0.074	ug/l	0.074	0.25	1	10/21/00	8310	TJW	1
Benzo(a)pyrene	< 0.1	ug/l	0.1	0.34	1	10/21/00	8310	TJW	2
Benzo(b)fluoranthene	< 0.065	ug/l	0.065	0.22	1	10/21/00	8310	TJW	1
Benzo(g,h,i)perylene	< 0.52	ug/l	0.52	1.7	1	10/21/00	8310	TJW	1
Benzo(k)fluoranthene	< 0.01	ug/l	0.01	0.033	1	10/21/00	8310	TJW	1
Chrysene	< 0.7	ug/l	0.7	2.4	1	10/21/00	8310	TJW	1
Dibenzo(a,h)anthracene	< 0.42	ug/l	0.42	1.4	1	10/21/00	8310	TJW	1
Fluoranthene	< 0.36	ug/l	0.36	1.2	1	10/21/00	8310	TJW	1
Fluorene	< 0.33	ug/l	0.33	1.1	1	10/21/00	8310	TJW	1
Indeno(1,2,3-cd)pyrene	< 0.59	ug/l	0.59	2	1	10/21/00	8310	TJW	1
1-Methyl naphthalene	< 0.21	ug/l	0.21	0.7	1	10/21/00	8310	TJW	1
2-Methyl naphthalene	0.23 "J"	ug/l	0.2	0.67	1	10/21/00	8310	TJW	1
Naphthalene	0.25 "J"	ug/l	0.22	0.74	1	10/21/00	8310	TJW	1
Phenanthrene	0.12 "J"	ug/l	0.037	0.12	1	10/21/00	8310	TJW	1
Pyrene	< 0.059	ug/l	0.059	0.2	1	10/21/00	8310	TJW	1
PVOC									
Benzene	< 0.39	ug/l	0.39	1.3	1	10/19/00	GRO95	CAH	1 72
Ethylbenzene	< 0.4	ug/l	0.4	1.3	1	10/19/00	GRO95	CAH	1 72
MTBE	< 0.47	ug/l	0.47	1.6	1	10/19/00	GRO95	CAH	1 72
Toluene	< 0.37	ug/l	0.37	1.2	1	10/19/00	GRO95	CAH	1 72
1,2,4-Trimethylbenzene	< 0.4	ug/l	0.4	1.3	1	10/19/00	GRO95	CAH	1 72
1,3,5-Trimethylbenzene	< 0.63	ug/l	0.63	2.1	1	10/19/00	GRO95	CAH	1 72
Xylene's	< 1.4	ug/l	1.4	4.8	1	10/19/00	GRO95	CAH	1 72

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Invoice # E31157

Report Date 30-Oct-00

Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code 5031157H						Sample Type Water			
Sample ID MW-8						Sample Date 10/17/00			
Inorganic									
General									
Alkalinity as CaCO ₃	990	mg/l	1.5	5	1	10/26/00	310.1	SAD	1
Nitrogen (Nitrate-Nitrite)	< 0.02	mg/l	0.02	0.07	10	10/24/00	300.0	TJW	1
Sulfate	100	mg/l	0.24	0.79	10	10/20/00	300.0	TJW	1
Metals									
Iron Dissolved	1.7	mg/l	0.139	0.46	1	10/26/00	6010B	JLA	1
Manganese Dissolved	0.33	mg/l	0.017	0.057	1	10/26/00	6010B	JLA	1
Organic									
General									
Methane	1400	ug/l	5	15	10	10/26/00	8015	RTE	1
PAH's									
Acenaphthene	< 0.17	ug/l	0.17	0.55	1	10/26/00	8310	TJW	1
Acenaphthylene	< 1	ug/l	1	3.2	1	10/26/00	8310	TJW	1
Anthracene	< 0.01	ug/l	0.01	0.033	1	10/26/00	8310	TJW	1
Benzo(a)anthracene	< 0.074	ug/l	0.074	0.25	1	10/26/00	8310	TJW	1
Benzo(a)pyrene	< 0.1	ug/l	0.1	0.34	1	10/26/00	8310	TJW	1
Benzo(b)fluoranthene	< 0.065	ug/l	0.065	0.22	1	10/26/00	8310	TJW	1
Benzo(g,h,i)perylene	< 0.52	ug/l	0.52	1.7	1	10/26/00	8310	TJW	1
Benzo(k)fluoranthene	< 0.01	ug/l	0.01	0.033	1	10/26/00	8310	TJW	1
Chrysene	< 0.7	ug/l	0.7	2.4	1	10/26/00	8310	TJW	1
Dibenzo(a,h)anthracene	< 0.42	ug/l	0.42	1.4	1	10/26/00	8310	TJW	1
Fluoranthene	< 0.36	ug/l	0.36	1.2	1	10/26/00	8310	TJW	1
Fluorene	< 0.33	ug/l	0.33	1.1	1	10/26/00	8310	TJW	1
Indeno(1,2,3-cd)pyrene	< 0.59	ug/l	0.59	2	1	10/26/00	8310	TJW	1
1-Methyl naphthalene	< 0.21	ug/l	0.21	0.7	1	10/26/00	8310	TJW	1
2-Methyl naphthalene	< 0.2	ug/l	0.2	0.67	1	10/26/00	8310	TJW	1
Naphthalene	< 0.22	ug/l	0.22	0.74	1	10/26/00	8310	TJW	1
Phenanthrene	< 0.037	ug/l	0.037	0.12	1	10/26/00	8310	TJW	1
Pyrene	< 0.059	ug/l	0.059	0.2	1	10/26/00	8310	TJW	1
PVOC									
Benzene	< 0.39	ug/l	0.39	1.3	1	10/19/00	GRO95	CAH	1
Ethylbenzene	< 0.4	ug/l	0.4	1.3	1	10/19/00	GRO95	CAH	1
MTBE	< 0.47	ug/l	0.47	1.6	1	10/19/00	GRO95	CAH	1
Toluene	2.7	ug/l	0.37	1.2	1	10/19/00	GRO95	CAH	1
1,2,4-Trimethylbenzene	< 0.4	ug/l	0.4	1.3	1	10/19/00	GRO95	CAH	1

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GANNETT FLEMING
8025 EXCELSIOR DR.
MADISON, WI 53717-1900

Project # 34490.001
Project Name CITY OF MADISON WATER U
Invoice # E31157

Report Date 30-Oct-00

Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code 5031157H						Sample Type Water			
Sample ID MW-8						Sample Date 10/17/00			
1,3,5-Trimethylbenzene	< 0.63	ug/l	0.63	2.1	1	10/19/00	GRO95	CAH	1
Xylene's	< 1.4	ug/l	1.4	4.8	1	10/19/00	GRO95	CAH	1
Lab Code 5031157I						Sample Type Water			
Sample ID MW-9						Sample Date 10/17/00			

Inorganic

General

Alkalinity as CaCO3	470	mg/l	1.5	5	1	10/26/00	310.1	SAD	1
Nitrogen (Nitrate-Nitrite)	0.083	mg/l	0.02	0.07	10	10/24/00	300.0	TJW	1
Sulfate	45	mg/l	0.24	0.79	10	10/20/00	300.0	TJW	1

Metals

Iron Dissolved	< 0.139	mg/l	0.139	0.46	1	10/26/00	6010B	JLA	1
Manganese Dissolved	0.18	mg/l	0.017	0.057	1	10/26/00	6010B	JLA	1

Organic

General

Methane	9.5	ug/l	0.5	1.5	1	10/26/00	8015	RTE	1
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PAH's

Acenaphthene	< 0.17	ug/l	0.17	0.55	1	10/26/00	8310	TJW	1
Acenaphthylene	< 1	ug/l	1	3.2	1	10/26/00	8310	TJW	1
Anthracene	< 0.01	ug/l	0.01	0.033	1	10/26/00	8310	TJW	1
Benzo(a)anthracene	< 0.074	ug/l	0.074	0.25	1	10/26/00	8310	TJW	1
Benzo(a)pyrene	< 0.1	ug/l	0.1	0.34	1	10/26/00	8310	TJW	1
Benzo(b)fluoranthene	< 0.065	ug/l	0.065	0.22	1	10/26/00	8310	TJW	1
Benzo(g,h,i)perylene	< 0.52	ug/l	0.52	1.7	1	10/26/00	8310	TJW	1
Benzo(k)fluoranthene	< 0.01	ug/l	0.01	0.033	1	10/26/00	8310	TJW	1
Chrysene	< 0.7	ug/l	0.7	2.4	1	10/26/00	8310	TJW	1
Dibenzo(a,h)anthracene	< 0.42	ug/l	0.42	1.4	1	10/26/00	8310	TJW	1
Fluoranthene	< 0.36	ug/l	0.36	1.2	1	10/26/00	8310	TJW	1
Fluorene	< 0.33	ug/l	0.33	1.1	1	10/26/00	8310	TJW	1
Indeno(1,2,3-cd)pyrene	< 0.59	ug/l	0.59	2	1	10/26/00	8310	TJW	1
1-Methyl naphthalene	< 0.21	ug/l	0.21	0.7	1	10/26/00	8310	TJW	1
2-Methyl naphthalene	< 0.2	ug/l	0.2	0.67	1	10/26/00	8310	TJW	1
Naphthalene	< 0.22	ug/l	0.22	0.74	1	10/26/00	8310	TJW	1
Phenanthrene	< 0.037	ug/l	0.037	0.12	1	10/26/00	8310	TJW	1
Pyrene	< 0.059	ug/l	0.059	0.2	1	10/26/00	8310	TJW	1

PVOC

U.S. Analytical Lab

CLIFF WRIGHT
GANNETT FLEMING
8025 EXCELSIOR DR.
MADISON, WI 53717-1900

Project # 34490.001
Project Name CITY OF MADISON WATER U
Invoice # E31157

Report Date 30-Oct-00

Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code 50311571									
Sample ID MW-9									
						Sample Type	Water		
						Sample Date	10/17/00		
Benzene	< 0.39	ug/l	0.39	1.3	1	10/19/00	GRO95	CAH	1
Ethylbenzene	< 0.4	ug/l	0.4	1.3	1	10/19/00	GRO95	CAH	1
MTBE	< 0.47	ug/l	0.47	1.6	1	10/19/00	GRO95	CAH	1
Toluene	< 0.37	ug/l	0.37	1.2	1	10/19/00	GRO95	CAH	1
1,2,4-Trimethylbenzene	< 0.4	ug/l	0.4	1.3	1	10/19/00	GRO95	CAH	1
1,3,5-Trimethylbenzene	< 0.63	ug/l	0.63	2.1	1	10/19/00	GRO95	CAH	1
Xylene's	< 1.4	ug/l	1.4	4.8	1	10/19/00	GRO95	CAH	1

LOD Limit of Detection

"J" Flag: Analyte detected between LOD and LOQ

LOQ Limit of Quantitation

Code Comment

- 1 All laboratory QC requirements were met for this sample.
- 2 The duplicate RPD failed to meet acceptable QC limits.
- 59 Sample turbidity greater than 1.0 NTU.
- 72 Sample pH greater than 2.0

Authorized Signature

Katherine A. Brahman

CHAIN OF CUSTODY RECORD



Analytical Lab

1090 Kennedy Ave. • Kimberly, WI 54136
(920) 735-8295 • FAX 920-739-1738 • 800-490-4902
LAB@USOIL.COM

Rev. Date: 12-17-98

Chain # **N2** 21126

Page ____ of ____

Project #: **34490001**
 Sampler: (signature) *[Signature]*
 Project (Name / Location): **City of Madison, Water Utility**
 Reports To: **Cliff Wright**
 Company: **Gannett Fleming**
 Address: **8025 Executive Dr.**
 City/State/Zip: **Madison, WI 53717**
 Phone: **608 836 1500**
 Invoice To: **Tom Blatz**
 Company: **City of Madison (with Utility)**
 Address: **523 E. Main Street**
 City/State/Zip: **Madison, WI 53703**
 Phone: **608 836 1500**

Reports To: <u>Cliff Wright</u> Invoice To: <u>5 m B1072</u>										Sample Handling Request										Analysis Requested																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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Lab I.D.	Sample I.D.	Collection		No. of Containers		Description*		Preservation		DRO (Mod/TPH)		GRO (Mod/TPH)		PVOC (EPA 8021)		BTEX (EPA 8021)		VOC (EPA 8021)		VOC (EPA 8260)		O&G (EPA 413.1)		PAH (EPA 8310)		Pb		Flash Point		M. Phenols		D. Fe / Manganese		Sulfide / H ₂ S		Acetone / MEK		PID/ FID																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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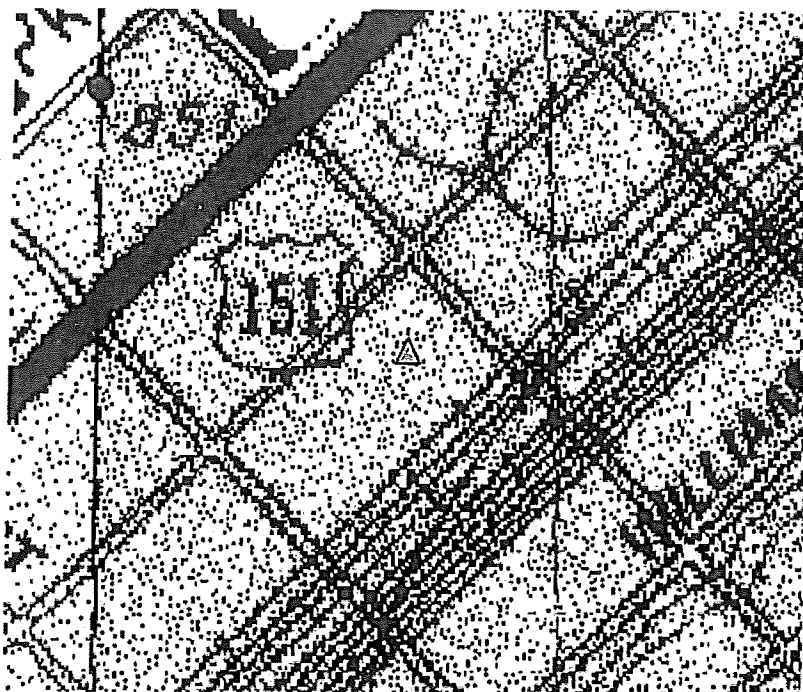
Comments/ Special Instructions
 *Specify groundwater "GW", Drinking Water "DW", Waste Water "WW", Soil "S", Air "A", etc.
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1849. 1850. 1851. 1852. 1853. 1854. 1855. 1856. 1857. 1858. 1859. 1860. 1861. 1862. 1863. 1864. 1865. 1866. 1867. 18

Gannett Fleming

ATTACHMENT I

GEOGRAPHIC POSITION OF CONTAMINATED SITE

Scale 1 : 3,839



Not all Closed Remediation Sites are shown

Parcel boundaries are approximations only. [Please see documentation.](#)

△ WTM coordinates: 571099, 289964