

**MINNESOTA DEPARTMENT OF TRANSPORTATION
USED OIL BURNER SAMPLING
ON-SPEC OIL ANALYSIS**

**District 1
Carlton, Minnesota
Virginia, Minnesota**



**Prepared by:
Minnesota Department of Transportation
Office of Environmental Services
Environmental Modeling and Testing Unit**

January 2010

INTRODUCTION

Enclosed in this report are the results of the sampling of used oil collected at the Minnesota Department of Transportation (MNDOT) District 1 Truck Station facilities. Used oil from vehicles is placed in Lube Cube storage tanks at each of the truck stations. The Lube Cubes are connected to building heaters that burn the used oil for heat recovery.

The sampling of used oil at the District 1 facilities was conducted by personnel from the MNDOT Office of Environmental Services. For additional information, contact Harold Bottolfson at (651) 366-5812. The laboratory analysis was performed by the Minnesota Department of Health.

The results of the laboratory analysis from the samples taken at the District 1 Truck Stations show the burner oil to be within the on spec limits.

Purpose

The purpose of the sampling and analysis is to insure that the used oil that is burned in heating units meets MPCA rules for such practices. The oil must meet the following limits to be classified as on-spec:

- Flashpoint 100 degrees Fahrenheit minimum
- Arsenic 5 parts per million (PPM) maximum
- Cadmium 2 PPM maximum
- Chromium 10 PPM maximum
- Lead 100 PPM maximum
- Total Halogens 1000 PPM maximum

Procedures

The oil was sampled from the storage tank with a Coliwasa sampler. The Coliwasa sampler is a 70" long polypropylene tube that is 1" diameter. The sampler has caps at each end that can be opened and closed by using a control rod that runs through the length of the tube. During the sampling, the end caps were opened and the coliwasa was slowly lowered into the tank so that a vertical column sample could be obtained. The sampler was lowered to the top of the sludge layer so that only the oil to be burned would be sampled. The oil from the sampler was placed in a sample bottles provided by the Minnesota Department of Health, which was contracted to analyze the sample. As the sample was released into the bottle, it was carefully observed for any discolorations or changes in the composition of the material. Notes were taken of the procedures during the sampling process.

Laboratory analysis methods for each of the listed parameters are as follows:

PARAMETER	METHOD
Flashpoint	ASTM D 3278-78
Metals	SW 6020
Total Halogens	SW846 9076

Results

The observation notes taken during the sampling are as follows:

Carlton Truck Station

1. The oil removed from the tank with the coliwasa did not show segments or layering.
2. The oil removed did not have any unusual odors and seemed consistent with the look and smell of used oil.
3. The area around the Lube Cube looked well maintained and orderly.
4. The depth of the oil in the tank was 36".
5. There was a layer of sludge at the bottom approximately 2" deep.

Virginia Truck Station

1. The oil removed from the tank with the coliwasa did not show segments or layering.
2. The oil removed did not have any unusual odors and seemed consistent with the look and smell of used oil.
3. The area around the Lube Cube looked well maintained and orderly.
4. The depth of the oil in the tank was approximately 24".
5. There was a layer of sludge at the bottom approximately 2" deep.

MN/DOT District 1
Used Oil Sampling Laboratory Results
(Values in PPM)

Sample Location	Date	Flashpoint (F)	Arsenic	Cadmium	Chromium	Lead	Total Halogens
Carlton	11/3/2009	>200	<0.4	<0.4	4.3	6.1	262
Virginia	11/3/2009	>200	<0.4	<0.4	3	6.8	355
On Spec Limits		100 Minimum	5 Maximum	2 Maximum	10 Maximum	100 Maximum	1000 Maximum

***Values in Red are Off Spec**

Carlton Used Oil Container



**Minnesota Department of Health
Chain of Custody**



Chain of Custody

Minnesota Department of Health
Environmental Laboratory
601 Robert St. North
St. Paul, MN 55155-2531

Page ___ of ___

RF017400

Potential Hazard: Yes/No/Unknown (Circle One)
If Yes please add information to Comments below:

Standard (Civil/Criminal Chain of Custody) (Circle One)

Client/Agency: MNDOT
Project Name: D1 Brown Samples
Site ID: _____
Program Code (2 Letters): DD
Contact Name: Harold Bottolfsen
Contact Phone #: 651-366-5812

Matrix Codes:
DW - Drinking Water
SW - Surface Water
GW - Ground Water
WW - Waste Water
SD - Soil/Solid
WP - Wipe
AR - Air
TS - Tissue
OT - Other

Report to: _____
MDH ID: _____
Address if Needed: _____

Sampled By: (Print) Harold Bottolfsen Affiliation: _____
Sampler Signature: [Signature] Phone: 651-366-5812

#	MDH No. (Lab Use Only)	Field ID	Sample Source/Point	Collection Date	Time (24 Hour)	Matrix Code	Containers & Preservatives								Total # of Containers	Samples Field Filtered, Y/N	Requested Analysis	Seal Intact Y/N	Lab Temp (°C)
							Unpreserved	Hydrochloric Acid	Sulfuric Acid	Nitric Acid	Sodium Hydroxide	Sodium Thiosulfate	Ascorbic Acid	Other					
1			Carlton	11-3-09	10:30	OT									3		AS, Cr, Cd, Pb, TOX, Flashpoint	16°C	
2			Virginia	11-3-09	12:45														
3			Randi	11-3-09	15:45														
4			Park Rapids	11-4-09	9:08														
5			Wadena	11-4-09	10:30														
6			Gaylord	10-20-09	10:00														
7			Hallbrook	11-12-09	13:30														
8			Roseau	11-12-09	15:00														
9			Thief River	11-13-09	9:00														
10			Crookston	11-13-09	11:00														

Sampler Comments: _____
Relinquished By / Affiliation: _____
Date: _____ Time: _____
Accepted By / Affiliation: [Signature]
Date: _____ Time: _____

Write Client Copy _____
Yellow Lab Copy _____
Pink Submitter Copy _____
MDH 1000 **33264**
NO PINK LAB FORM 18.

**Minnesota Department of Health
Laboratory Results**

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
Program Name: **OES**
Request No: **361555**

Date Received: **16-NOV-2009**
Date Generated: **11-DEC-2009**
Request Page: **1 of 20**

Samples: 200934503 - 200934512

Date Reported: **11-DEC-2009**

Sample No: **200934503**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
03-NOV-2009	1030	-	16	-

Sampling Point and Source Of Sample

CARLTON

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By **MLK** on **11-DEC-09**

	Result Codes	Result	Rept Level	Units	Analysis Date
981 Analyses sent to private lab -MDH Total Halides		262	100	mg/kg	23-NOV-09
Sample analyzed at TestAmerica.					
995 Admin. Consultation -MDH Consultation Time					08-DEC-09
See attached report from TestAmerica.					

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **361555**

Date Received: **16-NOV-2009**
 Date Generated: **11-DEC-2009**
 Request Page: **2 of 20**

Samples: 200934503 - 200934512

Date Reported: **11-DEC-2009**

Sample No: **200934503**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
03-NOV-2009	1030	-	16	-

Sampling Point and Source Of Sample

CARLTON

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **10-DEC-09**

	Result Codes	Result	Rept Level	Units	Analysis Date
111 SW 6020					
Report level was changed due to sample dilution.					
Arsenic	Sed, Total	< 0.4	0.4	ug/g	08-DEC-09 16:08
126 SW 6020					
Report level was changed due to sample dilution.					
Cadmium	Sed, Total	< 0.40	0.40	ug/g	08-DEC-09 16:08
134 SW 6020					
Report level was changed due to sample dilution.					
Chromium	Sed, Total	4.3	0.40	ug/g	08-DEC-09 16:08
161 SW 6020					
Report level was changed due to sample dilution.					
Lead	Sed, Total	6.1	0.40	ug/g	08-DEC-09 16:08

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **10-DEC-09**

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
270 ASTM D 3278-78					
Flash Point, Pen-Mar		> 200		deg F	17-NOV-09

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 361555

Date Received: 16-NOV-2009
Date Generated: 11-DEC-2009
Request Page: 3 of 20

Samples: 200934503 - 200934512

Date Reported: 11-DEC-2009

Sample No: 200934504

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
03-NOV-2009 1245 - 16 -

Sampling Point and Source Of Sample

VIRGINIA

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By MLK on 11-DEC-09

Table with 5 columns: Result Codes, Result, Rept Level, Units, Analysis Date. Contains data for 'Total Halides' (355 mg/kg) and 'Consultation Time' (08-DEC-09).

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **361555**

Date Received: **16-NOV-2009**
 Date Generated: **11-DEC-2009**
 Request Page: **4 of 20**

Samples: 200934503 - 200934512

Date Reported: **11-DEC-2009**

Sample No: **200934504**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
03-NOV-2009	1245	-	16	-

Sampling Point and Source Of Sample

VIRGINIA

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **10-DEC-09**

	Result Codes	Result	Rept Level	Units	Analysis Date
111 SW 6020					
Report level was changed due to sample dilution.					
Arsenic Sed, Total	<	0.4	0.4	ug/g	08-DEC-09 16:11
126 SW 6020					
Report level was changed due to sample dilution.					
Cadmium Sed, Total	<	0.40	0.40	ug/g	08-DEC-09 16:11
134 SW 6020					
Report level was changed due to sample dilution.					
Chromium Sed, Total		3.0	0.40	ug/g	08-DEC-09 16:11
161 SW 6020					
Report level was changed due to sample dilution.					
Lead Sed, Total		6.8	0.40	ug/g	08-DEC-09 16:11

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **10-DEC-09**

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
270 ASTM D 3278-78					
Flash Point, Pen-Mar	>	200		deg F	17-NOV-09

**MINNESOTA DEPARTMENT OF TRANSPORTATION
USED OIL BURNER SAMPLING
ON-SPEC OIL ANALYSIS**

**District 2
Ada
Bemidji
Crookston
Erskine
Hallock
Park Rapids
Roseau
Thief River Falls**



**Prepared by:
Minnesota Department of Transportation
Office of Environmental Services
Environmental Modeling and Testing Unit**

January 2010

INTRODUCTION

Enclosed in this report are the results of the sampling of used oil collected at the Minnesota Department of Transportation (MNDOT) District 2 Truck Station facilities. Used oil from vehicles is placed in Lube Cube storage tanks at each of the truck stations. The Lube Cubes are connected to building heaters that burn the used oil for heat recovery.

The sampling of used oil at the District 2 facilities was conducted by personnel from the MNDOT Office of Environmental Services. For additional information, contact Harold Bottolfson at (651) 366-5812. The laboratory analysis was performed by the Minnesota Department of Health.

The results of the laboratory analysis from the samples taken at the District 2 Truck Stations show the burner oil to be within the on spec limits.

Purpose

The purpose of the sampling and analysis is to insure that the used oil that is burned in heating units meets MPCA rules for such practices. The oil must meet the following limits to be classified as on-spec:

- Flashpoint 100 degrees Fahrenheit minimum
- Arsenic 5 parts per million (PPM) maximum
- Cadmium 2 PPM maximum
- Chromium 10 PPM maximum
- Lead 100 PPM maximum
- Total Halogens 1000 PPM maximum

Procedures

The oil was sampled from the storage tank with a Coliwasa sampler. The Coliwasa sampler is a 70" long polypropylene tube that is 1" diameter. The sampler has caps at each end that can be opened and closed by using a control rod that runs through the length of the tube. During the sampling, the end caps were opened and the coliwasa was slowly lowered into the tank so that a vertical column sample could be obtained. The sampler was lowered to the top of the sludge layer so that only the oil to be burned would be sampled. The oil from the sampler was placed in a sample bottles provided by the Minnesota Department of Health, which was contracted to analyze the sample. As the sample was released into the bottle, it was carefully observed for any discolorations or changes in the composition of the material. Notes were taken of the procedures during the sampling process.

Laboratory analysis methods for each of the listed parameters are as follows:

PARAMETER	METHOD
Flashpoint	ASTM D 3278-78
Metals	SW 6020
Total Halogens	SW846 9076

Results

The observation notes taken during the sampling are as follows:

The oil removed from the tank with the coliwasa did not show segments or layering. The oil removed did not have any unusual odors and seemed consistent with the look and smell of used oil.

Oil Level in the tanks

Ada	About ½ full
Bemidji	About 2" of sludge
Crookston	About 2" of sludge
Erskine	18" of oil with 3" of sludge
Hallock	About 3" of sludge
Park Rapids	About ¼ full
Roseau	About 1" of sludge
Thief River Falls	About 2" of sludge

MN/DOT District 2
Used Oil Sampling Laboratory Results
(Values in PPM)

Sample Location	Date	Flashpoint (F)	Arsenic	Cadmium	Chromium	Lead	Total Halogens
Ada	12/3/2009	>200	<1.0	<1.0	2	3.2	<100
Bemidji	11/3/2009	177	<0.4	<0.4	2.1	12	342
Crookston	11/13/2009	159	<0.4	<0.4	3.6	3.9	109
Erskine	12/4/2009	182	<1.0	<1.0	1.7	6	441
Hallock	11/12/2009	>200	<0.4	<0.4	5.1	50	230
Park Rapids	11/4/2009	>200	<0.4	<0.4	2.7	18	220
Roseau	11/12/2009	>200	<0.4	<0.4	6.4	13	168
Thief River Falls	11/13/2009	>200	<0.4	<0.4	10	5.8	156
On Spec Limits		100 Minimum	5 Maximum	2 Maximum	10 Maximum	100 Maximum	1000 Maximum

***Values in Red are Off Spec**

Ada Used Oil Container



Erskine Used Oil Container



Park Rapids Used Oil Container



**Minnesota Department of Health
Chain of Custody**



Chain of Custody

Minnesota Department of Health
Environmental Laboratory
601 Robert St. North
St. Paul, MN 55155-2531

Page of

RF017400

Potential Hazard: Yes/No/Unknown (Circle One).
If Yes please add information to Comments below.

Standard/Civil/Criminal Chain of Custody
(Circle One)

Client/Agency MNDOT
Project Name Oil Burner Samples
Site ID
Program Code (2 Letters) DD
Contact Name Harold Bortolfsen
Contact Phone # 651-366-5812

Matrix Codes
DW = Drinking Water
SW = Surface Water
GW = Ground Water
WW = Waste Water
SD = Soil/Solid
WP = Wipe
AR = Air
TS = Tissue
OT = Other

Report to
MDH ID

Address if Needed

Sampled By (Print) Harold Bortolfsen Affiliation Phone 651-366-5812
Sampler Signature Harold Bortolfsen

#	MDH Sample Number (Lab Use Only)	Field ID	Sample Source/Point	Collection Date	Time (24 Hour)	Matrix Code	Containers & Preservatives								Total # of Containers	Samples Field Filtered: Y/N	Requested Analysis:	Seal Intact: Y/N	Lab Temp (°C)
							Unpreserved	Hydrochloric Acid	Sulfuric Acid	Nitric Acid	Sodium Hydroxide	Sodium Thiosulfate	Ascorbic Acid	Other					
1	200934503		Carlton	11-3-09	10:30	OT 3									3		AS, Cr, Cd, Pb, TOX, Flashpoint		16°C
2			Virginia	11-3-09	12:45														
3			Bemidji	11-3-09	15:45														
4			Bark Rapids	11-4-09	9:08														
5			Wadena	11-4-09	10:30														
6			Gaylord	10-30-09	10:00														
7			Halllock	11-12-09	13:30														
8			Roseau	11-12-09	15:00														
9			Thief River	11-13-09	9:00														
10	200934512		CROOKSTON	11-13-09	11:00														

Receiving Comments:
Relinquished By / Affiliation
Date 11-16-09 Time 12:14
Accepted By / Affiliation
Date 11-16-09 Time 12:14

White Client Copy Yellow Lab Copy Pink Submitter Copy
NO PINK LAB FORM BS.
MDH 1000 33264



Chain of Custody

Minnesota Department of Health
 Environmental Laboratory
 601 Robert St. North
 St. Paul, MN 55155-2531

Page ____ of ____

Lab Use Only.
 Potential Hazard: Yes Unknown (Circle One).
 If Yes please add information to Comments below.

Client/Agency MN/DOT
 Project Name Oil Burner Samples
 Site ID _____

Program Code (2 Letters) DD
 Contact Name Harold Bortolison
 Contact Phone # 651-366-5812

Affiliation _____

Matrix Codes
 DW = Drinking Water
 SW = Surface Water
 GW = Ground Water
 WW = Waste Water
 SD = Soil/Solid
 WP = Wipe
 AR = Air
 TS = Tissue
 OT = Other

Report to _____
 MDH ID _____

Address if Needed _____

Sampled By (Print) Harold Bortolison
 Sampler Signature Harold Bortolison Phone 651 366-5812

#	MDH Sample Number (Lab Use Only)	Field ID	Sample Source/Point	Collection Date	Time (24 Hour)	Matrix Code	Containers & Preservatives							Total # of Containers	Samples Field Filtered: Y/N	Requested Analysis:	Seal Intact: Y/N	Lab Temp (°C)
							Unpreserved	Hydrochloric Acid	Sulfuric Acid	Nitric Acid	Sodium Hydroxide	Sodium Thiosulfate	Ascorbic Acid					
1			Ada	12-3-09	14:10	OT 3								3		AS, Cd, Pb, TOX, Fluoride, NT		20
2			Mahmomen	12-3-09	15:50													
3			ErsKine	12-4-09	9:05													
4			Hawley	12-4-09	10:55													
5			Perhem	12-4-09	13:20													
6			Fergus Falls	12-15-09	13:26													
7			Barnesville	12-15-09	15:02													
8			Detroit Lakes	12-16-09	9:00													
9			Hennig	12-16-09	10:55													
10			Little Falls	12-16-09	13:20													

Sampler Comments: _____

Receiving Comments: _____

Relinquished By / Affiliation _____ Date _____ Time _____ Accepted By / Affiliation Sarah Tangwall Date 12-23-09 Time 13:40

**Minnesota Department of Health
Laboratory Results**

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
Program Name: **OES**
Request No: **362952**

Date Received: **23-DEC-2009**
Date Generated: **04-FEB-2010**
Request Page: **5 of 20**

Samples: 200936773 - 200936782

Date Reported: **09-FEB-2010**

Sample No: **200936775**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
04-DEC-2009	0905	-	20	-

Sampling Point and Source Of Sample

ERSKINE

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By **LRM** on **09-FEB-10**

	Result Codes	Result	Rept Level	Units	Analysis Date
981 Analyses sent to private lab -MDH Total Halides		441	100	mg/kg	06-JAN-10
Analysis performed by TestAmerica.					
995 Admin. Consultation -MDH Consultation Time					04-FEB-10
See attached report from TestAmerica.					

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 362952

Date Received: 23-DEC-2009
Date Generated: 04-FEB-2010
Request Page: 6 of 20

Samples: 200936773 - 200936782

Date Reported: 09-FEB-2010

Sample No: 200936775

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
04-DEC-2009 0905 - 20 -

Sampling Point and Source Of Sample

ERSKINE

SAMPLE RESULTS

Unit: METALS

Reviewed By JJB on 09-FEB-10

Table with 7 columns: Codes, Result, Rept Level, Units, Analysis Date. Rows include Arsenic, Cadmium, Chromium, and Lead with their respective results and dates.

Unit: ORGANIC CHEMISTRY

Reviewed By PDS on 05-FEB-10

Note: Positive Organic Results are indicated by BOLD.

Table with 7 columns: Codes, Result, Rept Level, Units, Analysis Date. Row includes Flash Point, Pen-Mar with a result of 182 deg F on 30-DEC-09.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 362952

Date Received: 23-DEC-2009
Date Generated: 04-FEB-2010
Request Page: 1 of 20

Samples: 200936773 - 200936782

Date Reported: 09-FEB-2010

Sample No: 200936773

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
03-DEC-2009 1410 - 20 -

Sampling Point and Source Of Sample

ADA

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By LRM on 09-FEB-10

Table with 5 columns: Codes, Result, Rept Level, Units, Analysis Date. Contains data for 'Total Halides' and 'Consultation Time'.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **362952**

Date Received: **23-DEC-2009**
 Date Generated: **04-FEB-2010**
 Request Page: **2 of 20**

Samples: 200936773 - 200936782

Date Reported: **09-FEB-2010**

Sample No: **200936773**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
03-DEC-2009	1410	-	20	-

Sampling Point and Source Of Sample

ADA

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **09-FEB-10**

			Result				
			Codes	Result	Rept Level	Units	Analysis Date
111	SW 6020	Arsenic	Sed, Total	RC < 1.0	1	ug/g	21-JAN-10 12:03
126	SW 6020	Cadmium	Sed, Total	RC < 1.0	1.0	ug/g	21-JAN-10 12:03
134	SW 6020	Chromium	Sed, Total	RC 2.0	1.0	ug/g	21-JAN-10 12:03
161	SW 6020	Lead	Sed, Total	RC 3.2	1.0	ug/g	21-JAN-10 12:03

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **05-FEB-10**

Note: Positive Organic Results are indicated by BOLD.

			Result				
			Codes	Result	Rept Level	Units	Analysis Date
270	ASTM D 3278-78	Flash Point, Pen-Mar		> 200		deg F	30-DEC-09

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 361555

Date Received: 16-NOV-2009
Date Generated: 11-DEC-2009
Request Page: 13 of 20

Samples: 200934503 - 200934512

Date Reported: 11-DEC-2009

Sample No: 200934509

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
12-NOV-2009 1330 - 16 -

Sampling Point and Source Of Sample

HALLOCK

SAMPLE RESULTS

Unit: ADMINISTRATIVE

Reviewed By MLK on 11-DEC-09

Table with 5 columns: Result Codes, Result, Rept Level, Units, Analysis Date. Contains data for 'Total Halides' (230 mg/kg) and 'Consultation Time' (08-DEC-09).

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **361555**

Date Received: **16-NOV-2009**
 Date Generated: **11-DEC-2009**
 Request Page: **14 of 20**

Samples: 200934503 - 200934512

Date Reported: **11-DEC-2009**

Sample No: **200934509**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
12-NOV-2009	1330	-	16	-

Sampling Point and Source Of Sample

HALLOCK

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **10-DEC-09**

	Result Codes	Result	Rept Level	Units	Analysis Date
111 SW 6020					
Report level was changed due to sample dilution.					
Arsenic Sed, Total	<	0.4	0.4	ug/g	08-DEC-09 16:37
126 SW 6020					
Report level was changed due to sample dilution.					
Cadmium Sed, Total	<	0.40	0.40	ug/g	08-DEC-09 16:37
134 SW 6020					
Report level was changed due to sample dilution.					
Chromium Sed, Total		5.1	0.40	ug/g	08-DEC-09 16:37
161 SW 6020					
Report level was changed due to sample dilution.					
Lead Sed, Total		50	0.40	ug/g	08-DEC-09 16:37

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **10-DEC-09**

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
270 ASTM D 3278-78					
Flash Point, Pen-Mar	>	200		deg F	17-NOV-09

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
Program Name: **OES**
Request No: **361555**

Date Received: **16-NOV-2009**
Date Generated: **11-DEC-2009**
Request Page: **15 of 20**

Samples: 200934503 - 200934512

Date Reported: **11-DEC-2009**

Sample No: **200934510**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
12-NOV-2009	1500	-	16	-

Sampling Point and Source Of Sample

ROSEAU

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By **MLK** on **11-DEC-09**

	Result Codes	Result	Rept Level	Units	Analysis Date
981 Analyses sent to private lab -MDH Total Halides		168	100	mg/kg	23-NOV-09
Sample analyzed at TestAmerica.					
995 Admin. Consultation -MDH Consultation Time					08-DEC-09
See attached report from TestAmerica.					

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 361555

Date Received: 16-NOV-2009
Date Generated: 11-DEC-2009
Request Page: 16 of 20

Samples: 200934503 - 200934512

Date Reported: 11-DEC-2009

Sample No: 200934510

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
12-NOV-2009 1500 - 16 -

Sampling Point and Source Of Sample

ROSEAU

SAMPLE RESULTS

Unit: METALS

Reviewed By JJB on 10-DEC-09

Table with 6 columns: Codes, Result, Rept Level, Units, Analysis Date. Rows include Arsenic, Cadmium, Chromium, and Lead with associated levels and dates.

Unit: ORGANIC CHEMISTRY

Reviewed By PDS on 10-DEC-09

Note: Positive Organic Results are indicated by BOLD.

Table with 6 columns: Codes, Result, Rept Level, Units, Analysis Date. Row includes Flash Point, Pen-Mar with result > 200 and date 17-NOV-09.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
Program Name: **OES**
Request No: **361555**

Date Received: **16-NOV-2009**
Date Generated: **11-DEC-2009**
Request Page: **17 of 20**

Samples: 200934503 - 200934512

Date Reported: **11-DEC-2009**

Sample No: **200934511**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
13-NOV-2009	0900	-	16	-

Sampling Point and Source Of Sample

THIEF RIVER

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By **MLK** on **11-DEC-09**

	Result Codes	Result	Rept Level	Units	Analysis Date
981 Analyses sent to private lab -MDH Total Halides		156	100	mg/kg	23-NOV-09
Sample analyzed at TestAmerica.					
995 Admin. Consultation -MDH Consultation Time					08-DEC-09
See attached report from TestAmerica.					

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **361555**

Date Received: **16-NOV-2009**
 Date Generated: **11-DEC-2009**
 Request Page: **18 of 20**

Samples: 200934503 - 200934512

Date Reported: **11-DEC-2009**

Sample No: **200934511**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
13-NOV-2009	0900	-	16	-

Sampling Point and Source Of Sample

THIEF RIVER

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **10-DEC-09**

	Result Codes	Result	Rept Level	Units	Analysis Date
111 SW 6020					
		Report level was changed due to sample dilution.			
Arsenic Sed, Total	<	0.4	0.4	ug/g	08-DEC-09 16:44
126 SW 6020					
		Report level was changed due to sample dilution.			
Cadmium Sed, Total	<	0.40	0.40	ug/g	08-DEC-09 16:44
134 SW 6020					
		Report level was changed due to sample dilution.			
Chromium Sed, Total		10	0.40	ug/g	08-DEC-09 16:44
161 SW 6020					
		Report level was changed due to sample dilution.			
Lead Sed, Total		5.8	0.40	ug/g	08-DEC-09 16:44

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **10-DEC-09**

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
270 ASTM D 3278-78					
Flash Point, Pen-Mar	>	200		deg F	17-NOV-09

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
Program Name: **OES**
Request No: **361555**

Date Received: **16-NOV-2009**
Date Generated: **11-DEC-2009**
Request Page: **19 of 20**

Samples: 200934503 - 200934512

Date Reported: **11-DEC-2009**

Sample No: **200934512**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
13-NOV-2009	1100	-	16	-

Sampling Point and Source Of Sample

CROOKSTON

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By **MLK** on **11-DEC-09**

	Result Codes	Result	Rept Level	Units	Analysis Date
981 Analyses sent to private lab -MDH Total Halides		109	100	mg/kg	23-NOV-09
Sample analyzed at TestAmerica.					
995 Admin. Consultation -MDH Consultation Time					08-DEC-09
See attached report from TestAmerica.					

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **361555**

Date Received: **16-NOV-2009**
 Date Generated: **11-DEC-2009**
 Request Page: **20 of 20**

Samples: 200934503 - 200934512

Date Reported: **11-DEC-2009**

Sample No: **200934512**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
13-NOV-2009	1100	-	16	-

Sampling Point and Source Of Sample

CROOKSTON

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **10-DEC-09**

	Result Codes	Result	Rept Level	Units	Analysis Date
111 SW 6020					
		Report level was changed due to sample dilution.			
Arsenic Sed, Total	<	0.4	0.4	ug/g	08-DEC-09 16:47
126 SW 6020					
		Report level was changed due to sample dilution.			
Cadmium Sed, Total	<	0.40	0.40	ug/g	08-DEC-09 16:47
134 SW 6020					
		Report level was changed due to sample dilution.			
Chromium Sed, Total		3.6	0.40	ug/g	08-DEC-09 16:47
161 SW 6020					
		Report level was changed due to sample dilution.			
Lead Sed, Total		3.9	0.40	ug/g	08-DEC-09 16:47

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **10-DEC-09**

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
270 ASTM D 3278-78					
Flash Point, Pen-Mar		159		deg F	17-NOV-09

Result Code Description
RC Report level was changed due to sample dilution.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 361555

Date Received: 16-NOV-2009
Date Generated: 11-DEC-2009
Request Page: 5 of 20

Samples: 200934503 - 200934512

Date Reported: 11-DEC-2009

Sample No: 200934505

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
03-NOV-2009 1545 - 16 -

Sampling Point and Source Of Sample

BEMIDJI

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By MLK on 11-DEC-09

Table with 5 columns: Result Codes, Result, Rept Level, Units, Analysis Date. Contains data for 'Total Halides' (342 mg/kg) and 'Consultation Time' (08-DEC-09).

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **361555**

Date Received: **16-NOV-2009**
 Date Generated: **11-DEC-2009**
 Request Page: **6 of 20**

Samples: 200934503 - 200934512

Date Reported: **11-DEC-2009**

Sample No: **200934505**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
03-NOV-2009	1545	-	16	-

Sampling Point and Source Of Sample

BEMIDJI

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **10-DEC-09**

	Result Codes	Result	Rept Level	Units	Analysis Date
111 SW 6020					
Report level was changed due to sample dilution.					
Arsenic Sed, Total	<	0.4	0.4	ug/g	08-DEC-09 16:24
126 SW 6020					
Report level was changed due to sample dilution.					
Cadmium Sed, Total	<	0.40	0.40	ug/g	08-DEC-09 16:24
134 SW 6020					
Report level was changed due to sample dilution.					
Chromium Sed, Total		2.1	0.40	ug/g	08-DEC-09 16:24
161 SW 6020					
Report level was changed due to sample dilution.					
Lead Sed, Total		12	0.40	ug/g	08-DEC-09 16:24

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **10-DEC-09**

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
270 ASTM D 3278-78					
Flash Point, Pen-Mar		177		deg F	17-NOV-09

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 361555

Date Received: 16-NOV-2009
Date Generated: 11-DEC-2009
Request Page: 7 of 20

Samples: 200934503 - 200934512

Date Reported: 11-DEC-2009

Sample No: 200934506

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
04-NOV-2009 0908 - 16 -

Sampling Point and Source Of Sample

PARK RAPIDS

SAMPLE RESULTS

Unit: ADMINISTRATIVE

Reviewed By MLK on 11-DEC-09

Table with 5 columns: Result Codes, Result, Rept Level, Units, Analysis Date. Contains data for 'Total Halides' (220 mg/kg) and 'Consultation Time' (08-DEC-09).

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **361555**

Date Received: **16-NOV-2009**
 Date Generated: **11-DEC-2009**
 Request Page: **8 of 20**

Samples: 200934503 - 200934512

Date Reported: **11-DEC-2009**

Sample No: **200934506**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
04-NOV-2009	0908	-	16	-

Sampling Point and Source Of Sample

PARK RAPIDS

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **10-DEC-09**

	Result Codes	Result	Rept Level	Units	Analysis Date
111 SW 6020					
		Report level was changed due to sample dilution.			
Arsenic Sed, Total	<	0.4	0.4	ug/g	08-DEC-09 16:27
126 SW 6020					
		Report level was changed due to sample dilution.			
Cadmium Sed, Total	<	0.40	0.40	ug/g	08-DEC-09 16:27
134 SW 6020					
		Report level was changed due to sample dilution.			
Chromium Sed, Total		2.7	0.40	ug/g	08-DEC-09 16:27
161 SW 6020					
		Report level was changed due to sample dilution.			
Lead Sed, Total		18	0.40	ug/g	08-DEC-09 16:27

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **10-DEC-09**

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
270 ASTM D 3278-78					
Flash Point, Pen-Mar	>	200		deg F	17-NOV-09

**MINNESOTA DEPARTMENT OF TRANSPORTATION
USED OIL BURNER SAMPLING
ON-SPEC OIL ANALYSIS**

**District 3
Little Falls
Sauk Center
Wadena**



**Prepared by:
Minnesota Department of Transportation
Office of Environmental Services
Environmental Modeling and Testing Unit**

March 2010

INTRODUCTION

Enclosed in this report are the results of the sampling of used oil collected at the Minnesota Department of Transportation (MNDOT) District 3 Truck Station facilities. Used oil from vehicles is placed in Lube Cube storage tanks at each of the truck stations. The Lube Cubes are connected to building heaters that burn the used oil for heat recovery.

The sampling of used oil at the District 3 facilities was conducted by personnel from the MNDOT Office of Environmental Services, Modeling and Testing Unit. The laboratory analysis was performed by the Minnesota Department of Health.

The results of the laboratory analysis from the samples taken at the District 3 Truck Stations show the burner oil to be within the on spec limits.

Purpose

The purpose of the sampling and analysis is to insure that the used motor oil that is burned in heating units meets MPCA rules for such practices. The oil must meet the following limits to be classified as on-spec:

- Flashpoint 100 degrees Fahrenheit minimum
- Arsenic 5 parts per million (PPM) maximum
- Cadmium 2 PPM maximum
- Chromium 10 PPM maximum
- Lead 100 PPM maximum
- Total Halogens 1000 PPM maximum

Procedures

The oil was sampled from the storage tank with a Coliwasa sampler. The Coliwasa sampler is a 70" long polypropylene tube that is 1" diameter. The sampler has caps at each end that can be opened and closed by using a control rod that runs through the length of the tube. During the sampling, the end caps were opened and the coliwasa was slowly lowered into the tank so that a vertical column sample could be obtained. The sampler was lowered to the top of the sludge layer so that only the oil to be burned would be sampled. The oil from the sampler was placed in a sample bottles provided by the Minnesota Department of Health, which was contracted to analyze the sample. As the sample was released into the bottle, it was carefully observed for any discolorations or changes in the composition of the material. Notes were taken of the procedures during the sampling process.

Laboratory analysis methods for each of the listed parameters are as follows:

PARAMETER	METHOD
Flashpoint	ASTM D 3278-78
Metals	SW 6020
Total Halogens	SW846 9076

Results

The observation notes taken during the sampling are as follows:

1. The oil removed from the tank with the coliwasa did not show segments or layering.
2. The oil removed did not have any unusual odors and seemed consistent with the look and smell of used oil.
3. The Little Falls tank had 18" of oil.
4. The Wadena tank was ¼ full.
5. There was no sludge detected at either tank.

MN/DOT District 3
Used Oil Sampling Laboratory Results
(Values in PPM)

Sample Location	Date	Flashpoint (F)	Arsenic	Cadmium	Chromium	Lead	Total Halogens
Little Falls	12/16/2009	>200	<1.0	<1.0	1.2	8.9	<100
Wadena	11/4/2009	>200	<0.4	<0.4	2.5	4.2	<100
Sauk Centre	3/10/2010	>200	<2.0	<2.0	<2.0	6.1	<100
On Spec Limits		100 Minimum	5 Maximum	2 Maximum	10 Maximum	100 Maximum	1000 Maximum

***Values in Red are Off Spec**

Wadena Used Oil Container



Sauk Centre Used Oil Container



**Minnesota Department of Health
Chain of Custody**



Chain of Custody

Minnesota Department of Health
 Environmental Laboratory
 601 Robert St. North
 St. Paul, MN 55155-2531

Page ___ of ___

Lab Use Only:
 Potential Hazard: Yes Unknown (Circle One)
 If Yes please add information to Comments below.

Standard Civil-Criminal Chain of Custody
 (Circle One)

Client/Agency: MN/DOT
 Project Name: O.I. Bowers Samples
 Site ID: _____
 Program Code (2 Letters): DD
 Contact Name: Harold Bortolfsen
 Contact Phone # 651-366-5812

Matrix Codes
 DW - Drinking Water
 SW - Surface Water
 GW - Ground Water
 WW - Waste Water
 SD - Soil/Solid
 WP - Wipe
 AR - Air
 TS - Tissue
 OT - Other

Report to _____
 MDH ID _____

 Address if Needed _____

Sampled by (Print): Harold Bortolfsen
 Affiliation: _____
 Phone: 651 366-5812

Sampler Signature: Harold Bortolfsen

#	Field ID	Sample Source/Point	Collection Date	Time (24 Hour)	Matrix Code	Containers & Preservatives							Total # of Containers	Samples Field Filtered: Y/N	Requested Analysis:
						Unpreserved	Hydrochloric Acid	Sulfuric Acid	Nitric Acid	Sodium Hydroxide	Sodium Thiosulfate	Ascorbic Acid			
1		Ada	12-3-09	14:10	OT 3								3		AS, CGCd, Pb, TOX, Fluorent
2		Mahnemen	12-3-09	15:50											
3		ErsKine	12-4-09	9:05											
4		Hawley	12-4-09	10:55											
5		Berham	12-4-09	13:20											
6		Fergus Falls	12-15-09	13:26											
7		Barnesville	12-15-09	15:02											
8		Detroit Lakes	12-16-09	9:00											
9		Hennings	12-16-09	10:55											
10		Little Falls	12-16-09	13:20											

Sampler Comments: _____
 Relinquished By / Affiliation: _____
 Date: _____ Time: _____
 Accepted By / Affiliation: _____
 Date: _____ Time: _____



Chain of Custody

Minnesota Department of Health
 Environmental Laboratory
 601 Robert St. North
 St. Paul, MN 55155-2531

Page ____ of ____

Lab Use Only:

Potential Hazard: Yes/No/Unknown (Circle One)
 If Yes please add information to Comments below:

Standard/Civil/Criminal Chain of Custody
 (Circle One)

Client/Agency: MWDOT

Project Name: CA1 Burners Surveys

Site ID: _____

Program Code (2 Letters): DD

Contact Name: Harold Bortelson

Contact Phone # 651-366-5812

Matrix Codes

- DW = Drinking Water
- SW = Surface Water
- GW = Ground Water
- WW = Waste Water
- SD = Soil/Solid
- WP = Wipe
- AR = Air
- TS = Tissue
- OT = Other

Report to _____

MIDH ID _____

Address if needed _____

Sampled By (Print): Harold Bortelson

Affiliation _____

Sampler Signature: Harold Bortelson

Phone: 651-366-5812

#	Field ID	Sample Source/Point	Collection Date	Time (24 Hour)	Matrix Code	Containers & Preservatives							Total # of Containers	Samples Field Filtered, Y/N	Requested Analysis
						Unpreserved	Hydrochloric Acid	Sulfuric Acid	Nitric Acid	Sodium Hydroxide	Sodium Thiosulfate	Ascorbic Acid			
1		MORRIS	3-9-10	11:15	OT								3		AS, Cr, Cd, Pb, Tox, Fish/B, HT
2		Wheaton	3-9-10	13:10											
3		Breckenridge	3-9-10	14:30											
4		Moorhead	3-10-10	8:15											
5		Swk Centre	3-10-10	10:45											
6															
7															
8															
9															
10															

Sampler Comments:

Relinquished By / Affiliation _____

Date: 3-10-10

Time: 3:10

Accepted By / Affiliation: Joe Brown MDH

Date: 3-12-10

Time: 11:05

White Client Copy

Yellow Lab Copy

Pink Submitter Copy

MIDH 1000

35073



Chain of Custody

Minnesota Department of Health
Environmental Laboratory
601 Robert St. North
St. Paul, MN 55155-2531

Page of

RF017400

Potential Hazard: Yes/No/Unknown (Circle One).
If Yes please add information to Comments below.

Standard/Civil/Criminal Chain of Custody
(Circle One)

Client/Agency MNDOT
Project Name Oil Burner Samples
Site ID
Program Code (2 Letters) DD
Contact Name Harold Bortolfsen
Contact Phone # 651-366-5812

Matrix Codes
DW = Drinking Water
SW = Surface Water
GW = Ground Water
WW = Waste Water
SD = Soil/Solid
WP = Wipe
AR = Air
TS = Tissue
OT = Other

Report to
MDH ID

Address if Needed

Sampled By (Print) Harold Bortolfsen Affiliation Phone 651-366-5812
Sampler Signature Harold Bortolfsen

#	MDH Sample Number (Lab Use Only)	Field ID	Sample Source/Point	Collection Date	Time (24 Hour)	Matrix Code	Containers & Preservatives							Total # of Containers	Samples Field Filtered: Y/N	Requested Analysis:	Seal Intact: Y/N	Lab Temp (°C)
							Unpreserved	Hydrochloric Acid	Sulfuric Acid	Nitric Acid	Sodium Hydroxide	Sodium Thiosulfate	Ascorbic Acid					
1	200934503		Carlton	11-3-09	10:30	OT 3								3		AS, Cr, Cd, Ph-Tox, Flashpoint		16°C
2			Virginia	11-3-09	12:45													
3			Bemidji	11-3-09	15:45													
4			Bark Rapids	11-4-09	9:08													
5			Wadena	11-4-09	10:30													
6			Gaylord	10-30-09	10:00													
7			Hallrock	11-12-09	13:30													
8			Roseau	11-12-09	15:00													
9			Thief River	11-13-09	9:00													
10	200934512		Crookston	11-13-09	11:00													

Receiving Comments:
Relinquished By / Affiliation
Date 11-16-09 Time 12:14
Accepted By / Affiliation
Date 11-16-09 Time 12:14

White Client Copy Yellow Lab Copy Pink Submitter Copy
NO PINK LAB FORM BS.
MDH 1000 33264

**Minnesota Department of Health
Laboratory Results**

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
Program Name: **OES**
Request No: **361555**

Date Received: **16-NOV-2009**
Date Generated: **11-DEC-2009**
Request Page: **9 of 20**

Samples: 200934503 - 200934512

Date Reported: **11-DEC-2009**

Sample No: **200934507**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
04-NOV-2009	1030	-	16	-

Sampling Point and Source Of Sample

WADENA

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By **MLK** on **11-DEC-09**

	Result Codes	Result	Rept Level	Units	Analysis Date
981 Analyses sent to private lab -MDH					
Total Halides		< 100	100	mg/kg	23-NOV-09
Sample analyzed at TestAmerica.					
995 Admin. Consultation -MDH					
Consultation Time					08-DEC-09
See attached report from TestAmerica.					

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **361555**

Date Received: **16-NOV-2009**
 Date Generated: **11-DEC-2009**
 Request Page: **10 of 20**

Samples: 200934503 - 200934512

Date Reported: **11-DEC-2009**

Sample No: **200934507**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
04-NOV-2009	1030	-	16	-

Sampling Point and Source Of Sample

WADENA

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **10-DEC-09**

	Result Codes	Result	Rept Level	Units	Analysis Date
111 SW 6020					
Report level was changed due to sample dilution.					
Arsenic Sed, Total	<	0.4	0.4	ug/g	08-DEC-09 16:31
126 SW 6020					
Report level was changed due to sample dilution.					
Cadmium Sed, Total	<	0.40	0.40	ug/g	08-DEC-09 16:31
134 SW 6020					
Report level was changed due to sample dilution.					
Chromium Sed, Total		2.5	0.40	ug/g	08-DEC-09 16:31
161 SW 6020					
Report level was changed due to sample dilution.					
Lead Sed, Total		4.2	0.40	ug/g	08-DEC-09 16:31

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **10-DEC-09**

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
270 ASTM D 3278-78					
Flash Point, Pen-Mar	>	200		deg F	17-NOV-09

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 362952

Date Received: 23-DEC-2009
Date Generated: 04-FEB-2010
Request Page: 19 of 20

Samples: 200936773 - 200936782

Date Reported: 09-FEB-2010

Sample No: 200936782

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
16-DEC-2009 1320 - 20 -

Sampling Point and Source Of Sample

LITTLE FALLS

SAMPLE RESULTS

Unit: ADMINISTRATIVE

Reviewed By LRM on 09-FEB-10

Table with 5 columns: Codes, Result, Rept Level, Units, Analysis Date. Contains data for 'Total Halides' and 'Consultation Time'.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **362952**

Date Received: **23-DEC-2009**
 Date Generated: **04-FEB-2010**
 Request Page: **20 of 20**

Samples: 200936773 - 200936782

Date Reported: **09-FEB-2010**

Sample No: **200936782**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
16-DEC-2009	1320	-	20	-

Sampling Point and Source Of Sample

LITTLE FALLS

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **09-FEB-10**

			Result				
			Codes	Result	Rept Level	Units	Analysis Date
111	SW 6020						
	Arsenic	Sed, Total	RC <	1.0	1	ug/g	21-JAN-10 12:45
126	SW 6020						
	Cadmium	Sed, Total	RC <	1.0	1.0	ug/g	21-JAN-10 12:45
134	SW 6020						
	Chromium	Sed, Total	RC	1.2	1.0	ug/g	21-JAN-10 12:45
161	SW 6020						
	Lead	Sed, Total	RC	8.9	1.0	ug/g	21-JAN-10 12:45

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **05-FEB-10**

Note: Positive Organic Results are indicated by BOLD.

			Result				
			Codes	Result	Rept Level	Units	Analysis Date
270	ASTM D 3278-78						
	Flash Point, Pen-Mar			> 200		deg F	30-DEC-09

Result Code	Description
ND	Not Detected
RC	Report level was changed due to sample dilution.

Minnesota Department Of Health - Environmental Laboratory

Amended Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 366331

Date Received: 12-MAR-2010
Date Generated: 01-APR-2010
Request Page: 9 of 13

Samples: 201004988 - 201004992

Date Reported: 01-APR-2010
Original Date Reported: 30-MAR-2010

Sample No: 201004992

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
10-MAR-2010 1045 - 17 -

Sampling Point and Source Of Sample

SAUK CENTER

SAMPLE RESULTS

Unit: ADMINISTRATIVE

Reviewed By LRM on 29-MAR-10

Table with 5 columns: Codes, Result, Rept Level, Units, Analysis Date. Includes rows for 'Total Halides' and 'Consultation Time' with associated analysis details and dates.

Minnesota Department Of Health - Environmental Laboratory

Amended Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **366331**

Date Received: **12-MAR-2010**
 Date Generated: **01-APR-2010**
 Request Page: **10 of 13**

Samples: 201004988 - 201004992

Date Reported: **01-APR-2010**
 Original Date Reported: **30-MAR-2010**

Sample No: **201004992**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
10-MAR-2010	1045	-	17	-

Sampling Point and Source Of Sample

SAUK CENTER

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **30-MAR-10**

			Result Codes	Result	Rept Level	Units	Analysis Date
111	SW 6020						
	Arsenic	Sed, Total	RC <	2.0	2	ug/g	19-MAR-10 15:18
126	SW 6020						
	Cadmium	Sed, Total	RC <	2.0	2.0	ug/g	19-MAR-10 15:18
134	SW 6020						
	Chromium	Sed, Total	RC <	2.0	2.0	ug/g	19-MAR-10 15:18
161	SW 6020						
	Lead	Sed, Total	RC	6.1	2.0	ug/g	19-MAR-10 15:18
3051	EPA 3051A						
	Acid Digestion of Solids		DC				16-MAR-10

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **30-MAR-10**

Note: Positive Organic Results are indicated by BOLD.

			Result Codes	Result	Rept Level	Units	Analysis Date
270	ASTM D 3278-78						
	Flash Point, Pen-Mar			> 200		deg F	18-MAR-10

Result Code Description

RC Report level was changed due to sample dilution.

**MINNESOTA DEPARTMENT OF TRANSPORTATION
USED OIL BURNER SAMPLING
ON-SPEC OIL ANALYSIS**

**District 4
Alexandria
Appleton
Barnesville
Benson
Breckenridge
Detroit Lakes
Evansville
Fergus Falls
Glenwood
Hawley
Henning
Mahnomen
Moorhead
Morris
Ortonville
Perham
Wheaton**



**Prepared by:
Minnesota Department of Transportation
Office of Environmental Services
Environmental Modeling and Testing Unit**

March 2010

INTRODUCTION

Enclosed in this report are the results of the sampling of used oil collected at the Minnesota Department of Transportation (MNDOT) District 4 Truck Station facilities. Used oil from vehicles is placed in Lube Cube storage tanks at each of the truck stations. The Lube Cubes are connected to building heaters that burn the used oil for heat recovery.

The sampling of used oil at the District 4 facilities was conducted by personnel from the MNDOT Office of Environmental Services. For additional information, contact Harold Bottolfson at (651) 366-5812. The laboratory analysis was performed by the Minnesota Department of Health.

The results of the laboratory analysis from the samples taken at the District 4 Truck Stations show the burner oil to be within the on spec limits.

Purpose

The purpose of the sampling and analysis is to insure that the used motor oil that is burned in heating units meets MPCA rules for such practices. The oil must meet the following limits to be classified as on-spec:

- Flashpoint 100 degrees Fahrenheit minimum
- Arsenic 5 parts per million (PPM) maximum
- Cadmium 2 PPM maximum
- Chromium 10 PPM maximum
- Lead 100 PPM maximum
- Total Halogens 1000 PPM maximum

Procedures

The oil was sampled from the storage tank with a Coliwasa sampler. The Coliwasa sampler is a 70" long polypropylene tube that is 1" diameter. The sampler has caps at each end that can be opened and closed by using a control rod that runs through the length of the tube. During the sampling, the end caps were opened and the coliwasa was slowly lowered into the tank so that a vertical column sample could be obtained. The sampler was lowered to the top of the sludge layer so that only the oil to be burned would be sampled. The oil from the sampler was placed in a sample bottles provided by the Minnesota Department of Health, which was contracted to analyze the sample. As the sample was released into the bottle, it was carefully observed for any discolorations or changes in the composition of the material. Notes were taken of the procedures during the sampling process.

Laboratory analysis methods for each of the listed parameters are as follows:

PARAMETER	METHOD
Flashpoint	ASTM D 3278-78
Metals	SW 6020
Total Halogens	SW846 9076

Results

The observation notes taken during the sampling are as follows:

The oil removed from the tanks with the coliwasa did not show segments or layering. The oil removed did not have any unusual odors and seemed consistent with the look and smell of used oil.

Oil Level in the tanks

Alexandria	About $\frac{3}{4}$ full
Appleton	10" of oil with 3" of sludge
Barnesville	18" of oil with 1" of sludge
Benson	About $\frac{1}{2}$ full
Breckenridge	6" of oil
Detroit Lakes	38" of oil with about 2" of sludge
Evansville	24" of oil
Fergus Falls	20" of oil with about 2" of sludge
Glenwood	About $\frac{1}{2}$ full
Hawley	About $\frac{1}{4}$ full
Henning	24" of oil
Mahnomen	8" of oil
Moorhead	20" of oil

Morris	28" of oil
Ortonville	About ½ full
Perham	6" of oil
Wheaton	7" of oil

MN/DOT District 4
Used Oil Sampling Laboratory Results
(Values in PPM)

Sample Location	Date	Flashpoint (F)	Arsenic	Cadmium	Chromium	Lead	Total Halogens
Alexandria	12/22/2009	>200	<1.0	<1.0	1.4	7.2	139
Appleton	2/26/2010	>200	<2.0	<2.0	<2.0	9.5	<100
Barnesville	12/15/2009	170	<1.0	<1.0	1.2	3.1	<100
Benson	12/21/2009	>200	<1.0	<1.0	1.3	5	<100
Breckenridge	3/9/2010	158	<2.0	<2.0	<2.0	2.7	<100
Detroit Lakes	12/16/2009	>200	<1.0	<1.0	<1.0	3.8	<100
Evansville	12/22/2009	>200	<1.0	<1.0	1.7	18	282
Fergus Falls	12/15/2009	190	<1.0	<1.0	2.1	13	219
Glenwood	12/22/2009	>200	<1.0	<1.0	2.2	5.2	<100
Hawley	12/4/2009	>200	<1.0	<1.0	1.5	5.6	180
Henning	12/16/2009	>200	<1.0	<1.0	1.4	3.7	<100
Mahnomen	12/3/2009	>200	<1.0	<1.0	2.4	4.3	208
Moorhead	3/10/2010	>200	<2.0	<2.0	<2.0	6.7	<100
Morris	3/9/2010	>200	<2.0	<2.0	<2.0	7.2	<100
Ortonville	12/21/2009	>200	<1.0	<1.0	2.4	5.2	141
Perham	12/4/2009	>200	<1.0	<1.0	3	4.8	193
Wheaton	3/9/2010	>200	<2.0	<2.0	<2.0	3.8	120
On Spec Limits		100 Minimum	5 Maximum	2 Maximum	10 Maximum	100 Maximum	1000 Maximum

***Values in Red are Off Spec**

Alexandria Used Oil Container



Barnesville Used Oil Container



Breckenridge Used Oil Container



Evansville Used Oil Container



Fergus Falls Used Oil Container



Glenwood Used Oil Container



Hawley Used Oil Container



Henning Used Oil Container



Mahnomen Used Oil Container



Moorhead Used Oil Container



Morris Used Oil Container



Perham Used Oil Container



Wheaton Used Oil Container



**Minnesota Department of Health
Chain of Custody**

Chain of Custody

Minnesota Department of Health
Environmental Laboratory
601 Robert St. North
St. Paul, MN 55155-2531

Lab Use Only:

Potential Hazard: Yes No Unknown (Circle One)
If Yes please add information to Comments below:

Client/Agency: MNDOT
Project Name: 01 Bomers Lakes
Site ID: _____

Standard/Civil/Criminal Chain of Custody
(Circle One)

Program Code (2 Letters): DD
Contact Name: Harold Batolfson
Contact Phone #: 651-366-5812

Sampled By (Print): Harold Batolfson

Affiliation: _____

Phone: 651-366-5812

Matrix Codes
DW - Drinking Water
SW - Surface Water
GW - Ground Water
WW - Waste Water
SD - Soil/Solid
WP - Waste
AR - Air
TS - Tissue
OT - Other

Report to: _____
MDH ID: _____

Address if Needed: _____

#	Field ID	Sample Source/Point	Collection Date	Time (24 Hour)	Matrix Code	Containers & Preservatives							Total # of Containers	Samples Field Filtered: Y/N	Requested Analysis:
						Unpreserved	Hydrochloric Acid	Sulfuric Acid	Nitric Acid	Sodium Hydroxide	Sodium Thiosulfate	Ascorbic Acid			
1		Benson	12-21-09	11:00	OT								3		AS, CV, CD, Pb, Tox, ELSTANT
2		Ortonville	12-21-09	13:00											
3		Alexandria	12-22-09	9:45											
4		Evansville	12-22-09	9:00											
5		Glenwood	12-22-09	10:35											
6		Wilmar	11-17-09	12:30											
7		Forest Lake	12-23-09	12:30											
8															
9															
10															

Sampler Comments:

Relinquished By / Affiliation: _____

Accepted By / Affiliation: _____

(Sampler)	Date	Time	Date	Time
<u>Harold Batolfson</u>	<u>12-23-09</u>	<u>13:40</u>	<u>12-23-09</u>	<u>13:40</u>

White Client Copy

Yellow Lab Copy

Pink Submitter Copy



Chain of Custody

Minnesota Department of Health
 Environmental Laboratory
 601 Robert St. North
 St. Paul, MN 55155-2531

Page ___ of ___

Lab Use Only:
 Potential Hazard: Yes Unknown (Circle One)
 If Yes please add information to Comments below.

Client/Agency: MN/DOT
 Project Name: O.I. Bowers Samples
 Site ID: _____

Program Code (2 Letters): DD
 Contact Name: Harold Bortolfsen
 Contact Phone # 651-366-5812

Matrix Codes:
 DW - Drinking Water
 SW - Surface Water
 GW - Ground Water
 WW - Waste Water
 SD - Soil/Solid
 WP - Wipe
 AR - Air
 TS - Tissue
 OT - Other

Report to _____
 MDH ID _____

Address if Needed _____

Sampled by (Print): Harold Bortolfsen
 Affiliation: _____
 Phone: 651 366-5812

Sampler Signature: Harold Bortolfsen

#	Field ID	Sample Source/Point	Collection Date	Time (24 Hour)	Matrix Code	Containers & Preservatives							Total # of Containers	Samples Field Filtered: Y/N	Requested Analysis:	
						Unpreserved	Hydrochloric Acid	Sulfuric Acid	Nitric Acid	Sodium Hydroxide	Sodium Thiosulfate	Ascorbic Acid				Other
1		Ada	12-3-09	14:10	OT 3									3		AS, CGCd, Pb, TOX, Fluoride, NT
2		Mahnemen	12-3-09	15:50												
3		Erskine	12-4-09	9:05												
4		Hawley	12-4-09	10:55												
5		Berghem	12-4-09	13:20												
6		Fergus Falls	12-15-09	13:26												
7		Barnesville	12-15-09	15:02												
8		Detroit Lakes	12-16-09	9:00												
9		Hennings	12-16-09	10:55												
10		Little Falls	12-16-09	13:20												

Relinquished By / Affiliation: _____

Accepted By / Affiliation: Samuel Tangwall

Sampler	Date	Time	Date	Time
<u>Harold Bortolfsen</u>	12-23-09	13:40	12-23-09	13:40

White (Client Copy)

Yellow (Lab Copy)

Pink (Submitter Copy)

MDH 1000

33069



Chain of Custody

Minnesota Department of Health
 Environmental Laboratory
 601 Robert St. North
 St. Paul, MN 55155-2531

Page 1 of 1

Lab Use Only:

Potential Hazard: Yes No Unknown (Circle One)
 If Yes please add information to Comments below.

Client/Agency: MN/DOT
 Project Name: D11 Bremer Samples
 Site ID: _____

Program Code (3 Letters): DD

Contact Name: Harold Botolfson

Contact Phone: 651-366-5812

Containers & Preservatives

Matrix Codes
 DW - Drinking Water
 SW - Surface Water
 GW - Ground Water
 WW - Waste Water
 SD - Soil/Solid
 WF - Wipe
 AR - Air
 TS - Tissue
 OT - Other

Report to: _____
 MDH ID: _____

Address if Needed: _____

Affiliation

Sampled By (Print): Harold Botolfson

Phone: 651-366-5812

Sampler Signature: Harold Botolfson

#	Field ID	Sample Source/Point	Collection Date	Time (24 Hour)	Matrix Code	Unpreserved	Hydrochloric Acid	Sulfuric Acid	Nitric Acid	Sodium Hydroxide	Sodium Thiosulfate	Ascorbic Acid	Other	Total # of Containers	Sample Field Filtered: <u>Yes</u>	Requested Analysis:
1		Macoyland	2-19-10	10:30	OT									3		AS, Cr, Cd, Pb, Tox, Flash, P, IAT
2		Dandale #1	2-19-10	11:00												
3		Dandale #2	2-19-10	11:15												
4		ST. Peter	2-24-10	9:30												
5		New UIm	2-25-10	11:30												
6		Windom	2-25-10	14:30												
7		Marshall	2-26-10	8:00												
8		Appleton	2-26-10	11:30	✓											
9																
10																

Sampler Comments:

Relinquished By / Affiliation

Date

Time

Accepted By / Affiliation

Date

Time

(Sampler) Harold Botolfson

2 Mar 10

10:33

Harold Botolfson MDH

3-2-10

10:35

White Client Copy

Yellow Lab Copy

Pink Submitter Copy

MDH 1000

33188



Chain of Custody

Minnesota Department of Health
 Environmental Laboratory
 601 Robert St. North
 St. Paul, MN 55155-2531

Page ____ of ____

Lab Use Only:

Potential Hazard: Yes/No/Unknown (Circle One)
 If Yes please add information to Comments below:

Standard/Civil/Criminal Chain of Custody
 (Circle One)

Client/Agency: MWDOT

Project Name: CA1 Burners Surveys

Site ID: _____

Program Code (2 Letters): DD

Contact Name: Harold Bortelson

Contact Phone # 651-366-5812

Matrix Codes

- DW = Drinking Water
- SW = Surface Water
- GW = Ground Water
- WW = Waste Water
- SD = Soil/Solid
- WP = Wipe
- AR = Air
- TS = Tissue
- OT = Other

Report to _____

MIDH ID _____

Address if needed _____

Sampled By (Print): Harold Bortelson

Affiliation _____

Sampler Signature: [Signature]

Phone: 651-366-5812

#	Field ID	Sample Source/Point	Collection Date	Time (24 Hour)	Matrix Code	Containers & Preservatives							Total # of Containers	Samples Field Filtered Y/N	Requested Analysis
						Unpreserved	Hydrochloric Acid	Sulfuric Acid	Nitric Acid	Sodium Hydroxide	Sodium Thiosulfate	Ascorbic Acid			
1		MORRIS	3-9-10	11:15	OT								3		AS, Cr, Cd, Pb, Tox, Fish/B, HT
2		Wheaton	3-9-10	13:10											
3		Breckenridge	3-9-10	14:30											
4		Moorhead	3-10-10	8:15											
5		Swk Centre	3-10-10	10:45											
6															
7															
8															
9															
10															

Sampler Comments:

Relinquished By / Affiliation _____

Date _____

Time _____

Accepted By / Affiliation _____

Date _____

Time _____

(Sampler) [Signature]

Date 11-05

Time 3:10

Accepted By [Signature] MCH

Date 3-12-10

Time 11:05

White Client Copy

Yellow Lab Copy

Pink Submitter Copy

MIDH 1000

35073

**Minnesota Department of Health
Laboratory Results**

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 365936

Date Received: 02-MAR-2010
Date Generated: 23-MAR-2010
Request Page: 15 of 16
Date Reported: 23-MAR-2010

Samples: 201004306 - 201004313

Sample No: 201004313

Receiving Comments: -

Coll Date	Coll Time	Location	Lab Temp	Site Number
26-FEB-2010	1130	-	13	-

Sampling Point and Source Of Sample

APPLETON

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE Reviewed By LRM on 22-MAR-10

Result

Codes	Result	Rept Level	Units	Analysis Date
-------	--------	------------	-------	---------------

981 Analyses sent to private lab -MDH

Total Halides	< 100	100	mg/kg	08-MAR-10
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Analysis performed by TestAmerica Laboratory.

995 Admin. Consultation -MDH

Consultation Time				22-MAR-10
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See attached report from TestAmerica Laboratory.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
 Program Name: OES
 Request No: 365936

Date Received: 02-MAR-2010
 Date Generated: 23-MAR-2010
 Request Page: 16 of 16

Samples: 201004306 - 201004313

Date Reported: 23-MAR-2010

Sample No: 201004313

Receiving Comments: -

Coll Date	Coll Time	Location	Lab Temp	Site Number
26-FEB-2010	1130	-	13	-

Sampling Point and Source Of Sample

APPLETON

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By JJB on 23-MAR-10

Result

Codes	Result	Rept Level	Units	Analysis Date
-------	--------	------------	-------	---------------

111	SW 6020	Arsenic	Sed, Total	RC < 2.0	2	ug/g	19-MAR-10 14:49
126	SW 6020	Cadmium	Sed, Total	RC < 2.0	2.0	ug/g	19-MAR-10 14:49
134	SW 6020	Chromium	Sed, Total	RC < 2.0	2.0	ug/g	19-MAR-10 14:49
161	SW 6020	Lead	Sed, Total	RC 9.5	2.0	ug/g	19-MAR-10 14:49

Unit: ORGANIC CHEMISTRY

Reviewed By PDS on 23-MAR-10

Note: Positive Organic Results are indicated by BOLD.

Result

Codes	Result	Rept Level	Units	Analysis Date
-------	--------	------------	-------	---------------

270	ASTM D 3278-78	Flash Point, Pen-Mar		> 200		deg F	08-MAR-10
-----	----------------	----------------------	--	-------	--	-------	-----------

Result Code Description

RC Report level was changed due to sample dilution.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 362948

Date Received: 23-DEC-2009
Date Generated: 04-FEB-2010
Request Page: 1 of 14

Samples: 200936783 - 200936789

Date Reported: 09-FEB-2010

Sample No: 200936783

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
21-DEC-2009 1105 - 20 -

Sampling Point and Source Of Sample

BENSON

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By LRM on 09-FEB-10

Table with 5 columns: Codes, Result, Rept Level, Units, Analysis Date. Contains data for 'Total Halides' and 'Consultation Time'.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 362948

Date Received: 23-DEC-2009
Date Generated: 04-FEB-2010
Request Page: 2 of 14

Samples: 200936783 - 200936789

Date Reported: 09-FEB-2010

Sample No: 200936783

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
21-DEC-2009 1105 - 20 -

Sampling Point and Source Of Sample

BENSON

SAMPLE RESULTS

Unit: METALS

Reviewed By JJB on 09-FEB-10

Table with 7 columns: Codes, Result, Rept Level, Units, Analysis Date. Rows include Arsenic, Cadmium, Chromium, and Lead with their respective results and dates.

Unit: ORGANIC CHEMISTRY

Reviewed By PDS on 05-FEB-10

Note: Positive Organic Results are indicated by BOLD.

Table with 7 columns: Codes, Result, Rept Level, Units, Analysis Date. Row includes Flash Point, Pen-Mar with result > 200 deg F.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 362948

Date Received: 23-DEC-2009
Date Generated: 04-FEB-2010
Request Page: 3 of 14

Samples: 200936783 - 200936789

Date Reported: 09-FEB-2010

Sample No: 200936784

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
21-DEC-2009 1300 - 20 -

Sampling Point and Source Of Sample

ORTONVILLE

SAMPLE RESULTS

Unit: ADMINISTRATIVE

Reviewed By LRM on 09-FEB-10

Table with 5 columns: Result Codes, Result, Rept Level, Units, Analysis Date. Includes rows for '981 Analyses sent to private lab -MDH' and '995 Admin. Consultation -MDH'.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **362948**

Date Received: **23-DEC-2009**
 Date Generated: **04-FEB-2010**
 Request Page: **4 of 14**

Samples: 200936783 - 200936789

Date Reported: **09-FEB-2010**

Sample No: **200936784**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
21-DEC-2009	1300	-	20	-

Sampling Point and Source Of Sample

ORTONVILLE

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **09-FEB-10**

		Result				
		Codes	Result	Rept Level	Units	Analysis Date
111	SW 6020					
	Arsenic Sed, Total	RC <	1.0	1	ug/g	21-JAN-10 12:58
126	SW 6020					
	Cadmium Sed, Total	RC <	1.0	1.0	ug/g	21-JAN-10 12:58
134	SW 6020					
	Chromium Sed, Total	RC	2.4	1.0	ug/g	21-JAN-10 12:58
161	SW 6020					
	Lead Sed, Total	RC	5.2	1.0	ug/g	21-JAN-10 12:58

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **05-FEB-10**

Note: Positive Organic Results are indicated by BOLD.

		Result				
		Codes	Result	Rept Level	Units	Analysis Date
270	ASTM D 3278-78					
	Flash Point, Pen-Mar		> 200		deg F	31-DEC-09

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
Program Name: **OES**
Request No: **362948**

Date Received: **23-DEC-2009**
Date Generated: **04-FEB-2010**
Request Page: **5 of 14**

Samples: 200936783 - 200936789

Date Reported: **09-FEB-2010**

Sample No: **200936785**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
22-DEC-2009	0945	-	20	-

Sampling Point and Source Of Sample

ALEXANDRIA

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By **LRM** on **09-FEB-10**

	Result Codes	Result	Rept Level	Units	Analysis Date
981 Analyses sent to private lab -MDH Total Halides		139	100	mg/kg	06-JAN-10
Analysis performed by TestAmerica.					
995 Admin. Consultation -MDH Consultation Time					04-FEB-10
See attached report from TestAmerica.					

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **362948**

Date Received: **23-DEC-2009**
 Date Generated: **04-FEB-2010**
 Request Page: **6 of 14**

Samples: 200936783 - 200936789

Date Reported: **09-FEB-2010**

Sample No: **200936785**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
22-DEC-2009	0945	-	20	-

Sampling Point and Source Of Sample

ALEXANDRIA

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **09-FEB-10**

		Result				
		Codes	Result	Rept Level	Units	Analysis Date
111	SW 6020					
	Arsenic Sed, Total	RC <	1.0	1	ug/g	21-JAN-10 13:01
126	SW 6020					
	Cadmium Sed, Total	RC <	1.0	1.0	ug/g	21-JAN-10 13:01
134	SW 6020					
	Chromium Sed, Total	RC	1.4	1.0	ug/g	21-JAN-10 13:01
161	SW 6020					
	Lead Sed, Total	RC	7.2	1.0	ug/g	21-JAN-10 13:01

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **05-FEB-10**

Note: Positive Organic Results are indicated by BOLD.

		Result				
		Codes	Result	Rept Level	Units	Analysis Date
270	ASTM D 3278-78					
	Flash Point, Pen-Mar		> 200		deg F	31-DEC-09

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 362948

Date Received: 23-DEC-2009
Date Generated: 04-FEB-2010
Request Page: 7 of 14

Samples: 200936783 - 200936789

Date Reported: 09-FEB-2010

Sample No: 200936786

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
22-DEC-2009 0900 - 20 -

Sampling Point and Source Of Sample

EVANSVILLE

SAMPLE RESULTS

Unit: ADMINISTRATIVE

Reviewed By LRM on 09-FEB-10

Table with 5 columns: Result Codes, Result, Rept Level, Units, Analysis Date. Contains data for 'Total Halides' and 'Consultation Time'.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 362948

Date Received: 23-DEC-2009
Date Generated: 04-FEB-2010
Request Page: 8 of 14

Samples: 200936783 - 200936789

Date Reported: 09-FEB-2010

Sample No: 200936786

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
22-DEC-2009 0900 - 20 -

Sampling Point and Source Of Sample

EVANSVILLE

SAMPLE RESULTS

Unit: METALS

Reviewed By JJB on 09-FEB-10

Table with 7 columns: Result Codes, Result, Rept Level, Units, Analysis Date. Rows include Arsenic, Cadmium, Chromium, and Lead with their respective values and analysis dates.

Unit: ORGANIC CHEMISTRY

Reviewed By PDS on 05-FEB-10

Note: Positive Organic Results are indicated by BOLD.

Table with 5 columns: Result Codes, Result, Rept Level, Units, Analysis Date. Row includes Flash Point, Pen-Mar with result > 200 and analysis date 31-DEC-09.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 362948

Date Received: 23-DEC-2009
Date Generated: 04-FEB-2010
Request Page: 9 of 14

Samples: 200936783 - 200936789

Date Reported: 09-FEB-2010

Sample No: 200936787

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
22-DEC-2009 1035 - 20 -

Sampling Point and Source Of Sample

GLENWOOD

SAMPLE RESULTS

Unit: ADMINISTRATIVE

Reviewed By LRM on 09-FEB-10

Table with 5 columns: Codes, Result, Rept Level, Units, Analysis Date. Contains data for 'Total Halides' and 'Consultation Time'.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **362948**

Date Received: **23-DEC-2009**
 Date Generated: **04-FEB-2010**
 Request Page: **10 of 14**

Samples: 200936783 - 200936789

Date Reported: **09-FEB-2010**

Sample No: **200936787**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
22-DEC-2009	1035	-	20	-

Sampling Point and Source Of Sample

GLENWOOD

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **09-FEB-10**

		Result				
111	SW 6020	Codes	Result	Rept Level	Units	Analysis Date
	Arsenic Sed, Total	RC <	1.0	1	ug/g	21-JAN-10 13:08
	126 SW 6020					
	Cadmium Sed, Total	RC <	1.0	1.0	ug/g	21-JAN-10 13:08
	134 SW 6020					
	Chromium Sed, Total	RC	2.2	1.0	ug/g	21-JAN-10 13:08
	161 SW 6020					
	Lead Sed, Total	RC	5.2	1.0	ug/g	21-JAN-10 13:08

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **05-FEB-10**

Note: Positive Organic Results are indicated by BOLD.

		Result				
270	ASTM D 3278-78	Codes	Result	Rept Level	Units	Analysis Date
	Flash Point, Pen-Mar		> 200		deg F	31-DEC-09

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 362952

Date Received: 23-DEC-2009
Date Generated: 04-FEB-2010
Request Page: 3 of 20

Samples: 200936773 - 200936782

Date Reported: 09-FEB-2010

Sample No: 200936774

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
03-DEC-2009 1550 - 20 -

Sampling Point and Source Of Sample

MAHNOMEN

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By LRM on 09-FEB-10

Table with 5 columns: Result Codes, Result, Rept Level, Units, Analysis Date. Contains data for 'Total Halides' and 'Consultation Time'.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **362952**

Date Received: **23-DEC-2009**
 Date Generated: **04-FEB-2010**
 Request Page: **4 of 20**

Samples: 200936773 - 200936782

Date Reported: **09-FEB-2010**

Sample No: **200936774**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
03-DEC-2009	1550	-	20	-

Sampling Point and Source Of Sample

MAHNOMEN

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **09-FEB-10**

		Result				
		Codes	Result	Rept Level	Units	Analysis Date
111	SW 6020					
	Arsenic Sed, Total	RC <	1.0	1	ug/g	21-JAN-10 12:13
126	SW 6020					
	Cadmium Sed, Total	RC <	1.0	1.0	ug/g	21-JAN-10 12:13
134	SW 6020					
	Chromium Sed, Total	RC	2.4	1.0	ug/g	21-JAN-10 12:13
161	SW 6020					
	Lead Sed, Total	RC	4.3	1.0	ug/g	21-JAN-10 12:13

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **05-FEB-10**

Note: Positive Organic Results are indicated by BOLD.

		Result				
		Codes	Result	Rept Level	Units	Analysis Date
270	ASTM D 3278-78					
	Flash Point, Pen-Mar		> 200		deg F	30-DEC-09

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 362952

Date Received: 23-DEC-2009
Date Generated: 04-FEB-2010
Request Page: 7 of 20

Samples: 200936773 - 200936782

Date Reported: 09-FEB-2010

Sample No: 200936776

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
04-DEC-2009 1055 - 20 -

Sampling Point and Source Of Sample

HAWLEY

SAMPLE RESULTS

Unit: ADMINISTRATIVE

Reviewed By LRM on 09-FEB-10

Table with 5 columns: Result Codes, Result, Rept Level, Units, Analysis Date. Contains data for 'Total Halides' and 'Consultation Time'.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **362952**

Date Received: **23-DEC-2009**
 Date Generated: **04-FEB-2010**
 Request Page: **8 of 20**

Samples: 200936773 - 200936782

Date Reported: **09-FEB-2010**

Sample No: **200936776**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
04-DEC-2009	1055	-	20	-

Sampling Point and Source Of Sample

HAWLEY

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **09-FEB-10**

			Result				
			Codes	Result	Rept Level	Units	Analysis Date
111	SW 6020						
	Arsenic	Sed, Total	RC <	1.0	1	ug/g	21-JAN-10 12:19
126	SW 6020						
	Cadmium	Sed, Total	RC <	1.0	1.0	ug/g	21-JAN-10 12:19
134	SW 6020						
	Chromium	Sed, Total	RC	1.5	1.0	ug/g	21-JAN-10 12:19
161	SW 6020						
	Lead	Sed, Total	RC	5.6	1.0	ug/g	21-JAN-10 12:19

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **05-FEB-10**

Note: Positive Organic Results are indicated by BOLD.

			Result				
			Codes	Result	Rept Level	Units	Analysis Date
270	ASTM D 3278-78						
	Flash Point, Pen-Mar			> 200		deg F	30-DEC-09

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 362952

Date Received: 23-DEC-2009
Date Generated: 04-FEB-2010
Request Page: 9 of 20

Samples: 200936773 - 200936782

Date Reported: 09-FEB-2010

Sample No: 200936777

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
04-DEC-2009 1320 - 20 -

Sampling Point and Source Of Sample

PERHAM

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By LRM on 09-FEB-10

Table with 5 columns: Result Codes, Result, Rept Level, Units, Analysis Date. Contains data for 'Total Halides' and 'Consultation Time'.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **362952**

Date Received: **23-DEC-2009**
 Date Generated: **04-FEB-2010**
 Request Page: **10 of 20**

Samples: 200936773 - 200936782

Date Reported: **09-FEB-2010**

Sample No: **200936777**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
04-DEC-2009	1320	-	20	-

Sampling Point and Source Of Sample

PERHAM

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **09-FEB-10**

		Result				
		Codes	Result	Rept Level	Units	Analysis Date
111	SW 6020					
	Arsenic Sed, Total	RC <	1.0	1	ug/g	21-JAN-10 12:22
126	SW 6020					
	Cadmium Sed, Total	RC <	1.0	1.0	ug/g	21-JAN-10 12:22
134	SW 6020					
	Chromium Sed, Total	RC	3.0	1.0	ug/g	21-JAN-10 12:22
161	SW 6020					
	Lead Sed, Total	RC	4.8	1.0	ug/g	21-JAN-10 12:22

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **05-FEB-10**

Note: Positive Organic Results are indicated by BOLD.

		Result				
		Codes	Result	Rept Level	Units	Analysis Date
270	ASTM D 3278-78					
	Flash Point, Pen-Mar		> 200		deg F	30-DEC-09

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 362952

Date Received: 23-DEC-2009
Date Generated: 04-FEB-2010
Request Page: 11 of 20

Samples: 200936773 - 200936782

Date Reported: 09-FEB-2010

Sample No: 200936778

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
15-DEC-2009 1326 - 20 -

Sampling Point and Source Of Sample

FERGUS FALLS

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By LRM on 09-FEB-10

Table with 5 columns: Result Codes, Result, Rept Level, Units, Analysis Date. Contains data for 'Total Halides' and 'Consultation Time'.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **362952**

Date Received: **23-DEC-2009**
 Date Generated: **04-FEB-2010**
 Request Page: **12 of 20**

Samples: 200936773 - 200936782

Date Reported: **09-FEB-2010**

Sample No: **200936778**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
15-DEC-2009	1326	-	20	-

Sampling Point and Source Of Sample

FERGUS FALLS

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **09-FEB-10**

		Result				
		Codes	Result	Rept Level	Units	Analysis Date
111	SW 6020					
	Arsenic Sed, Total	RC <	1.0	1	ug/g	21-JAN-10 12:26
126	SW 6020					
	Cadmium Sed, Total	RC <	1.0	1.0	ug/g	21-JAN-10 12:26
134	SW 6020					
	Chromium Sed, Total	RC	2.1	1.0	ug/g	21-JAN-10 12:26
161	SW 6020					
	Lead Sed, Total	RC	13	1.0	ug/g	21-JAN-10 12:26

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **05-FEB-10**

Note: Positive Organic Results are indicated by BOLD.

		Result				
		Codes	Result	Rept Level	Units	Analysis Date
270	ASTM D 3278-78					
	Flash Point, Pen-Mar		190		deg F	30-DEC-09

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
Program Name: **OES**
Request No: **362952**

Date Received: **23-DEC-2009**
Date Generated: **04-FEB-2010**
Request Page: **13 of 20**

Samples: 200936773 - 200936782

Date Reported: **09-FEB-2010**

Sample No: **200936779**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
15-DEC-2009	1502	-	20	-

Sampling Point and Source Of Sample

BARNESVILLE

***** SAMPLE RESULTS *****

Unit: **ADMINISTRATIVE**

Reviewed By **LRM** on **09-FEB-10**

	Result				
	Codes	Result	Rept Level	Units	Analysis Date
981 Analyses sent to private lab -MDH					
Total Halides	ND <	100	100	mg/kg	06-JAN-10
Analysis performed by TestAmerica.					
995 Admin. Consultation -MDH					
Consultation Time					04-FEB-10
See attached report from TestAmerica.					

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 362952

Date Received: 23-DEC-2009
Date Generated: 04-FEB-2010
Request Page: 14 of 20

Samples: 200936773 - 200936782

Date Reported: 09-FEB-2010

Sample No: 200936779

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
15-DEC-2009 1502 - 20 -

Sampling Point and Source Of Sample

BARNESVILLE

SAMPLE RESULTS

Unit: METALS

Reviewed By JJB on 09-FEB-10

Table with 7 columns: Codes, Result, Rept Level, Units, Analysis Date. Rows include Arsenic, Cadmium, Chromium, and Lead with their respective results and dates.

Unit: ORGANIC CHEMISTRY

Reviewed By PDS on 05-FEB-10

Note: Positive Organic Results are indicated by BOLD.

Table with 5 columns: Codes, Result, Rept Level, Units, Analysis Date. Row includes Flash Point, Pen-Mar with a result of 170 and date 30-DEC-09.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 362952

Date Received: 23-DEC-2009
Date Generated: 04-FEB-2010
Request Page: 15 of 20

Samples: 200936773 - 200936782

Date Reported: 09-FEB-2010

Sample No: 200936780

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
16-DEC-2009	0900	-	20	-

Sampling Point and Source Of Sample

DETROIT LAKES

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By LRM on 09-FEB-10

	<u>Result</u>				
	<u>Codes</u>	<u>Result</u>	<u>Rept Level</u>	<u>Units</u>	<u>Analysis Date</u>
981 Analyses sent to private lab -MDH					
Total Halides	ND <	100	100	mg/kg	06-JAN-10
Analysis performed by TestAmerica.					
995 Admin. Consultation -MDH					
Consultation Time					04-FEB-10
See attached report from TestAmerica.					

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **362952**

Date Received: **23-DEC-2009**
 Date Generated: **04-FEB-2010**
 Request Page: **16 of 20**

Samples: 200936773 - 200936782

Date Reported: **09-FEB-2010**

Sample No: **200936780**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
16-DEC-2009	0900	-	20	-

Sampling Point and Source Of Sample

DETROIT LAKES

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **09-FEB-10**

			Result					
			Codes	Result	Rept Level	Units	Analysis Date	
111	SW 6020	Arsenic	Sed, Total	RC <	1.0	1	ug/g	21-JAN-10 12:32
126	SW 6020	Cadmium	Sed, Total	RC <	1.0	1.0	ug/g	21-JAN-10 12:32
134	SW 6020	Chromium	Sed, Total	RC <	1.0	1.0	ug/g	21-JAN-10 12:32
161	SW 6020	Lead	Sed, Total	RC	3.8	1.0	ug/g	21-JAN-10 12:32

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **05-FEB-10**

Note: Positive Organic Results are indicated by BOLD.

			Result					
			Codes	Result	Rept Level	Units	Analysis Date	
270	ASTM D 3278-78	Flash Point, Pen-Mar		>	200		deg F	30-DEC-09

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 362952

Date Received: 23-DEC-2009
Date Generated: 04-FEB-2010
Request Page: 17 of 20

Samples: 200936773 - 200936782

Date Reported: 09-FEB-2010

Sample No: 200936781

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
16-DEC-2009 1055 - 20 -

Sampling Point and Source Of Sample

HENNING

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By LRM on 09-FEB-10

Table with 5 columns: Result Codes, Result, Rept Level, Units, Analysis Date. Contains data for 981 Analyses sent to private lab -MDH and 995 Admin. Consultation -MDH.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 362952

Date Received: 23-DEC-2009
Date Generated: 04-FEB-2010
Request Page: 18 of 20

Samples: 200936773 - 200936782

Date Reported: 09-FEB-2010

Sample No: 200936781

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
16-DEC-2009 1055 - 20 -

Sampling Point and Source Of Sample

HENNING

SAMPLE RESULTS

Unit: METALS

Reviewed By JJB on 09-FEB-10

Table with 7 columns: Result Codes, Result, Rept Level, Units, Analysis Date. Rows include Arsenic, Cadmium, Chromium, and Lead with their respective values and analysis dates.

Unit: ORGANIC CHEMISTRY

Reviewed By PDS on 05-FEB-10

Note: Positive Organic Results are indicated by BOLD.

Table with 5 columns: Result Codes, Result, Rept Level, Units, Analysis Date. Row includes Flash Point, Pen-Mar with a result of > 200 and analysis date of 30-DEC-09.

Minnesota Department Of Health - Environmental Laboratory

Amended Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
Program Name: **OES**
Request No: **366331**

Date Received: **12-MAR-2010**
Date Generated: **01-APR-2010**
Request Page: **1 of 13**

Samples: 201004988 - 201004992

Date Reported: **01-APR-2010**
Original Date Reported: **30-MAR-2010**

Sample No: **201004988**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
09-MAR-2010	1115	-	17	-

Sampling Point and Source Of Sample

MORRIS

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By **LRM** on **29-MAR-10**

	Result				
	Codes	Result	Rept Level	Units	Analysis Date
981 Analyses sent to private lab -MDH					
Total Halides		< 100	100	mg/kg	23-MAR-10
Analysis performed by TestAmerica Laboratory.					
995 Admin. Consultation -MDH					
Consultation Time					29-MAR-10
See attached report from TestAmerica Laboratory.					

Minnesota Department Of Health - Environmental Laboratory

Amended Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **366331**

Date Received: **12-MAR-2010**
 Date Generated: **01-APR-2010**
 Request Page: **2 of 13**

Samples: 201004988 - 201004992

Date Reported: **01-APR-2010**
 Original Date Reported: **30-MAR-2010**

Sample No: **201004988**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
09-MAR-2010	1115	-	17	-

Sampling Point and Source Of Sample

MORRIS

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **30-MAR-10**

			Result Codes	Result	Rept Level	Units	Analysis Date
111	SW 6020						
	Arsenic	Sed, Total	RC <	2.0	2	ug/g	19-MAR-10 15:05
126	SW 6020						
	Cadmium	Sed, Total	RC <	2.0	2.0	ug/g	19-MAR-10 15:05
134	SW 6020						
	Chromium	Sed, Total	RC <	2.0	2.0	ug/g	19-MAR-10 15:05
161	SW 6020						
	Lead	Sed, Total	RC	7.2	2.0	ug/g	19-MAR-10 15:05
3051	EPA 3051A						
	Acid Digestion of Solids		DC				16-MAR-10

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **30-MAR-10**

Note: Positive Organic Results are indicated by BOLD.

			Result Codes	Result	Rept Level	Units	Analysis Date
270	ASTM D 3278-78						
	Flash Point, Pen-Mar		>	200		deg F	18-MAR-10

Minnesota Department Of Health - Environmental Laboratory

Amended Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 366331

Date Received: 12-MAR-2010
Date Generated: 01-APR-2010
Request Page: 3 of 13

Samples: 201004988 - 201004992

Date Reported: 01-APR-2010
Original Date Reported: 30-MAR-2010

Sample No: 201004989

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
09-MAR-2010 1310 - 17 -

Sampling Point and Source Of Sample

WHEATON

SAMPLE RESULTS

Unit: ADMINISTRATIVE

Reviewed By LRM on 29-MAR-10

Table with 5 columns: Codes, Result, Rept Level, Units, Analysis Date. Includes rows for '981 Analyses sent to private lab -MDH' and '995 Admin. Consultation -MDH'.

Minnesota Department Of Health - Environmental Laboratory

Amended Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **366331**

Date Received: **12-MAR-2010**
 Date Generated: **01-APR-2010**
 Request Page: **4 of 13**

Samples: 201004988 - 201004992

Date Reported: **01-APR-2010**
 Original Date Reported: **30-MAR-2010**

Sample No: **201004989**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
09-MAR-2010	1310	-	17	-

Sampling Point and Source Of Sample

WHEATON

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **30-MAR-10**

			Result	Rept Level	Units	Analysis Date
			Codes	Result	Rept Level	Units
111	SW 6020					
	Arsenic	Sed, Total	RC <	2.0	2	ug/g
						19-MAR-10 15:08
126	SW 6020					
	Cadmium	Sed, Total	RC <	2.0	2.0	ug/g
						19-MAR-10 15:08
134	SW 6020					
	Chromium	Sed, Total	RC <	2.0	2.0	ug/g
						19-MAR-10 15:08
161	SW 6020					
	Lead	Sed, Total	RC	3.8	2.0	ug/g
						19-MAR-10 15:08
3051	EPA 3051A					
	Acid Digestion of Solids		DC			16-MAR-10

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **30-MAR-10**

Note: Positive Organic Results are indicated by BOLD.

			Result	Rept Level	Units	Analysis Date
			Codes	Result	Rept Level	Units
270	ASTM D 3278-78					
	Flash Point, Pen-Mar		>	200		deg F
						18-MAR-10

Minnesota Department Of Health - Environmental Laboratory

Amended Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
Program Name: **OES**
Request No: **366331**

Date Received: **12-MAR-2010**
Date Generated: **01-APR-2010**
Request Page: **5 of 13**

Samples: 201004988 - 201004992

Date Reported: **01-APR-2010**
Original Date Reported: **30-MAR-2010**

Sample No: **201004990**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
09-MAR-2010	1430	-	17	-

Sampling Point and Source Of Sample

BRECKENRIDGE

***** SAMPLE RESULTS *****

Unit: **ADMINISTRATIVE**

Reviewed By **LRM** on **29-MAR-10**

	Result				
	Codes	Result	Rept Level	Units	Analysis Date
981 Analyses sent to private lab -MDH					
Total Halides		< 100	100	mg/kg	23-MAR-10
Analysis performed by TestAmerica Laboratory.					
995 Admin. Consultation -MDH					
Consultation Time					29-MAR-10
See attached report from TestAmerica Laboratory.					

Minnesota Department Of Health - Environmental Laboratory

Amended Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **366331**

Date Received: **12-MAR-2010**
 Date Generated: **01-APR-2010**
 Request Page: **6 of 13**

Samples: 201004988 - 201004992

Date Reported: **01-APR-2010**
 Original Date Reported: **30-MAR-2010**

Sample No: **201004990**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
09-MAR-2010	1430	-	17	-

Sampling Point and Source Of Sample

BRECKENRIDGE

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **30-MAR-10**

			Result	Rept Level	Units	Analysis Date
			Codes	Result	Rept Level	Units
111	SW 6020					
	Arsenic	Sed, Total	RC <	2.0	2	ug/g
						19-MAR-10 15:11
126	SW 6020					
	Cadmium	Sed, Total	RC <	2.0	2.0	ug/g
						19-MAR-10 15:11
134	SW 6020					
	Chromium	Sed, Total	RC <	2.0	2.0	ug/g
						19-MAR-10 15:11
161	SW 6020					
	Lead	Sed, Total	RC	2.7	2.0	ug/g
						19-MAR-10 15:11
3051	EPA 3051A					
	Acid Digestion of Solids		DC			16-MAR-10

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **30-MAR-10**

Note: Positive Organic Results are indicated by BOLD.

			Result	Rept Level	Units	Analysis Date
			Codes	Result	Rept Level	Units
270	ASTM D 3278-78					
	Flash Point, Pen-Mar			158		deg F
						18-MAR-10

Minnesota Department Of Health - Environmental Laboratory

Amended Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 366331

Date Received: 12-MAR-2010
Date Generated: 01-APR-2010
Request Page: 7 of 13

Samples: 201004988 - 201004992

Date Reported: 01-APR-2010
Original Date Reported: 30-MAR-2010

Sample No: 201004991

Receiving Comments: -

Coll Date	Coll Time	Location	Lab Temp	Site Number
10-MAR-2010	0815	-	17	-

Sampling Point and Source Of Sample

MOORHEAD

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By LRM on 29-MAR-10

	Result Codes	Result	Rept Level	Units	Analysis Date
981 Analyses sent to private lab -MDH					
Total Halides		< 100	100	mg/kg	23-MAR-10
Analysis performed by TestAmerica Laboratory.					
995 Admin. Consultation -MDH					
Consultation Time					29-MAR-10
See attached report from TestAmerica Laboratory.					

Minnesota Department Of Health - Environmental Laboratory

Amended Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **366331**

Date Received: **12-MAR-2010**
 Date Generated: **01-APR-2010**
 Request Page: **8 of 13**

Samples: 201004988 - 201004992

Date Reported: **01-APR-2010**
 Original Date Reported: **30-MAR-2010**

Sample No: **201004991**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
10-MAR-2010	0815	-	17	-

Sampling Point and Source Of Sample

MOORHEAD

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **30-MAR-10**

			Result Codes	Result	Rept Level	Units	Analysis Date
111	SW 6020						
	Arsenic	Sed, Total	RC <	2.0	2	ug/g	19-MAR-10 15:15
126	SW 6020						
	Cadmium	Sed, Total	RC <	2.0	2.0	ug/g	19-MAR-10 15:15
134	SW 6020						
	Chromium	Sed, Total	RC <	2.0	2.0	ug/g	19-MAR-10 15:15
161	SW 6020						
	Lead	Sed, Total	RC	6.7	2.0	ug/g	19-MAR-10 15:15
3051	EPA 3051A						
	Acid Digestion of Solids		DC				16-MAR-10

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **30-MAR-10**

Note: Positive Organic Results are indicated by BOLD.

			Result Codes	Result	Rept Level	Units	Analysis Date
270	ASTM D 3278-78						
	Flash Point, Pen-Mar		>	200		deg F	18-MAR-10

**MINNESOTA DEPARTMENT OF TRANSPORTATION
USED OIL BURNER SAMPLING
ON-SPEC OIL ANALYSIS
District 6
Rushford, Minnesota**



**Prepared by:
Minnesota Department of Transportation
Office of Environmental Services
Environmental Modeling and Testing Unit**

January 2010

INTRODUCTION

Enclosed in this report are the results of the sampling of used oil from the burner located at the Minnesota Department of Transportation (MNDOT) District 6 Rushford Truck Station facility. Used oil from vehicles is placed in a Lube Cube storage tank at the truck station. The Lube Cube is connected to a building heater that burns the used oil for heat recovery.

The sampling of used oil at the Rushford facility was conducted by personnel from the MNDOT Office of Environmental Services. For additional information, contact Harold Bottolfson at (651) 366-5812. The laboratory analysis was performed by the Minnesota Department of Health.

The results of the laboratory analysis from the sample taken at the Rushford Truck Station show the burner oil to be within the on spec limits.

Purpose

The purpose of the sampling and analysis is to insure that the used motor oil that is burned in heating units meets MPCA rules for such practices. The oil must meet the following limits to be classified as on-spec:

- Flashpoint 100 degrees Fahrenheit minimum
- Arsenic 5 parts per million (PPM) maximum
- Cadmium 2 PPM maximum
- Chromium 10 PPM maximum
- Lead 100 PPM maximum
- Total Halogens 1000 PPM maximum

Procedures

The oil was sampled from the storage tank with a Coliwasa sampler. The Coliwasa sampler is a 70" long polypropylene tube that is 1" diameter. The sampler has caps at each end that can be opened and closed by using a control rod that runs through the length of the tube. During the sampling, the end caps were opened and the coliwasa was slowly lowered into the tank so that a vertical column sample could be obtained. The sampler was lowered to the top of the sludge layer so that only the oil to be burned would be sampled. The oil from the sampler was placed in a sample bottles provided by the Minnesota Department of Health, which was contracted to analyze the sample. As the sample was released into the bottle, it was carefully observed for any discolorations or changes in the composition of the material. Notes were taken of the procedures during the sampling process.

Laboratory analysis methods for each of the listed parameters are as follows:

PARAMETER	METHOD
Flashpoint	ASTM D 3278-78
Metals	SW 6020
Total Halogens	SW846 9076

Results

The observation notes taken during the sampling are as follows:

1. The oil removed from the tank with the coliwasa did not show segments or layering.
2. The oil removed did not have any unusual odors and seemed consistent with the look and smell of used oil.
3. The area around the Lube Cube looked well maintained and orderly.
4. The depth of the oil in the tank was 10".
5. There was a layer of sludge at the bottom approximately 2" deep.

MN/DOT District 6
Used Oil Sampling Laboratory Results
(Values in PPM)

Sample Location	Date	Flashpoint (F)	Arsenic	Cadmium	Chromium	Lead	Total Halogens
Rushford	10/27/2009	>200	<0.4	<0.4	6	37	149
On Spec Limits		100 Minimum	5 Maximum	2 Maximum	10 Maximum	100 Maximum	1000 Maximum

***Values in Red are Off Spec**

Rushford Used Oil Container



**Minnesota Department of Health
Chain of Custody**



Chain of Custody

Minnesota Department of Health
Environmental Laboratory
601 Robert St. North
St. Paul, MN 55155-2531

Page 1 of 1

Lab Use Only.

Potential Hazard: Yes/No/Unknown (Circle One).
If Yes please add information to Comments below.

Standard/Civil/Criminal Chain of Custody
(Circle One)

Client/Agency MNDOT
Project Name Truck Station Oil Sampling
Site ID Manicatu + Rushford
Program Code (2 Letters) DD
Contact Name Harold Bottolfson
Contact Phone # 651-366-5812

Matrix Codes

- DW = Drinking Water
- SW = Surface Water
- GW = Ground Water
- WW = Waste Water
- SD = Soil/Solid
- WP = Wipe
- AR = Air
- TS = Tissue
- OT = Other

Report to _____
MDH ID _____

Address if Needed _____

Sampled By (Print)		Affiliation		Containers & Preservatives															
Harold Bottolfson		MNDOT		Unpreserved	Hydrochloric Acid	Sulfuric Acid	Nitric Acid	Sodium Hydroxide	Sodium Thiosulfate	Ascorbic Acid	Other	Total # of Containers	Samples Field Filled: Y/N	Requested Analysis:		Seal Intact: Y/N	Lab Temp: (C)		
Sampler Signature		Phone		MDH Sample Number (Lab Use Only)	Field ID	Sample Source/Point	Collection Date	Time (24 Hour)	Matrix Code										
<i>[Signature]</i>		651-366-5812																	
1		A	oil burner	10/21/09	9:00	OT	3							3	As, Cr, Cd, Pb-TOX-Flashpoint				
2		B	oil burner	10/21/09	10:30	OT	3							3	Same				
3		C	oil burner	10/21/09	15:00	OT	3							3	Same				
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Sampler Comments:

Receiving Comments:

Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
<i>[Signature]</i> / MNDOT	10-29-09	10:00	<i>[Signature]</i> / MDH	10-29-09	10:09
<i>[Signature]</i> / MNDOT	10-27-09	10:47	<i>[Signature]</i> / MDH	10-29-09	10:46

**Minnesota Department of Health
Laboratory Results**

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 360698

Date Received: 29-OCT-2009
Date Generated: 11-DEC-2009
Request Page: 5 of 6

Samples: 200933184 - 200933186

Date Reported: 11-DEC-2009

Sample No: 200933186

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
27-OCT-2009 1500 RUSHFORD TRK 17 C

Sampling Point and Source Of Sample

USED OIL TANK

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By MLK on 11-DEC-09

Table with 5 columns: Result Codes, Result, Rept Level, Units, Analysis Date. Contains data for 'Total Halides' and 'Consultation Time'.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **360698**

Date Received: **29-OCT-2009**
 Date Generated: **11-DEC-2009**
 Request Page: **6 of 6**

Samples: 200933184 - 200933186

Date Reported: **11-DEC-2009**

Sample No: **200933186**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
27-OCT-2009	1500	RUSHFORD TRK	17	C

Sampling Point and Source Of Sample

USED OIL TANK

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **10-DEC-09**

	Result Codes	Result	Rept Level	Units	Analysis Date
111 SW 6020					
		Report level was changed due to sample dilution.			
Arsenic Sed, Total	<	0.4	0.4	ug/g	08-DEC-09 15:52
126 SW 6020					
		Report level was changed due to sample dilution.			
Cadmium Sed, Total	<	0.40	0.40	ug/g	08-DEC-09 15:52
134 SW 6020					
		Report level was changed due to sample dilution.			
Chromium Sed, Total		6.0	0.40	ug/g	08-DEC-09 15:52
161 SW 6020					
		Report level was changed due to sample dilution.			
Lead Sed, Total		37	0.40	ug/g	08-DEC-09 15:52

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **10-DEC-09**

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
270 ASTM D 3278-78					
Flash Point, Pen-Mar	>	200		deg F	10-NOV-09

Result Code Description
 RC Report level was changed due to sample dilution.

**MINNESOTA DEPARTMENT OF TRANSPORTATION
USED OIL BURNER SAMPLING
ON-SPEC OIL ANALYSIS**

District 7

Gaylord

Mankato

Mapleton

New Ulm

St. Peter

Windom



**Prepared by:
Minnesota Department of Transportation
Office of Environmental Services
Environmental Modeling and Testing Unit**

March 2010

INTRODUCTION

Enclosed in this report are the results of the sampling of used oil collected at the Minnesota Department of Transportation (MNDOT) District 7 Truck Station facilities. Used oil from vehicles is placed in Lube Cube storage tanks at each of the truck stations. The Lube Cubes are connected to building heaters that burn the used oil for heat recovery.

The sampling of used oil at the District 7 facilities was conducted by personnel from the MNDOT Office of Environmental Services. For additional information, contact Harold Bottolfson at (651) 366-5812. The laboratory analysis was performed by the Minnesota Department of Health.

The results of the laboratory analysis from the samples taken at the District 7 Truck Stations show the burner oil to be within the on spec limits.

Purpose

The purpose of the sampling and analysis is to insure that the used motor oil that is burned in heating units meets MPCA rules for such practices. The oil must meet the following limits to be classified as on-spec:

- Flashpoint >100 degrees Fahrenheit
- Arsenic <5 parts per million (PPM)
- Cadmium <2 PPM
- Chromium <10 PPM
- Lead <100 PPM
- Total Halogens <1000 PPM

Procedures

The oil was sampled from the storage tank with a Coliwasa sampler. The Coliwasa sampler is a 70" long polypropylene tube that is 1" diameter. The sampler has caps at each end that can be opened and closed by using a control rod that runs through the length of the tube. During the sampling, the end caps were opened and the coliwasa was slowly lowered into the tank so that a vertical column sample could be obtained. The sampler was lowered to the top of the sludge layer so that only the oil to be burned would be sampled. The oil from the sampler was placed in a sample bottles provided by the Minnesota Department of Health, which was contracted to analyze the sample. As the sample was released into the bottle, it was carefully observed for any discolorations or changes in the composition of the material. Notes were taken of the procedures during the sampling process.

Laboratory analysis methods for each of the listed parameters are as follows:

PARAMETER	METHOD
Flashpoint	ASTM D 3278-78
Metals	SW 6020
Total Halogens	SW846 9076

Results

The observation notes taken during the sampling are as follows:

Mankato Truck Station

1. The oil removed from the tank with the coliwasa did not show segments or layering.
2. The oil removed did not have any unusual odors and seemed consistent with the look and smell of used oil.
3. The area around the Lube Cube looked well maintained and orderly.
4. The depth of the oil in the tank was 35".
5. There was a layer of sludge at the bottom approximately 2" deep.

Mapleton Truck Station

1. The oil removed from the tank with the coliwasa did not show segments or layering.
2. The oil removed did not have any unusual odors and seemed consistent with the look and smell of used oil.
3. The area around the Lube Cube looked well maintained and orderly.
4. The depth of the oil in the tank was approximately 18".
5. There was a layer of sludge at the bottom approximately 2" deep.

Gaylord Truck Station

1. The oil removed from the tank with the coliwasa did not show segments or layering.
2. The oil removed did not have any unusual odors and seemed consistent with the look
3. and smell of used oil.
4. The area around the Lube Cube looked well maintained and orderly.
5. The depth of the oil in the tank was approximately 26”.
6. There was a layer of sludge at the bottom approximately 2” deep.

New Ulm Truck Station

1. The oil removed from the tank with the coliwasa did not show segments or layering.
2. The oil removed did not have any unusual odors and seemed consistent with the look and smell of used oil.
3. The area around the Lube Cube looked well maintained and orderly.
4. The depth of the oil in the tank was 22”.
5. There was no sludge detected in the tank.

St. Peter Truck Station

1. The oil removed from the tank with the coliwasa did not show segments or layering.
2. The oil removed did not have any unusual odors and seemed consistent with the look and smell of used oil.
3. The area around the Lube Cube looked well maintained and orderly.
4. The depth of the oil in the tank was 5”.
5. There was no sludge detected in the tank.

Windom Truck Station

1. The oil removed from the tank with the coliwasa did not show segments or layering.
2. The oil removed did not have any unusual odors and seemed consistent with the look and smell of used oil.
3. The area around the Lube Cube looked well maintained and orderly.
4. The depth of the oil in the tank was 12”.
5. There was a layer of sludge at the bottom approximately 1” deep.

MN/DOT District 7
Used Oil Sampling Laboratory Results
(Values in PPM)

Sample Location	Date	Flashpoint (F)	Arsenic	Cadmium	Chromium	Lead	Total Halogens
Gaylord	10/30/2009	>200	<0.4	<0.40	2.5	4.5	174
Mankato	10/27/2009	>200	<0.4	0.54	3.2	24	579
Mapleton	10/27/2009	>200	<0.4	<0.40	3.9	7.4	232
New Ulm	2/25/2010	>200	<0.2	<0.2	2.2	30	271
St. Peter	2/25/2010	>200	<0.2	<0.2	<0.2	17	137
Windom	2/25/2010	>200	<0.2	<0.2	<0.2	11	234
On Spec Limits		100 Minimum	5 Maximum	2 Maximum	10 Maximum	100 Maximum	1000 Maximum

*Values in Red are Off Spec

Mankato Used Oil Container



Mapleton Used Oil Container



Gaylord Used Oil Container



New Ulm Used Oil Container



St. Peter Used Oil Container



Windom Used Oil Container



**Minnesota Department of Health
Chain of Custody**

200934503

200934512



Chain of Custody

Minnesota Department of Health
Environmental Laboratory
601 Robert St. North
St. Paul, MN 55155-2531

Page of

RF017400



Potential Hazard: Yes/No/Unknown (Circle One)
If Yes please add information to Comments below:

Standard/Title/Criminal Chain of Custody:
(Circle One)

Client/Agency: MNDOT

Project Name: Oil Bore Samples

Site ID:

Program Code (2 Letters): DD

Contact Name: Harold Botolfson

Contact Phone #: 651-366-5812

Matrix Codes

- DW - Drinking Water
- SW - Surface Water
- GW - Ground Water
- WW - Waste Water
- SD - Soil/Solid
- WP - Wipes
- AR - Air
- TS - Tissue
- OT - Other

Report to:

MDH IID:

Address if Needed:

Sampled By (Print): Harold Botolfson

Affiliation:

Sampler Signature: Harold Botolfson

Phone: 651-366-5812

#	Field ID	Sample Source Point	Collection Date	Time (24 Hour)	Matrix Code	Containers & Preservatives							Total # of Containers	Samples Field Filtered: <u> </u>	Requested Analysis: <u>AS, CCcd, Ph-TOX, Flashpoint</u>	Notes	
						Unpreserved	Hydrochloric Acid	Sulfuric Acid	Nitric Acid	Sodium Hydroxide	Sodium Thiosulfate	Ascorbic Acid					Other
1		Carlton	11-3-09	10:30	OT								3				
2		Virginia	11-3-09	12:45													
3		Ramdi	11-3-09	15:45													
4		Rock Rapids	11-4-09	9:08													
5		Wadena	11-4-09	10:30													
6		Gaylord	10-30-09	10:00													
7		Hallowell	11-12-09	13:30													
8		Roseau	11-12-09	15:00													
9		Thief River	11-13-09	9:00													
10		Crookston	11-13-09	11:00													

Sampler Comments:

Receiving Comments:

Relinquished By / Affiliation:

Date: 11-16-09

Time: 12:14

Accepted By / Affiliation: Harold Botolfson

Date: 11-16-09

Time: 12:14

White Client Copy

Yellow Lab Copy

Pink Submitter Copy

MDH 1000

33264

NO PINK LAB FORMS.

Chain of Custody

Minnesota Department of Health
Environmental Laboratory
601 Robert St. North
St. Paul, MN 55155-2531

Lab Use Only:

Potential Hazard: Yes/No/Unknown: (Circle One)
If Yes please add information to Comments below.

Standard/Civil/Criminal Chain of Custody
(Circle One)

Client/Agency: MNDOT

Project Name: Truck Station Disposal Site
Site ID: Mapleton + Rushford

Program Code (2 Letters): DD
Contact Name: Harold Botholfson
Contact Phone: 651-366-5812

Matrix Codes:

- DW = Drinking Water
- SW = Surface Water
- GW = Ground Water
- WW = Waste Water
- SD = Soil/Solid
- WP = Wipe
- AR = Air
- TS = Tissue
- OT = Other

Report to: _____
MDH ID: _____

Address if Needed: _____

Containers & Preservatives

- Unpreserved
- Hydrochloric Acid
- Sulfuric Acid
- Nitric Acid
- Sodium Hydroxide
- Sodium Thiosulfate
- Ascorbic Acid
- Other

Total # of Containers: _____
Sample Field Filtered: Y/N

Requested Analysis:

As, Cr, Cd, Pb = TOX - Flashpoint

#	Field ID	Sample Source/Point	Collection Date	Time (24 Hour)	Matrix Code	Unpreserved	Hydrochloric Acid	Sulfuric Acid	Nitric Acid	Sodium Hydroxide	Sodium Thiosulfate	Ascorbic Acid	Other	Total # of Containers	Sample Field Filtered: Y/N	Requested Analysis
1	A	oil burner	10/21/09	9:00	OT B									3		As, Cr, Cd, Pb = TOX - Flashpoint Same
2	B	oil burner	10/21/09	10:30	OT B									3		
3	C	oil burner	10/21/09	15:00	OT B									3		
4																
5																
6																
7																
8																
9																
10																

Sampler Comments:

Relinquished By / Affiliation: _____ Date: _____ Time: _____
Accepted By / Affiliation: _____ Date: _____ Time: _____

Sampler: Harold Botholfson Date: 10-29-09 Time: 10:00
Harold Botholfson Date: 10-29-09 Time: 10:17

White Client Copy

Yellow Lab Copy

Pink Submitter Copy



Chain of Custody

Minnesota Department of Health
 Environmental Laboratory
 601 Robert St. North
 St. Paul, MN 55155-2531

Lab Use Only:

Potential Hazard: Yes Unknown (Circle One)
 If Yes please add information to Comments below.

Client/Agency: MWD&T
 Project Name: Oil Burner Samples
 Site ID: _____
 Program Code (2 Letters): DD
 Contact Name: HONOLD BOTTOLFSON
 Contact Phone # 651-366-5812

Report to: _____
 MDH ID: _____
 Address (if needed): _____

Sampled By (Print):

Honold Bottolfson

Affiliation:

Phone: 651-366-5812

Sampler Signature: [Signature]

#	Field ID	Sample Source/Point	Collection Date	Time (24 Hour)	Matrix Code	Containers & Preservatives							Total # of Containers	Samples Field Filled: Y/N	Requested Analysis:
						Unpreserved	Hydrochloric Acid	Sulfuric Acid	Nitric Acid	Sodium Hydroxide	Sodium Thiosulfate	Ascorbic Acid			
1		Maryland	2-19-10	10:30	OT 3								3		AS, Cr, Cd, Pb, Tox, Flash Point
2		Dakota #1	2-19-10	11:00											
3		Dakota #2	2-19-10	11:15											
4		St. Peter	2-24-10	9:30											
5		New UIm	2-25-10	11:30											
6		Windom	2-25-10	14:30											
7		Mars Hall	2-26-10	8:00											
8		Appleton	2-26-10	11:30											
9															
10															

Sampler Comments:

Requisitioned By / Affiliation: _____ Date: _____ Time: _____
 Accepted By / Affiliation: [Signature] MDH Date: 3-2-10 Time: 10:33

**Minnesota Department of Health
Laboratory Results**

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
Program Name: **OES**
Request No: **361555**

Date Received: **16-NOV-2009**
Date Generated: **11-DEC-2009**
Request Page: **11 of 20**

Samples: 200934503 - 200934512

Date Reported: **11-DEC-2009**

Sample No: **200934508**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
30-OCT-2009	1000	-	16	-

Sampling Point and Source Of Sample

GAYLORD

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By **MLK** on **11-DEC-09**

	Result Codes	Result	Rept Level	Units	Analysis Date
981 Analyses sent to private lab -MDH Total Halides		174	100	mg/kg	23-NOV-09
Sample analyzed at TestAmerica.					
995 Admin. Consultation -MDH Consultation Time					08-DEC-09
See attached report from TestAmerica.					

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **361555**

Date Received: **16-NOV-2009**
 Date Generated: **11-DEC-2009**
 Request Page: **12 of 20**

Samples: 200934503 - 200934512

Date Reported: **11-DEC-2009**

Sample No: **200934508**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
30-OCT-2009	1000	-	16	-

Sampling Point and Source Of Sample

GAYLORD

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **10-DEC-09**

	Result	Codes	Result	Rept Level	Units	Analysis Date
111 SW 6020						
	Report level was changed due to sample dilution.					
Arsenic Sed, Total	<	0.4	0.4	ug/g	08-DEC-09 16:34	
126 SW 6020						
	Report level was changed due to sample dilution.					
Cadmium Sed, Total	<	0.40	0.40	ug/g	08-DEC-09 16:34	
134 SW 6020						
	Report level was changed due to sample dilution.					
Chromium Sed, Total		2.5	0.40	ug/g	08-DEC-09 16:34	
161 SW 6020						
	Report level was changed due to sample dilution.					
Lead Sed, Total		4.5	0.40	ug/g	08-DEC-09 16:34	

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **10-DEC-09**

Note: Positive Organic Results are indicated by BOLD.

	Result	Codes	Result	Rept Level	Units	Analysis Date
270 ASTM D 3278-78						
Flash Point, Pen-Mar	>	200		deg F	17-NOV-09	

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
Program Name: **OES**
Request No: **360698**

Date Received: **29-OCT-2009**
Date Generated: **11-DEC-2009**
Request Page: **1 of 6**

Samples: 200933184 - 200933186

Date Reported: **11-DEC-2009**

Sample No: **200933184**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
27-OCT-2009	0900	ANKATO TK ST	17	A

Sampling Point and Source Of Sample

USED OIL TANK

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By **MLK** on **11-DEC-09**

	Result				
	Codes	Result	Rept Level	Units	Analysis Date
981 Analyses sent to private lab -MDH					
Total Halides		579	100	mg/kg	03-NOV-09
See attached report from TestAmerica, Inc.					
995 Admin. Consultation -MDH					
Consultation Time					19-NOV-09
Analysis completed by TestAmerica, Inc.					

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **360698**

Date Received: **29-OCT-2009**
 Date Generated: **11-DEC-2009**
 Request Page: **2 of 6**

Samples: 200933184 - 200933186

Date Reported: **11-DEC-2009**

Sample No: **200933184**

Receiving Comments: -

Coll Date	Coll Time	Location	Lab Temp	Site Number
27-OCT-2009	0900	ANKATO TK ST	17	A

Sampling Point and Source Of Sample

USED OIL TANK

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **10-DEC-09**

	Result Codes	Result	Rept Level	Units	Analysis Date
111 SW 6020					
Report level was changed due to sample dilution.					
Arsenic Sed, Total	<	0.4	0.4	ug/g	08-DEC-09 15:42
126 SW 6020					
Report level was changed due to sample dilution.					
Cadmium Sed, Total		0.54	0.40	ug/g	08-DEC-09 15:42
134 SW 6020					
Report level was changed due to sample dilution.					
Chromium Sed, Total		3.2	0.40	ug/g	08-DEC-09 15:42
161 SW 6020					
Report level was changed due to sample dilution.					
Lead Sed, Total		24	0.40	ug/g	08-DEC-09 15:42

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **10-DEC-09**

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
270 ASTM D 3278-78					
Flash Point, Pen-Mar	>	200		deg F	10-NOV-09

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 360698

Date Received: 29-OCT-2009
Date Generated: 11-DEC-2009
Request Page: 3 of 6

Samples: 200933184 - 200933186

Date Reported: 11-DEC-2009

Sample No: 200933185

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
27-OCT-2009 1000 MAPLETON TRK 17 B

Sampling Point and Source Of Sample

USED OIL TANK

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By MLK on 11-DEC-09

Table with 5 columns: Result Codes, Result, Rept Level, Units, Analysis Date. Contains data for 'Total Halides' and 'Consultation Time'.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **360698**

Date Received: **29-OCT-2009**
 Date Generated: **11-DEC-2009**
 Request Page: **4 of 6**

Samples: 200933184 - 200933186

Date Reported: **11-DEC-2009**

Sample No: **200933185**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
27-OCT-2009	1000	MAPLETON TRK	17	B

Sampling Point and Source Of Sample

USED OIL TANK

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **10-DEC-09**

	Result Codes	Result	Rept Level	Units	Analysis Date
111 SW 6020					
		Report level was changed due to sample dilution.			
Arsenic	Sed, Total	< 0.4	0.4	ug/g	08-DEC-09 15:48
126 SW 6020					
		Report level was changed due to sample dilution.			
Cadmium	Sed, Total	< 0.40	0.40	ug/g	08-DEC-09 15:48
134 SW 6020					
		Report level was changed due to sample dilution.			
Chromium	Sed, Total	3.9	0.40	ug/g	08-DEC-09 15:48
161 SW 6020					
		Report level was changed due to sample dilution.			
Lead	Sed, Total	7.4	0.40	ug/g	08-DEC-09 15:48

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **10-DEC-09**

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
270 ASTM D 3278-78					
Flash Point, Pen-Mar		> 200		deg F	10-NOV-09

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 365936

Date Received: 02-MAR-2010
Date Generated: 23-MAR-2010
Request Page: 9 of 16

Samples: 201004306 - 201004313

Date Reported: 23-MAR-2010

Sample No: 201004310

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
25-FEB-2010	1130	-	13	-

Sampling Point and Source Of Sample

NEW ULM

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By LRM on 22-MAR-10

Result

Codes	Result	Rept Level	Units	Analysis Date
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981 Analyses sent to private lab -MDH

Total Halides	271	100	mg/kg	08-MAR-10
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Analysis performed by TestAmerica Laboratory.

995 Admin. Consultation -MDH

Consultation Time				22-MAR-10
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See attached report from TestAmerica Laboratory.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
 Program Name: OES
 Request No: 365936

Date Received: 02-MAR-2010
 Date Generated: 23-MAR-2010
 Request Page: 10 of 16

Samples: 201004306 - 201004313

Date Reported: 23-MAR-2010

Sample No: 201004310

Receiving Comments: -

Coll Date	Coll Time	Location	Lab Temp	Site Number
25-FEB-2010	1130	-	13	-

Sampling Point and Source Of Sample

NEW ULM

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By JJB on 23-MAR-10

		Result				
		Codes	Result	Rept Level	Units	Analysis Date
111	SW 6020 Arsenic	Sed, Total	RC < 2.0	2	ug/g	19-MAR-10 14:39
126	SW 6020 Cadmium	Sed, Total	RC < 2.0	2.0	ug/g	19-MAR-10 14:39
134	SW 6020 Chromium	Sed, Total	RC 2.2	2.0	ug/g	19-MAR-10 14:39
161	SW 6020 Lead	Sed, Total	RC 30	2.0	ug/g	19-MAR-10 14:39

Unit: ORGANIC CHEMISTRY

Reviewed By PDS on 23-MAR-10

Note: Positive Organic Results are indicated by BOLD.

		Result				
		Codes	Result	Rept Level	Units	Analysis Date
270	ASTM D 3278-78 Flash Point, Pen-Mar		> 200		deg F	08-MAR-10

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 365936

Date Received: 02-MAR-2010
Date Generated: 23-MAR-2010
Request Page: 7 of 16

Samples: 201004306 - 201004313

Date Reported: 23-MAR-2010

Sample No: 201004309

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
25-FEB-2010	0930	-	13	-

Sampling Point and Source Of Sample

ST. PETER

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By LRM on 22-MAR-10

Result

Codes	Result	Rept Level	Units	Analysis Date
-------	--------	------------	-------	---------------

981 Analyses sent to private lab -MDH

Total Halides	137	100	mg/kg	08-MAR-10
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Analysis performed by TestAmerica Laboratory.

995 Admin. Consultation -MDH

Consultation Time				22-MAR-10
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See attached report from TestAmerica Laboratory.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
 Program Name: OES
 Request No: 365936

Date Received: 02-MAR-2010
 Date Generated: 23-MAR-2010
 Request Page: 8 of 16

Samples: 201004306 - 201004313

Date Reported: 23-MAR-2010

Sample No: 201004309

Receiving Comments: -

Coll Date	Coll Time	Location	Lab Temp	Site Number
25-FEB-2010	0930	-	13	-

Sampling Point and Source Of Sample

ST. PETER

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By JJB on 23-MAR-10

		Result Codes	Result	Rept Level	Units	Analysis Date
111	SW 6020					
	Arsenic	Sed, Total	RC < 2.0	2	ug/g	19-MAR-10 14:36
126	SW 6020					
	Cadmium	Sed, Total	RC < 2.0	2.0	ug/g	19-MAR-10 14:36
134	SW 6020					
	Chromium	Sed, Total	RC < 2.0	2.0	ug/g	19-MAR-10 14:36
161	SW 6020					
	Lead	Sed, Total	RC 17	2.0	ug/g	19-MAR-10 14:36

Unit: ORGANIC CHEMISTRY

Reviewed By PDS on 23-MAR-10

Note: Positive Organic Results are indicated by BOLD.

		Result Codes	Result	Rept Level	Units	Analysis Date
270	ASTM D 3278-78					
	Flash Point, Pen-Mar		> 200		deg F	08-MAR-10

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 365936

Date Received: 02-MAR-2010
Date Generated: 23-MAR-2010
Request Page: 11 of 16

Samples: 201004306 - 201004313

Date Reported: 23-MAR-2010

Sample No: 201004311

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
25-FEB-2010	1430	-	13	-

Sampling Point and Source Of Sample

WINDOM

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By LRM on 22-MAR-10

Result

Codes	Result	Rept Level	Units	Analysis Date
-------	--------	------------	-------	---------------

981 Analyses sent to private lab -MDH

Total Halides	234	100	mg/kg	08-MAR-10
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Analysis performed by TestAmerica Laboratory.

995 Admin. Consultation -MDH

Consultation Time				22-MAR-10
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See attached report from TestAmerica Laboratory.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD	Date Received: 02-MAR-2010
Program Name: OES	Date Generated: 23-MAR-2010
Request No: 365936	Request Page: 12 of 16
Samples: 201004306 - 201004313	Date Reported: 23-MAR-2010

Sample No: 201004311

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
25-FEB-2010	1430	-	13	-

Sampling Point and Source Of Sample

WINDOM

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By JJB on 23-MAR-10

			Result Codes	Result	Rept Level	Units	Analysis Date
111	SW 6020						
	Arsenic	Sed, Total	RC <	2.0	2	ug/g	19-MAR-10 14:42
126	SW 6020						
	Cadmium	Sed, Total	RC <	2.0	2.0	ug/g	19-MAR-10 14:42
134	SW 6020						
	Chromium	Sed, Total	RC <	2.0	2.0	ug/g	19-MAR-10 14:42
161	SW 6020						
	Lead	Sed, Total	RC	11	2.0	ug/g	19-MAR-10 14:42

Unit: ORGANIC CHEMISTRY

Reviewed By PDS on 23-MAR-10

Note: Positive Organic Results are indicated by BOLD.

			Result Codes	Result	Rept Level	Units	Analysis Date
270	ASTM D 3278-78						
	Flash Point, Pen-Mar		>	200		deg F	08-MAR-10

**MINNESOTA DEPARTMENT OF TRANSPORTATION
USED OIL BURNER SAMPLING
ON-SPEC OIL ANALYSIS**

**District 8
Marshall
Willmar**



**Prepared by:
Minnesota Department of Transportation
Office of Environmental Services
Environmental Modeling and Testing Unit**

March 2010

INTRODUCTION

Enclosed in this report are the results of the sampling of used oil collected at the Minnesota Department of Transportation (MNDOT) District 8 Truck Station facilities. Used oil from vehicles is placed in Lube Cube storage tanks at each of the truck stations. The Lube Cubes are connected to building heaters that burn the used oil for heat recovery.

The sampling of used oil at the District 8 facilities was conducted by personnel from the MNDOT Office of Environmental Services. For additional information, contact Harold Bottolfson at (651) 366-5812. The laboratory analysis was performed by the Minnesota Department of Health.

The results of the laboratory analysis from the samples taken at the District 8 Truck Stations show the burner oil to be within the on spec limits.

Purpose

The purpose of the sampling and analysis is to insure that the used motor oil that is burned in heating units meets MPCA rules for such practices. The oil must meet the following limits to be classified as on-spec:

- Flashpoint 100 degrees Fahrenheit minimum
- Arsenic 5 parts per million (PPM) maximum
- Cadmium 2 PPM maximum
- Chromium 10 PPM maximum
- Lead 100 PPM maximum
- Total Halogens 1000 PPM maximum

Procedures

The oil was sampled from the storage tank with a Coliwasa sampler. The Coliwasa sampler is a 70" long polypropylene tube that is 1" diameter. The sampler has caps at each end that can be opened and closed by using a control rod that runs through the length of the tube. During the sampling, the end caps were opened and the coliwasa was slowly lowered into the tank so that a vertical column sample could be obtained. The sampler was lowered to the top of the sludge layer so that only the oil to be burned would be sampled. The oil from the sampler was placed in a sample bottles provided by the Minnesota Department of Health, which was contracted to analyze the sample. As the sample was released into the bottle, it was carefully observed for any discolorations or changes in the composition of the material. Notes were taken of the procedures during the sampling process.

Laboratory analysis methods for each of the listed parameters are as follows:

PARAMETER	METHOD
Flashpoint	ASTM D 3278-78
Metals	SW 6020
Total Halogens	SW846 9076

Results

The observation notes taken during the sampling are as follows:

Marshall Truck Station

1. The oil removed from the tank with the coliwasa did not show segments or layering.
2. The oil removed did not have any unusual odors and seemed consistent with the look and smell of used oil.
3. The area around the Lube Cube looked well maintained and orderly.
4. The depth of the oil in the tank was 10".
5. There was a layer of sludge at the bottom approximately 3" deep.

Willmar Truck Station

1. The oil removed from the tank with the coliwasa did not show segments or layering.
2. The oil removed did not have any unusual odors and seemed consistent with the look and smell of used oil.
3. The area around the Lube Cube looked well maintained and orderly.
4. The depth of the oil in the tank was approximately 12”.
5. There was a layer of sludge at the bottom approximately 1” deep.

MN/DOT District 8
Used Oil Sampling Laboratory Results
(Values in PPM)

Sample Location	Date	Flashpoint (F)	Arsenic	Cadmium	Chromium	Lead	Total Halogens
Marshall	2/26/2010	>200	<2.0	<2.0	<2.0	4.5	<100
Willmar	11/17/2009	>200	<1.0	<1.0	1.3	5.2	149
On Spec Limits		100 Minimum	5 Maximum	2 Maximum	10 Maximum	100 Maximum	1000 Maximum

***Values in Red are Off Spec**

Willmar Used Oil Container



Marshall Used Oil Container



Minnesota Department of Health
Chain of Custody



Chain of Custody

Minnesota Department of Health
 Environmental Laboratory
 601 Robert St. North
 St. Paul, MN 55155-2531

Page 1 of 1

Lab Use Only:
 Potential Hazard: Yes/No/Unknown (Circle One).
 If Yes please add information to Comments below.

Standard/Civil/Criminal Chain of Custody
 (Circle One)

Sampled By (Print): **Harold Bottalison** Affiliation: _____

Sampler Signature: *Harold Bottalison* Phone: **651-366-5812**

Client/Agency: **MNDOT**
 Project Name: **01 BARNERS MARKS**
 Site ID: _____
 Program Code (2 Letters): **DD**
 Contact Name: **Harold Bottalison**
 Contact Phone #: **651-366-5812**

Matrix Codes:
 DW = Drinking Water
 SW = Surface Water
 GW = Ground Water
 WW = Waste Water
 SD = Soil/Solid
 WP = Wipe
 AR = Air
 TS = Tissue
 OT = Other

Report to: _____
 MDH ID: _____
 Address if Needed: _____

Field ID	Sample Source/Point	Collection Date	Time (24 Hour)	Matrix Code	Containers & Preservatives							Total # of Containers	Samples Field Filtered: Y/N	Requested Analysis:	
					Unpreserved	Hydrochloric Acid	Sulfuric Acid	Nitric Acid	Sodium Hydroxide	Sodium Thiosulfate	Ascorbic Acid				Other
1	Benson	12-21-09	11:08	OT									3		AS, CY, Cd, Pb, TOX, FLUORANT
2	Ortonville	12-21-09	13:00												
3	Alexandria	12-22-09	9:45												
4	Evansville	12-22-09	9:00												
5	Glenwood	12-22-09	10:35												
6	Wilmar	11-17-09	12:30												
7	Forest Lake	12-23-09	12:30												
8															
9															
10															

Sampler Comments: _____

Relinquished By / Affiliation: _____ Date: **12-23-09** Time: **13:40**

Accepted By / Affiliation: *Shelley Ingwell* Date: **12-28-09** Time: **1840**

Chain of Custody

Minnesota Department of Health
Environmental Laboratory
601 Robert St. North
St. Paul, MN 55155-2531

Lab Use Only:

Potential Hazard: Yes No Unknown (Circle One)
(If Yes please add information to Comments below.)

Client/Agency: MNDOT
Project Name: Oil Burner Samples
Site ID: _____
Program Code (2 Letters): DD
Contact Name: Harold Bortolison
Contact Phone: 651-366-5812

Standard/Civil/Criminal Chain of Custody
(Circle One)

Marric Codes:
DW - Drinking Water
SW - Surface Water
GW - Ground Water
WV - Waste Water
SD - Soil/Solid
WP - Wipe
AR - Air
TS - Tissue
OT - Other

Report to: _____
MDH ID: _____
Address if needed: _____

Requested Analysis: _____

Containers & Preservatives

- Unpreserved
- Hydrochloric Acid
- Sulfuric Acid
- Nitric Acid
- Sodium Hydroxide
- Sodium Thiosulfate
- Ascorbic Acid
- Other

Total # of Containers: 3
Samples Field Packed: Y/N

AS, CC, Cd, Pb, Tox, Flash Point

#	Field #	Sample Source/Point	Collection Date	Time (24 Hour)	Mixt Code	Unpreserved	Total # of Containers	Samples Field Packed: Y/N	Requested Analysis
1		Maryland	2-19-10	10:30	OT 3		3		AS, CC, Cd, Pb, Tox, Flash Point
2		Dardsale #1	2-19-10	11:00					
3		Dardsale #2	2-19-10	11:15					
4		ST. PETER	2-25-10	9:30					
5		New UIM	2-25-10	11:30					
6		Windom	2-25-10	14:30					
7		Mears Hall	2-26-10	8:00					
8		APPLETON	2-26-10	11:30					
9									
10									

Sampler Comments:

Relinquished By / Affiliation

(Sampler) Harold Bortolison

Date: 2 Mar 10

Time: 10:33

Accepted By / Affiliation

Lee Browne MDH

Date: 3-2-10

Time: 10:55

**Minnesota Department of Health
Laboratory Results**

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 365936

Date Received: 02-MAR-2010
Date Generated: 23-MAR-2010
Request Page: 13 of 16
Date Reported: 23-MAR-2010

Samples: 201004306 - 201004313

Sample No: 201004312

Receiving Comments: -

Coll Date	Coll Time	Location	Lab Temp	Site Number
26-FEB-2010	0800	-	13	-

Sampling Point and Source Of Sample

MARSHALL

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By LRM on 22-MAR-10

Result

Codes	Result	Rept Level	Units	Analysis Date
-------	--------	------------	-------	---------------

981 Analyses sent to private lab -MDH

Total Halides	< 100	100	mg/kg	08-MAR-10
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Analysis performed by TestAmerica Laboratory.

995 Admin. Consultation -MDH

Consultation Time				22-MAR-10
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See attached report from TestAmerica Laboratory.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
 Program Name: OES
 Request No: 365936

Date Received: 02-MAR-2010
 Date Generated: 23-MAR-2010
 Request Page: 14 of 16

Samples: 201004306 - 201004313

Date Reported: 23-MAR-2010

Sample No: 201004312

Receiving Comments: -

Coll Date	Coll Time	Location	Lab Temp	Site Number
26-FEB-2010	0800	-	13	-

Sampling Point and Source Of Sample

MARSHALL

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By JJB on 23-MAR-10

Result Codes	Result	Rept Level	Units	Analysis Date
111 SW 6020 Arsenic Sed, Total	RC < 2.0	2	ug/g	19-MAR-10 14:45
126 SW 6020 Cadmium Sed, Total	RC < 2.0	2.0	ug/g	19-MAR-10 14:45
134 SW 6020 Chromium Sed, Total	RC < 2.0	2.0	ug/g	19-MAR-10 14:45
161 SW 6020 Lead Sed, Total	RC 4.5	2.0	ug/g	19-MAR-10 14:45

Unit: ORGANIC CHEMISTRY

Reviewed By PDS on 23-MAR-10

Note: Positive Organic Results are indicated by BOLD.

Result Codes	Result	Rept Level	Units	Analysis Date
270 ASTM D 3278-78 Flash Point, Pen-Mar	> 200		deg F	08-MAR-10

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
Program Name: **OES**
Request No: **362948**

Date Received: **23-DEC-2009**
Date Generated: **04-FEB-2010**
Request Page: **11 of 14**

Samples: 200936783 - 200936789

Date Reported: **09-FEB-2010**

Sample No: **200936788**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
17-NOV-2009	1230	-	20	-

Sampling Point and Source Of Sample

WILMAR

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By **LRM** on **09-FEB-10**

	Result Codes	Result	Rept Level	Units	Analysis Date
981 Analyses sent to private lab -MDH Total Halides		149	100	mg/kg	06-JAN-10
Analysis performed by TestAmerica.					
995 Admin. Consultation -MDH Consultation Time					04-FEB-10
See attached report from TestAmerica.					

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **362948**

Date Received: **23-DEC-2009**
 Date Generated: **04-FEB-2010**
 Request Page: **12 of 14**

Samples: 200936783 - 200936789

Date Reported: **09-FEB-2010**

Sample No: **200936788**

Receiving Comments: -

Coll Date	Coll Time	Location	Lab Temp	Site Number
17-NOV-2009	1230	-	20	-

Sampling Point and Source Of Sample

WILMAR

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **09-FEB-10**

111 SW 6020	Arsenic	Sed, Total	RC <	1.0	1	ug/g	21-JAN-10 13:11
126 SW 6020	Cadmium	Sed, Total	RC <	1.0	1.0	ug/g	21-JAN-10 13:11
134 SW 6020	Chromium	Sed, Total	RC	1.3	1.0	ug/g	21-JAN-10 13:11
161 SW 6020	Lead	Sed, Total	RC	5.2	1.0	ug/g	21-JAN-10 13:11

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **05-FEB-10**

Note: Positive Organic Results are indicated by BOLD.

270 ASTM D 3278-78	Flash Point, Pen-Mar	>	200	deg F	31-DEC-09

**MINNESOTA DEPARTMENT OF TRANSPORTATION
USED OIL BURNER SAMPLING
ON-SPEC OIL ANALYSIS**

Metro District

Cedar

Eden Prairie

Forest Lake

Mendota

Plymouth

Maryland

Oakdale



**Prepared by:
Minnesota Department of Transportation
Office of Environmental Services
Environmental Modeling and Testing Unit**

March 2010

INTRODUCTION

Enclosed in this report are the results of the sampling of used oil collected at the Minnesota Department of Transportation (MNDOT) Metro Truck Station facilities. Used oil from vehicles is placed in Lube Cube storage tanks at each of the truck stations. The Lube Cubes are connected to building heaters that burn the used oil for heat recovery.

The sampling of used oil at the Metro District facilities was conducted by personnel from the MNDOT Office of Environmental Services. For additional information, contact Harold Bottolfson at (651) 366-5812. The laboratory analysis was performed by the Minnesota Department of Health.

The results of the laboratory analysis from the samples taken at the Metro District Truck Stations show the burner oil to be within the on spec limits.

Purpose

The purpose of the sampling and analysis is to insure that the used motor oil that is burned in heating units meets MPCA rules for such practices. The oil must meet the following limits to be classified as on-spec:

- Flashpoint >100 degrees Fahrenheit
- Arsenic <5 parts per million (PPM)
- Cadmium <2 PPM
- Chromium <10 PPM
- Lead <100 PPM
- Total Halogens <1000 PPM

Procedures

The oil was sampled from the storage tank with a Coliwasa sampler. The Coliwasa sampler is a 70" long polypropylene tube that is 1" diameter. The sampler has caps at each end that can be opened and closed by using a control rod that runs through the length of the tube. During the sampling, the end caps were opened and the coliwasa was slowly lowered into the tank so that a vertical column sample could be obtained. The sampler was lowered to the top of the sludge layer so that only the oil to be burned would be sampled. The oil from the sampler was placed in a sample bottles provided by the Minnesota Department of Health, which was contracted to analyze the sample. As the sample was released into the bottle, it was carefully observed for any discolorations or changes in the composition of the material. Notes were taken of the procedures during the sampling process.

Laboratory analysis methods for each of the listed parameters are as follows:

PARAMETER	METHOD
Flashpoint	ASTM D 3278-78
Metals	SW 6020
Total Halogens	SW846 9076

Results

Oil Level in the tanks

Cedar	full
Eden Prairie	63" of oil with 2" of sludge
Forest Lake	About 24" of oil
Mendota	30" of oil with no sludge
Plymouth	13" of oil
Maryland	18" of oil
Oakdale #1	18" of oil
Oakdale #2	30" of oil

Eden Prairie Used Oil Container



Forest Lake Used Oil Container



Plymouth Used Oil Container



Maryland Used Oil Container



Oakdale #1 Used Oil Container



Oakdale #2 Used Oil Container



Minnesota Department of Health
Chain of Custody

Chain of Custody

Minnesota Department of Health
Environmental Laboratory
601 Robert St. North
St. Paul, MN 55155-2531

Lab Use Only:
Potential Hazard: Yes/No/Unknown (Circle One)
If Yes please add information to Comments below.

Standard Civil/Criminal Chain of Custody
(Circle One)
(Client One)

Client Agency: MN DOT
Project Name: Truck Station 017 Sandy
Site ID: Eden Prairie & Plymouth
Program Code (2 Letters): DD
Contact Name: Harold Boffelsson
Contact Phone: 651-300-5812

Matrix Codes:
DW - Drinking Water
SW - Surface Water
GW - Ground Water
WW - Waste Water
SI - Soil/Solid
WP - Wipe
AR - Air
TS - Tissue
OT - Other

Report to: _____
MIDH ID: _____
Address if Needed: _____

Sampled By (Print): Harold Boffelsson

Affiliation: _____

Sampler Signature: [Signature]

Phone: 651-300-5812

#	Field ID	Sample Source/point	Collection Date	Time (24 Hour)	Matrix Code	Containers & Preservatives							Total # of Containers	Samples Field Filtered: Y/N	Requested Analysis:	
						Unpreserved	Hydrochloric Acid	Sulfuric Acid	Nitric Acid	Sodium Hydroxide	Sodium Thiosulfate	Ascorbic Acid				Other
1	A	Eden Prairie Oil Burner	10/29/09	11:00	OT									3		As, Cr, Cd, Pb - 10X Flush point Same
2	B	Plymouth Oil Burner	10/28/09	12:00	OT									3		
3																
4																
5																
6																
7																
8																
9																
10																

Sampler Comments:

Retrieved By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
<u>[Signature]</u> / MIDH	10-29-09	10:30	<u>[Signature]</u> / MIDH	10-29-09	10:11
<u>[Signature]</u> / MIDH	10-29-09	10:27	<u>[Signature]</u> / MIDH	10-29-09	10:57

Chain of Custody

Minnesota Department of Health
Environmental Laboratory
601 Robert St. North
St. Paul, MN 55155-2531

Lab Use Only:

Potential Hazard: Yes/No/Unknown (Circle One).
If Yes please add information to Comments below.

Standard/Civil/Criminal Chain of Custody
(Circle One)

Client/Agency MnDOT
Project Name Truck Station Oil Sampling
Site ID MnDOT's Cedar
Program Code (2 Letters) DD
Contact Name Harold & Bottolfsen
Contact Phone # 651-340-5812

Matrix Codes
DW - Drinking Water
SW - Surface Water
GW - Ground Water
WW - Waste Water
SD - Soil/Solid
WP - Wipe
AR - Air
TS - Tissue
OT - Other

Report to _____
MDH ID _____
Address if Needed _____

Sampled By (Print) Harold & Bottolfsen Affiliation TPSTID
Phone _____

Sampler Signature [Signature] 651-340-5812

#	Field ID	Sample Source/Point	Collection Date	Time (24 Hour)	Matrix Code	Containers & Preservatives							Total # of Containers	Sampler Field Filled: Y/N	Requested Analysis:
						Unpreserved	Hydrochloric Acid	Sulfuric Acid	Nitric Acid	Sodium Hydroxide	Sodium Thiosulfate	Ascorbic Acid			
1	A	oil burner	10/25/09	9:00	OT 3								3		refer to analysis form As, Cr, Cd, Pb, TOX - Flashpoint As, Cr, Cd, Pb, TOX - Flashpoint
2	B	oil burner	10/26/09	9:00	OT 3								3		
3															
4															
5															
6															
7															
8															
9															
10															

Sampler Comments: _____

Requisitioned By / Affiliation: [Signature] / MIDH Date: 10-29-09 Time: 10:46

Accepted By / Affiliation: [Signature] / MIDH Date: 10-29-09 Time: 10:46



Chain of Custody

Minnesota Department of Health
 Environmental Laboratory
 601 Robert St. North
 St. Paul, MN 55155-2531

Lab Use Only

Potential Hazard: Yes Unknown (Circle One)
 If Yes please add information to Comments below.

Standard Civil/Criminal Chain of Custody
 (Circle One)

Client/Agency: MWDOT
 Project Name: Oil Boomer Samples
 Site ID: _____
 Program Code (2 Letters): DD
 Contact Name: Harold Bortolison
 Contact Phone # 651-366-5812

Matrix Codes
 DW - Drinking Water
 SW - Surface Water
 GW - Ground Water
 WW - Waste Water
 SD - Soil/Solid
 WP - Wipe
 AR - Air
 TS - Tissue
 OT - Other

Report to: _____
 MDPH ID: _____
 Address if Needed: _____

Sampled By (Print): Harold Bortolison

Affiliation: _____

Sampler Signature: Harold Bortolison

Phone: 651-366-5812

#	Field ID	Sample Source/Point	Collection Date	Time (24 Hour)	Matrix Code	Containers & Preservatives							Total # of Containers	Samples Field Filtered Y/N	Requested Analysis
						Unpreserved	Hydrochloric Acid	Sulfuric Acid	Nitric Acid	Sodium Hydroxide	Sodium Thiosulfate	Ascorbic Acid			
1		Maryland	2-19-10	10:30	OTB								3		AS, Cr, Cd, Pb, Tox, Flash Point
2		Oakdale #1	2-19-10	11:00											
3		Oakdale #2	2-19-10	11:15											
4		St. Peter	2-24-10	9:30											
5		New UIM	2-25-10	11:30											
6		Windom	2-25-10	14:30											
7		Mears Hall	2-26-10	8:00											
8		Appleton	2-26-10	11:30											
9															
10															

Sampler Comments: _____

Requisitioned By / Affiliation: _____

Date: 2 Mar 10

Time: 10:33

Accepted By / Affiliation: Jan Brossmer MDPH

Date: 3-2-10

Time: 10:55

(Sampler) Harold Bortolison

**Minnesota Department of Health
Laboratory Results**

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 360835

Date Received: 29-OCT-2009
Date Generated: 11-DEC-2009
Request Page: 1 of 4

Samples: 200933187 - 200933188

Date Reported: 11-DEC-2009

Sample No: 200933187

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
23-OCT-2009 0900 WENDOTA TRUCK 17 -

Sampling Point and Source Of Sample

USED OIL TANK

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By MLK on 11-DEC-09

Table with 5 columns: Result Codes, Result, Rept Level, Units, Analysis Date. Contains data for 'Total Halides' and 'Consultation Time'.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **360835**

Date Received: **29-OCT-2009**
 Date Generated: **11-DEC-2009**
 Request Page: **2 of 4**

Samples: 200933187 - 200933188

Date Reported: **11-DEC-2009**

Sample No: **200933187**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
23-OCT-2009	0900	MENDOTA TRUCK	17	-

Sampling Point and Source Of Sample

USED OIL TANK

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **10-DEC-09**

	Result Codes	Result	Rept Level	Units	Analysis Date
111 SW 6020					
		Report level was changed due to sample dilution.			
Arsenic Sed, Total	<	0.4	0.4	ug/g	08-DEC-09 15:55
126 SW 6020					
		Report level was changed due to sample dilution.			
Cadmium Sed, Total	<	0.40	0.40	ug/g	08-DEC-09 15:55
134 SW 6020					
		Report level was changed due to sample dilution.			
Chromium Sed, Total		3.6	0.40	ug/g	08-DEC-09 15:55
161 SW 6020					
		Report level was changed due to sample dilution.			
Lead Sed, Total		8.3	0.40	ug/g	08-DEC-09 15:55

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **10-DEC-09**

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
270 ASTM D 3278-78					
Flash Point, Pen-Mar		174		deg F	10-NOV-09

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 360835

Date Received: 29-OCT-2009
Date Generated: 11-DEC-2009
Request Page: 3 of 4

Samples: 200933187 - 200933188

Date Reported: 11-DEC-2009

Sample No: 200933188

Receiving Comments: -

Coll Date Coll Time Location Lab Temp Site Number
26-OCT-2009 0900 CEDAR TRUCK ST 17 -

Sampling Point and Source Of Sample

USED OIL TANK

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By MLK on 11-DEC-09

Table with 5 columns: Result Codes, Result, Rept Level, Units, Analysis Date. Includes rows for 'Total Halides' and 'Consultation Time' with associated values and dates.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **360835**

Date Received: **29-OCT-2009**
 Date Generated: **11-DEC-2009**
 Request Page: **4 of 4**

Samples: 200933187 - 200933188

Date Reported: **11-DEC-2009**

Sample No: **200933188**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
26-OCT-2009	0900	CEDAR TRUCK ST	17	-

Sampling Point and Source Of Sample

USED OIL TANK

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **10-DEC-09**

	Result Codes	Result	Rept Level	Units	Analysis Date
111 SW 6020					
		Report level was changed due to sample dilution.			
Arsenic Sed, Total	<	0.4	0.4	ug/g	08-DEC-09 15:58
126 SW 6020					
		Report level was changed due to sample dilution.			
Cadmium Sed, Total	<	0.40	0.40	ug/g	08-DEC-09 15:58
134 SW 6020					
		Report level was changed due to sample dilution.			
Chromium Sed, Total		4.9	0.40	ug/g	08-DEC-09 15:58
161 SW 6020					
		Report level was changed due to sample dilution.			
Lead Sed, Total		3.2	0.40	ug/g	08-DEC-09 15:58

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **10-DEC-09**

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
270 ASTM D 3278-78					
Flash Point, Pen-Mar	>	200		deg F	10-NOV-09

Result Code Description
RC Report level was changed due to sample dilution.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
Program Name: **OES**
Request No: **360742**

Date Received: **29-OCT-2009**
Date Generated: **11-DEC-2009**
Request Page: **1 of 4**

Samples: 200933189 - 200933190

Date Reported: **11-DEC-2009**

Sample No: **200933189**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
28-OCT-2009	1100	EDEN PRAIRIE 1	17	A

Sampling Point and Source Of Sample

USED OIL TANK

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By **MLK** on **11-DEC-09**

	Result				
	Codes	Result	Rept Level	Units	Analysis Date
981 Analyses sent to private lab -MDH					
Total Halides		183	100	mg/kg	03-NOV-09
See attached report from TestAmerica, Inc.					
995 Admin. Consultation -MDH					
Consultation Time					19-NOV-09
Analysis completed by TestAmerica, Inc.					

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **360742**

Date Received: **29-OCT-2009**
 Date Generated: **11-DEC-2009**
 Request Page: **2 of 4**

Samples: 200933189 - 200933190

Date Reported: **11-DEC-2009**

Sample No: **200933189**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
28-OCT-2009	1100	EDEN PRAIRIE 1	17	A

Sampling Point and Source Of Sample

USED OIL TANK

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **10-DEC-09**

	Result Codes	Result	Rept Level	Units	Analysis Date
111 SW 6020					
		Report level was changed due to sample dilution.			
Arsenic Sed, Total	<	0.4	0.4	ug/g	08-DEC-09 16:01
126 SW 6020					
		Report level was changed due to sample dilution.			
Cadmium Sed, Total	<	0.40	0.40	ug/g	08-DEC-09 16:01
134 SW 6020					
		Report level was changed due to sample dilution.			
Chromium Sed, Total		4.7	0.40	ug/g	08-DEC-09 16:01
161 SW 6020					
		Report level was changed due to sample dilution.			
Lead Sed, Total		14	0.40	ug/g	08-DEC-09 16:01

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **10-DEC-09**

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
270 ASTM D 3278-78					
Flash Point, Pen-Mar	>	200		deg F	10-NOV-09

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
Program Name: **OES**
Request No: **360742**

Date Received: **29-OCT-2009**
Date Generated: **11-DEC-2009**
Request Page: **3 of 4**

Samples: 200933189 - 200933190

Date Reported: **11-DEC-2009**

Sample No: **200933190**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
28-OCT-2009	1200	PLYMOUTH TRK	17	B

Sampling Point and Source Of Sample

USED OIL TANK

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By **MLK** on **11-DEC-09**

	Result Codes	Result	Rept Level	Units	Analysis Date
981 Analyses sent to private lab -MDH					
Total Halides		144	100	mg/kg	03-NOV-09
See attached report from TestAmerica, Inc.					
995 Admin. Consultation -MDH					
Consultation Time					19-NOV-09
Analysis completed by TestAmerica, Inc.					

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **360742**

Date Received: **29-OCT-2009**
 Date Generated: **11-DEC-2009**
 Request Page: **4 of 4**

Samples: 200933189 - 200933190

Date Reported: **11-DEC-2009**

Sample No: **200933190**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
28-OCT-2009	1200	PLYMOUTH TRK	17	B

Sampling Point and Source Of Sample

USED OIL TANK

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **10-DEC-09**

	Result Codes	Result	Rept Level	Units	Analysis Date
111 SW 6020					
		Report level was changed due to sample dilution.			
Arsenic Sed, Total	<	0.4	0.4	ug/g	08-DEC-09 16:05
126 SW 6020					
		Report level was changed due to sample dilution.			
Cadmium Sed, Total	<	0.40	0.40	ug/g	08-DEC-09 16:05
134 SW 6020					
		Report level was changed due to sample dilution.			
Chromium Sed, Total		2.6	0.40	ug/g	08-DEC-09 16:05
161 SW 6020					
		Report level was changed due to sample dilution.			
Lead Sed, Total		7.3	0.40	ug/g	08-DEC-09 16:05

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **10-DEC-09**

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
270 ASTM D 3278-78					
Flash Point, Pen-Mar	>	200		deg F	10-NOV-09

Result Code Description
RC Report level was changed due to sample dilution.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
Program Name: **OES**
Request No: **362948**

Date Received: **23-DEC-2009**
Date Generated: **04-FEB-2010**
Request Page: **13 of 14**

Samples: 200936783 - 200936789

Date Reported: **09-FEB-2010**

Sample No: **200936789**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
23-DEC-2009	1230	-	20	-

Sampling Point and Source Of Sample

FOREST LAKE

***** SAMPLE RESULTS *****

Unit: **ADMINISTRATIVE**

Reviewed By **LRM** on **09-FEB-10**

	Result				
	Codes	Result	Rept Level	Units	Analysis Date
981 Analyses sent to private lab -MDH					
Total Halides		166	100	mg/kg	06-JAN-10
Analysis performed by TestAmerica.					
995 Admin. Consultation -MDH					
Consultation Time					04-FEB-10
See attached report from TestAmerica.					

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **DD**
 Program Name: **OES**
 Request No: **362948**

Date Received: **23-DEC-2009**
 Date Generated: **04-FEB-2010**
 Request Page: **14 of 14**

Samples: 200936783 - 200936789

Date Reported: **09-FEB-2010**

Sample No: **200936789**

Receiving Comments: -

<u>Coll Date</u>	<u>Coll Time</u>	<u>Location</u>	<u>Lab Temp</u>	<u>Site Number</u>
23-DEC-2009	1230	-	20	-

Sampling Point and Source Of Sample

FOREST LAKE

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By **JJB** on **09-FEB-10**

		Result				
		Codes	Result	Rept Level	Units	Analysis Date
111	SW 6020					
	Arsenic Sed, Total	RC <	1.0	1	ug/g	21-JAN-10 13:27
126	SW 6020					
	Cadmium Sed, Total	RC <	1.0	1.0	ug/g	21-JAN-10 13:27
134	SW 6020					
	Chromium Sed, Total	RC	2.5	1.0	ug/g	21-JAN-10 13:27
161	SW 6020					
	Lead Sed, Total	RC	10	1.0	ug/g	21-JAN-10 13:27

Unit: ORGANIC CHEMISTRY

Reviewed By **PDS** on **05-FEB-10**

Note: Positive Organic Results are indicated by BOLD.

		Result				
		Codes	Result	Rept Level	Units	Analysis Date
270	ASTM D 3278-78					
	Flash Point, Pen-Mar		> 200		deg F	31-DEC-09

Result Code Description
ND Not Detected
RC Report level was changed due to sample dilution.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 365936

Date Received: 02-MAR-2010
Date Generated: 23-MAR-2010
Request Page: 1 of 16

Samples: 201004306 - 201004313

Date Reported: 23-MAR-2010

Sample No: 201004306

Receiving Comments: -

Coll Date	Coll Time	Location	Lab Temp	Site Number
19-FEB-2010	1030	-	13	-

Sampling Point and Source Of Sample

MARYLAND

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE Reviewed By LRM on 22-MAR-10

	Result Codes	Result	Rept Level	Units	Analysis Date
981 Analyses sent to private lab -MDH					
Total Halides		127	100	mg/kg	08-MAR-10
Analysis performed by TestAmerica Laboratory.					
995 Admin. Consultation -MDH					
Consultation Time					22-MAR-10
See attached report from TestAmerica Laboratory.					

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
 Program Name: OES
 Request No: 365936

Date Received: 02-MAR-2010
 Date Generated: 23-MAR-2010
 Request Page: 2 of 16

Samples: 201004306 - 201004313

Date Reported: 23-MAR-2010

Sample No: 201004306

Receiving Comments: -

Coll Date	Coll Time	Location	Lab Temp	Site Number
19-FEB-2010	1030	-	13	-

Sampling Point and Source Of Sample

MARYLAND

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By JJB on 23-MAR-10

		Result				
		Codes	Result	Rept Level	Units	Analysis Date
111	SW 6020					
	Arsenic	Sed, Total	RC < 2.0	2	ug/g	19-MAR-10 14:26
126	SW 6020					
	Cadmium	Sed, Total	RC < 2.0	2.0	ug/g	19-MAR-10 14:26
134	SW 6020					
	Chromium	Sed, Total	RC < 2.0	2.0	ug/g	19-MAR-10 14:26
161	SW 6020					
	Lead	Sed, Total	RC 11	2.0	ug/g	19-MAR-10 14:26

Unit: ORGANIC CHEMISTRY

Reviewed By PDS on 23-MAR-10

Note: Positive Organic Results are indicated by BOLD.

		Result				
		Codes	Result	Rept Level	Units	Analysis Date
270	ASTM D 3278-78					
	Flash Point, Pen-Mar		155		deg F	08-MAR-10

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 365936

Date Received: 02-MAR-2010
Date Generated: 23-MAR-2010
Request Page: 3 of 16
Date Reported: 23-MAR-2010

Samples: 201004306 - 201004313

Sample No: 201004307

Receiving Comments: -

Coll Date	Coll Time	Location	Lab Temp	Site Number
19-FEB-2010	1100	-	13	-

Sampling Point and Source Of Sample

OAKDALE #1

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By LRM on 22-MAR-10

Result

Codes	Result	Rept Level	Units	Analysis Date
-------	--------	------------	-------	---------------

981 Analyses sent to private lab -MDH

Total Halides	375	100	mg/kg	08-MAR-10
---------------	-----	-----	-------	-----------

Analysis performed by TestAmerica Laboratory.

995 Admin. Consultation -MDH

Consultation Time				22-MAR-10
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See attached report from TestAmerica Laboratory.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
 Program Name: OES
 Request No: 365936

Date Received: 02-MAR-2010
 Date Generated: 23-MAR-2010
 Request Page: 4 of 16

Samples: 201004306 - 201004313

Date Reported: 23-MAR-2010

Sample No: 201004307

Receiving Comments: -

Coll Date	Coll Time	Location	Lab Temp	Site Number
19-FEB-2010	1100	-	13	-

Sampling Point and Source Of Sample

OAKDALE #1

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By JJB on 23-MAR-10

111	SW 6020	Arsenic	Sed, Total	RC <	2.0	2	ug/g	19-MAR-10 14:29
126	SW 6020	Cadmium	Sed, Total	RC <	2.0	2.0	ug/g	19-MAR-10 14:29
134	SW 6020	Chromium	Sed, Total	RC <	2.0	2.0	ug/g	19-MAR-10 14:29
161	SW 6020	Lead	Sed, Total	RC	8.0	2.0	ug/g	19-MAR-10 14:29

Unit: ORGANIC CHEMISTRY

Reviewed By PDS on 23-MAR-10

Note: Positive Organic Results are indicated by BOLD.

270	ASTM D 3278-78	Flash Point, Pen-Mar	177	deg F	08-MAR-10
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Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
Program Name: OES
Request No: 365936

Date Received: 02-MAR-2010
Date Generated: 23-MAR-2010
Request Page: 5 of 16

Samples: 201004306 - 201004313

Date Reported: 23-MAR-2010

Sample No: 201004308

Receiving Comments: -

Coll Date	Coll Time	Location	Lab Temp	Site Number
19-FEB-2010	1115	-	13	-

Sampling Point and Source Of Sample

OAKDALE #2

***** SAMPLE RESULTS *****

Unit: ADMINISTRATIVE

Reviewed By LRM on 22-MAR-10

Result

Codes	Result	Rept Level	Units	Analysis Date
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981 Analyses sent to private lab -MDH

Total Halides	359	100	mg/kg	08-MAR-10
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Analysis performed by TestAmerica Laboratory.

995 Admin. Consultation -MDH

Consultation Time				22-MAR-10
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See attached report from TestAmerica Laboratory.

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: DD
 Program Name: OES
 Request No: 365936

Date Received: 02-MAR-2010
 Date Generated: 23-MAR-2010
 Request Page: 6 of 16

Samples: 201004306 - 201004313

Date Reported: 23-MAR-2010

Sample No: 201004308

Receiving Comments: -

Coll Date	Coll Time	Location	Lab Temp	Site Number
19-FEB-2010	1115	-	13	-

Sampling Point and Source Of Sample

OAKDALE #2

***** SAMPLE RESULTS *****

Unit: METALS

Reviewed By JJB on 23-MAR-10

ID	Description	Result Codes	Result	Rept Level	Units	Analysis Date
111	SW 6020 Arsenic Sed, Total	RC <	2.0	2	ug/g	19-MAR-10 14:32
126	SW 6020 Cadmium Sed, Total	RC <	2.0	2.0	ug/g	19-MAR-10 14:32
134	SW 6020 Chromium Sed, Total	RC <	2.0	2.0	ug/g	19-MAR-10 14:32
161	SW 6020 Lead Sed, Total	RC	6.6	2.0	ug/g	19-MAR-10 14:32

Unit: ORGANIC CHEMISTRY

Reviewed By PDS on 23-MAR-10

Note: Positive Organic Results are indicated by BOLD.

ID	Description	Result Codes	Result	Rept Level	Units	Analysis Date
270	ASTM D 3278-78 Flash Point, Pen-Mar		> 200		deg F	08-MAR-10