HARRISON

Harrison Division
General Motors Corporation
200 Upper Mountain Road
Lockport, New York 14094

08-Jul-93

Mr. Stan Radon
New York State Department of Environmental Conservation
270 Michigan Avenue
Buffalo, New York 14203

Dear Mr. Radon:

Enclosed is the quarterly groundwater monitoring report for June 1993. The report form indicates the sample date, the groundwater elevations, and the as-analyzed concentration of certain parameters.

Sample collection and on-site analyses for pH, specific conductance, and temperature were performed by GZA GeoEnvironmental of New York. All other analyses were by Free-Col Laboratories, Inc. in Meadville, Pennsylvania.

If you have any questions regarding this or subsequent monitoring reports, please contact Cathy Ver at 439-2942.

Sincerely,

R. D. Knapp
Supervisor -
Environmental Activities

cc: Mr. P. Counterman - NYSDEC, Albany
Mr. J. DeVald - NCHD

QUARTERLY GROUNDWATER MONITORING REPORT

HARRISON DIVISION, GMC
LOCKPORT, NY 14094

SAMPLE DATE: 02-Jun-93

REPORT DATE: 08-Jul-93

BEDROCK WELL ID #	I-1R	I-2R	I-3R	I-4R	I-5R	I-6R	I-7R	TRIP BLANK
Water Elev, (feet)	623.2	623.4	616.1	612.3	612.3	611.6	611.2	N.A.
Specific Cond. (uMHOS/cm)	670	580	970	1460	620	780	770	N.A.
pH (standard units)	8.2	8.5	7.7	7.5	7.6	8.1	8.4	N.A.
Temperature (degree C)	12	16	12	12	14	12	12	N.A.
Cadmium, Total	0.0034	0.0037	0.0016	0.0014	0.0009	0.0002	<0.0001	<0.0001
Chromium, Total	0.003	0.005	<0.001	0.003	0.001	0.033	0.001	0.001
Copper, Total	0.015	0.010	0.012	0.007	0.004	0.008	0.003	0.005
Lead, Total	0.008	0.002	0.002	0.002	0.001	0.002	0.002	<0.001
Zinc, Total	0.410	0.028	0.016	0.052	0.029	0.277	0.020	<0.005

							% MATRIX RECOVERY	
TOP OF ROCK WELL ID #	I-1T	I-2T	I-3T	I-4T	I-5T	I-7T	SPIKE I-4R	DUPLICATE I-4R
Water Elev, (feet)	623.3	622.9	616.1	613.4	612.5	611.3	N.A.	N.A.
Specific Cond. (uMHOS/cm)	830	780	980	1800	2730	790	N.A.	N.A.
pH (standard units)	8.1	7.8	7.6	7.3	7.4	8.4	N.A.	N.A.
Temperature (degree C)	14	17	14	13	15	12	N.A.	N.A.
Cadmium, Total	0.0006	0.0003	0.0018	0.0016	0.0017	0.0003	78	80
Chromium, Total	0.001	<0.001	0.001	0.002	0.004	0.002	96	91
Copper, Total	0.009	0.015	0.007	0.007	0.010	0.011	104	103
Lead, Total	0.010	0.003	0.001	0.001	0.002	0.004	87	87
Zinc, Total	0.028	0.027	0.026	0.092	0.097	0.044	101	108

OBSERVATION WELL ID #	II-AR	II-AT	II-BT	II-CT	II-DR	II-DT
Water Elev, (feet)	614.9	616.7	617.7	613.3	615.7	615.2

NOTES:

1) Groundwater elevation expressed in feet above mean sea level.
2) Specific conductance expressed in uMHOS/cm at 25 degrees C.
3) Metals expressed in mg/L.
4) < Denotes concentration as analyzed was below detection limit.
5) Monitoring at Wells II-AR, II-AT, II-BT, II-CT, II-DR, and II-DT is for water elevation only.
6) * Denotes erratic spike dulicate results. See lab report.

FREE-COL LABORATORIES, INC.
P.O. Box 557, Cotton Road
Meadville, Pennsylvania 16335-0557
Phone: Area Code 814/724-6242
FAX: Area Code 814/333-1466

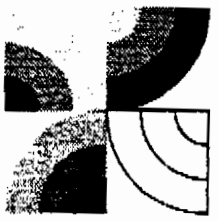
ENVIRONMENTAL
OCCUPATIONAL HEALTH
FOOD SCIENCE
SPECIALISTS

HARRISON DIVISION
GENERAL MOTORS CORPORATION

ROAD 7 QUARTERLY SAMPLING

SAMPLE DATE: 06/02/93
P.O.# H-55864

FREE-COL LABORATORIES, INC.
P.O. Box 557, Cotton Road
Meadville, Pennsylvania 16335-0557
Phone: Area Code 814/724-6242
FAX: Area Code 814/333-1466



ENVIRONMENTAL
OCCUPATIONAL HEALTH
FOOD SCIENCE
SPECIALISTS

July 8, 1993

Ms. Catherine Ver
Harrison Division
General Motors Corporation
200 Upper Mountain Road
Lockport, NY 14094

Dear Ms. Ver:

The purpose of this letter is to provide follow-up information to the correspondence of June 16, 1993, to Mr. Roy Knapp concerning the copper trip blank.

The trip blank was reanalyzed. The digested and undigested bottles were assayed for copper. The undigested trip blank bottle yielded an acceptable result of 0.001 mg/L. The digested trip blank yielded a value of 0.004 mg/L.

Subsequent analyses of blanks from the 500 ml and 1000 ml bottles were assayed for copper. In addition, the laboratory maintains a "System Blank" check performed quarterly for all bottles used for sampling encompassing all of the parameters associated with the sample containers. The results have returned and are at or below the copper detection limit of 0.001 mg/L.

It is evident that the contamination occurred at some point after the trip blank was returned to the laboratory. We have not encountered this problem before or after this one incident and do not anticipate it occurring in the future. We believe the contamination was isolated to the digested trip blank sample and does not reflect nor indicate a discrepancy pertaining to the values of the associated samples.

We have given this matter much consideration. This follow-up correspondence was delayed only due to the time required to collect and compile the data necessary for the review.

It is our pleasure to conduct such investigations. It benefits the laboratory as well as our client. We look forward to servicing your company on future sampling events.

Should you have additional questions, please do not hesitate to contact me directly at the laboratory.

Sincerely,

Diane Alexatos Tracy
QA/QC Supervisor

FREE-COL LABORATORIES, INC.
PO Box 557, Cotton Road
Meadville, Pennsylvania 16335-0557
Phone: Area Code 814/724-6242
FAX: Area Code 814/333-1466

ENVIRONMENTAL
OCCUPATIONAL HEALTH
FOOD SCIENCE
SPECIALISTS

June 16, 1993

Mr. Roy Knapp
Harrison Division
General Motors Corporation
200 Upper Mountain Road
Lockport, NY 14094

Dear Mr. Knapp:

Enclosed please find the report dated 6/16/93. Please note the copper trip blank, sample number 30603451, page 3, yielded a result of 0.005 mg/L. The allowed value over the detection limit for the trip blank for this parameter is 0.003 mg/L.

We believe this contamination is isolated to the trip blank bottle and not an indication of contamination from the sampling technique or the digestion. The digested blank, sample number 30603458, page 2 of the quality control, yielded a value of <0.001 mg/L.

A follow-up on the copper trip blank is being performed at the laboratory. Our review will include reanalysis of the digested and undigested trip blank bottle. We will inform you of the results within the next week.

Should you have any questions, please do not hesitate to contact me.

Sincerely,

Diane Alexatos Tracy
QA/QC Supervisor

ase Narrative

1. The following metals did not meet the QC limits established for a single spike recovery (90-110%), matrix interference is suspected. Subsequently, the sample was analyzed by a four-point method of Standard Additions. The parameters affected are coded with an "S".

   Metals: Lead G.F.
   Copper G.F.

2. This complete report is nine pages.

1ETHODS

PARAMETER	METHOD	SOURCE
Acid Digestion Preparation	3005A	2
Zinc	7950	2
Cadmium (flameless)	7131	2
Chromium (flameless)	7191	2
Copper (flameless)	7211	2
Lead (flameless)	7421	2

SOURCE

2 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", SW-846, Third Edition, U.S. Environmental Protection Agency. Revised 1986.

FREE-COL LABORATORIES, INC.

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5815 AIRPORT ROAD
ROANOKE, VIRGINIA 24012
PHONE: (703) 265-2544
FAX: (703) 362-1663

06/14/93

TO: HARRISON DIVISION GMC
ATTN: MR. ROY KNAPP
200 UPPER MOUNTAIN RD.
LOCKPORT NY 14094

P.O. # H-55864

ACCOUNT NO. 01220

ANALYTICAL REPORT FORM

LAB ID	SAMPLE ID			PARAMETER	RESULT
30603424	HR-060293	I-1T	06/02/93	ACID DIGESTION PREP	COMPLETE
30603425	HR-060293	I-1R	06/02/93	ACID DIGESTION PREP	COMPLETE
30603426	HR-060293	I-2T	06/02/93	ACID DIGESTION PREP	COMPLETE
30603427	HR-060293	I-2R	06/02/93	ACID DIGESTION PREP	COMPLETE
30603428	HR-060293	I-3T	06/02/93	ACID DIGESTION PREP	COMPLETE
30603429	HR-060293	I-3R	06/02/93	ACID DIGESTION PREP	COMPLETE
30603430	HR-060293	I-4T	06/02/93	ACID DIGESTION PREP	COMPLETE
30603431	HR-060293	I-4R	06/02/93	ACID DIGESTION PREP	COMPLETE
30603432	HR-060293	I-5T	06/02/93	ACID DIGESTION PREP	COMPLETE
30603433	HR-060293	I-5R	06/02/93	ACID DIGESTION PREP	COMPLETE
30603434	HR-060293	I-6R	06/02/93	ACID DIGESTION PREP	COMPLETE
30603435	HR-060293	I-7T	06/02/93	ACID DIGESTION PREP	COMPLETE
30603436	HR-060293	I-7R	06/02/93	ACID DIGESTION PREP	COMPLETE
30603437	TRIP BLANK	06/02/93		ACID DIGESTION PREP	COMPLETE

DATE AND	ANALYST
06/04/93	CONLEY

FREE-COL LABORATORIES, INC.

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06/14/93

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LOCKPORT NY 14094

P.O. # H-55864

ACCOUNT NO. 01220

ANALYTICAL REPORT FORM

PARAMETER	SAMPLE ID / LAB ID / DATE RECEIVED:	HR-060293 I-1T 6/2 DIGESTION 30603438 06/03/93	HR-060293 I-1R 6/2 DIGESTION 30603439 06/03/93	HR-060293 I-2T 6/2 DIGESTION 30603440 06/03/93	HR-060293 I-2R 6/2 DIGESTION 30603441 06/03/93
ZINC MG/L		0.028	0.410	0.027	0.028
CADMIUM G.F. MG/L		0.0006	0.0034	0.0003	0.0037
CHROMIUM-G.F. MG/L		0.001	0.003	<0.001	0.005
COPPER-G.F. MG/L		0.009	0.015	0.015	0.010
LEAD G.F. MG/L		0.010	0.008	0.003	0.002

Please reference the following page(s) for date and analyst.

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06/14/93

TO: HARRISON DIVISION GMC
ATTN: MR. ROY KNAPP
200 UPPER MOUNTAIN RD.
LOCKPORT NY 14094

P.O. # H-55864

ACCOUNT NO. 01220

ANALYTICAL REPORT FORM

PARAMETER	SAMPLE ID / LAB ID / DATE RECEIVED:	HR-060293 I-3T 6/2 DIGESTION 30603442 06/03/93	HR-060293 I-3R DIGESTION 30603443 06/03/93	HR-060293 I-4T DIGESTION 30603444 06/03/93
ZINC MG/L		0.026	0.016	0.092
CADMIUM G.F. MG/L		0.0018	0.0016	0.0016
CHROMIUM-G.F. MG/L		0.001	<0.001	0.002
COPPER-G.F. MG/L		0.007	0.012	0.007 S
LEAD G.F. MG/L		0.001	0.002	0.001

Please reference the following page(s) for date and analyst.

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06/14/93

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P.O. # H-55864

ACCOUNT NO. 01220

ANALYTICAL REPORT FORM

PARAMETER	SAMPLE ID / LAB ID / DATE RECEIVED:	HR-060293 I-4R DIGESTION 30603445 06/03/93	HR-060293 I-5T DIGESTION 30603446 06/03/93	HR-060293 I-5R DIGESTION 30603447 06/03/93
ZINC MG/L		0.052	0.097	0.029
CADMIUM G.F. MG/L		0.0014	0.0017	0.0009
CHROMIUM-G.F. MG/L		0.003	0.004	0.001
COPPER-G.F. MG/L		0.007	0.010	0.004
LEAD G.F. MG/L		0.002	0.002 S	0.001

Please reference the following page(s) for date and analyst.

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06/14/93

TO: HARRISON DIVISION GMC
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200 UPPER MOUNTAIN RD.
LOCKPORT NY 14094

P.O. # H-55864

ACCOUNT NO. 01220

ANALYTICAL REPORT FORM

PARAMETER	SAMPLE ID / LAB ID / DATE RECEIVED:	HR-060293 I-6R DIGESTION 30603448 06/03/93	HR-060293 I-7T DIGESTION 30603449 06/03/93	HR-060293 I-7R DIGESTION 30603450 06/03/93
ZINC MG/L		0.277	0.044	0.020
CADMIUM G.F. MG/L		0.0002	0.0003	<0.0001
CHROMIUM-G.F. MG/L		0.033	0.002	0.001
COPPER-G.F. MG/L		0.008	0.011	0.003
LEAD G.F. MG/L		0.002	0.004	0.002

Please reference the following page(s) for date and analyst.

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06/16/93

TO: HARRISON DIVISION GMC
ATTN: MR. ROY KNAPP
200 UPPER MOUNTAIN RD.
LOCKPORT NY 14094

P.O. # H-55864

ACCOUNT NO. 01220

ANALYTICAL REPORT FORM

SAMPLE ID : TRIP BLANK
06/02/93
DIGESTION
LAB ID 30603451
DATE RECEIVED: 06/03/93

PARAMETER	RESULTS	UNITS	DATE AND	ANALYST
Zinc	<0.005	MG/L	06/16/93	PRUTZMAN
Cadmium (flameless)	<0.0001	MG/L	06/10/93	BAKER
Chromium (flameless)	0.001	MG/L	06/09/93	BAKER/ LIM
Copper (flameless)	0.005	MG/L	06/07/93	LIM/ BAKER
Lead (flameless)	<0.001	MG/L	06/04/93	LIM/ BAKER

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06/14/93

TO: HARRISON DIVISION GMC
ATTN: MR. ROY KNAPP
200 UPPER MOUNTAIN RD.
LOCKPORT NY 14094-1896

P.O. # H-55864

ACCOUNT NO. 01220

ANALYTICAL REPORT FORM

LAB ID	SAMPLE ID			PARAMETER	RESULT
30603452	MATRIX SPK	I-4R	% RECOVERY	ACID DIGESTION PREP	COMPLETE
30603453	MATRIX DUP	I-4R	% RECOVERY	ACID DIGESTION PREP	COMPLETE

DATE AND ANALYST
06/04/93 CONLEY

FREE-COL LABORATORIES, INC.

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PHONE: (703) 265-2544
FAX: (703) 362-1663

06/14/93

TO: HARRISON DIVISION GMC
ATTN: MR. ROY KNAPP
200 UPPER MOUNTAIN RD.
LOCKPORT NY 14094-1896

P.O. # H-55864

ACCOUNT NO. 01220

ANALYTICAL REPORT FORM

SAMPLE ID : MATRIX SPK
I-4R
DIGEST AS%
LAB ID 30603454
DATE RECEIVED: 06/03/93

PARAMETER	RESULTS	UNITS	DATE AND	ANALYST
Zinc	101	%	06/07/93	PRUTZMAN
Cadmium (flameless)	78	%	06/10/93	BAKER
Chromium (flameless)	96	%	06/09/93	BAKER/ LIM
Copper (flameless)	104	%	06/07/93	LIM/ BAKER
Lead (flameless)	87	%	06/04/93	LIM/ BAKER

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06/14/93

TO: HARRISON DIVISION GMC
ATTN: MR. ROY KNAPP
200 UPPER MOUNTAIN RD.
LOCKPORT NY 14094-1896

P.O. # H-55864

ACCOUNT NO. 01220

ANALYTICAL REPORT FORM

SAMPLE ID : MATRIX DUP
I-4R
DIGEST AS%
LAB ID 30603455
DATE RECEIVED: 06/03/93

PARAMETER	RESULTS	UNITS	DATE AND	ANALYST
Zinc	108	%	06/07/93	PRUTZMAN
Cadmium (flameless)	80	%	06/10/93	BAKER
Chromium (flameless)	91	%	06/09/93	BAKER/ LIM
Copper (flameless)	103	%	06/07/93	LIM/ BAKER
Lead (flameless)	87	%	06/04/93	LIM/ BAKER

Andrew K. Ecklund
ASST. LABORATORY DIRECTOR

pc: Steve Blair - GZA

FREE-COL LABORATORIES, INC.

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J. RICHARD WOHLER, Ph.D.
LABORATORY DIRECTOR
MEADVILLE, PENNSYLVANIA

KENNETH G. HART
LABORATORY DIRECTOR
ROANOKE, VIRGINIA

TO:

ANALYTICAL REPORT FORM

CODE B: This analyte was detected in the associated blank as well as in the sample. It indicates possible/probable contamination. The data user may subtract the blank value from the sample value at his/her discretion.

CODE D: Detection limit change due to a dilution.

CODE R: The percent recovery on the spike sample associated with this sample was not within the acceptance limits of 75 - 125 percent.

CODE S: This result was obtained by Method of Standard Additions.

CODE NA: Not Applicable

CODE ND: Not Detectable

PRC: Preparation Reference Control

VOID: The sample plus spike concentration exceeded the linear range of the standard curve.

CODE Q: Values for parameters quantified in this sample have been adjusted for recoveries of the analytical matrix spike. The adjustments have been based on the matrix recoveries from this sample. Adjusted values are not given where sample values were less than the detection limit or where spike recoveries are equal to 100 percent.

CODE J: This result is an estimated value. It indicates that the compound meets the mass spectral data identification criteria. The result is less than the quantitation limit but greater than zero.

ENVIRONMENTAL SAMPLE DESCRIPTION
AND
CHAIN OF CUSTODY RECORD

ATTACHMENT #2

E DATE: 6/2/93

RESULTS REQUIRED BY: _____

VERBAL RESULTS NEEDED? _____

LABORATORY: Free-Col

HARRISON DIVISION, GMC
200 UPPER MOUNTAIN ROAD
LOCKPORT, NEW YORK 14094
PHONE: (716) ~~439~~ - 685-2300 (ex
CONTACT: Steve Blair

E TYPE: (CIRCLE)
1) WASTEWATER 2) DRINKING WATER (3) MONITORING WELL 4) SOIL
5) SLUDGE 6) SOLID WASTE 7) OIL 8) INDUSTRIAL HYGIENE
9) OTHER _____

E DESCRIPTION: Road 7 Quarterly Monitoring Program

AMPLE #	LOCATION	TIME	PARAMETERS	SAMPLE BOTTLE LOT # (OPTIONAL)
-060293-	I-1T	10 45	Cadmium, Chromium, Copper, Lead & Zinc	
	" -I-1R	11 00	"	
	" -I-2T	12 05	"	
	" -I-2R	12 15	"	
	" -I-3T	13 00	"	
	" -I-3R	13 10	"	
	" -I-4T	12 30	"	
	" -I-4R	12 45	"	

IMUM DETECTION LEVELS REQUIRED? _____

SSIBLE INTERFERENCES: _____

ASON FOR TEST (COMPARISON OF AREAS, BACKGROUND, ETC.) _____

Relinquished Cooler Temp 2°C

OTTLES ~~RECEIVED~~ BY: (DATE/TIME) [HRD PERSONNEL]	BOTTLES RELINQUISHED BY: (DATE/TIME) [HRD PERSONNEL]
Stephen Winn 6/3/93 10 15	
LES RELINQUISHED BY: (DATE/TIME) [HRD PERSONNEL]	BOTTLES RECEIVED BY: (DATE/TIME) [LAB PERSONNEL]
	W. F Slots 6-3-93 10 15
SAMPLE COLLECTED BY:	RECEIVED BY: [DATE, TIME, LAB SIGNATURE] Darlene K. Swogger 6-3-93 1500

ENVIRONMENTAL SAMPLE DESCRIPTION
AND
CHAIN OF CUSTODY RECORD

ATTACHMENT #2

LE DATE: 6/2/93

RESULTS REQUIRED BY: _____
VERBAL RESULTS NEEDED? _____

LABORATORY: Free Col

HARRISON DIVISION, GMC
200 UPPER MOUNTAIN ROAD
LOCKPORT, NEW YORK 14094
PHONE: (716) ~~439~~ 685-2300
CONTACT: Steve Blair

LE TYPE: (CIRCLE)
1) WASTEWATER 2) DRINKING WATER (3) MONITORING WELL 4) SOIL
5) SLUDGE 6) SOLID WASTE 7) OIL 8) INDUSTRIAL HYGIENE
9) OTHER _____

LE DESCRIPTION: Road 7 Quarterly Monitoring Program

AMPLE #	LOCATION	TIME	PARAMETERS	SAMPLE BOTTLE LOT # (OPTIONAL)
HR-060293	-I-5T	13^{20}	Cadmium, chromium, copper, lead & zinc	
	"-I-5R	13^{30}	"	
	"-I-6R	14^{10}	"	
	"-I-7T	13^{45}	"	
	"-I-7R	14^{00}	"	
	Trip Blank			

IIMUM DETECTION LEVELS REQUIRED? _____

SSIBLE INTERFERENCES: _____

ASON FOR TEST (COMPARISON OF AREAS, BACKGROUND, ETC.) _____

Relinquished Cooler Temp 2°C

BOTTLES RECEIVED BY: (DATE/TIME) [HRD PERSONNEL]	BOTTLES RELINQUISHED BY: (DATE/TIME) [HRD PERSONNEL]
[illegible] 6/3/93 10[15]	
ES RELINQUISHED BY: (DATE/TIME) [HRD PERSONNEL]	BOTTLES RECEIVED BY: (DATE/TIME) [LAB PERSONNEL]
	Wm F Slot 6-3-93 10[15]
SAMPLE COLLECTED BY:	RECEIVED BY: [DATE, TIME, LAB SIGNATURE]
	Darlene K. Swogger 6-3-93 1900

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ENVIRONMENTAL
OCCUPATIONAL HEALTH
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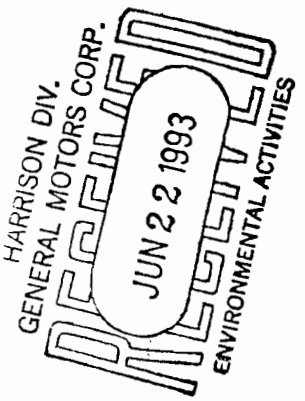
SPECIALISTS

QUALITY CONTROL INFORMATION

Free-Col Laboratories analyzes control samples at specified frequencies during the analysis of samples submitted by clients in order to evaluate and document the precision and accuracy of the results which are reported. The attached quality control data records, prepared by the analytical staff at the time of analysis, show the results obtained for different types of control samples during the analysis of the batch of samples described as follows:

General Motors Sample Identification	Free-Col ID
HR-060293 I-1T 06/02/93	30603424
HR-060293 I-1R 06/02/93	30603425
HR-060293 I-2T 06/02/93	30603426
HR-060293 I-2R 06/02/93	30603427
HR-060293 I-3T 06/02/93	30603428
HR-060293 I-3R 06/02/93	30603429
HR-060293 I-4T 06/02/93	30603430
HR-060293 I-4R 06/02/93	30603431
HR-060293 I-5T 06/02/93	30603432
HR-060293 I-5R 06/02/93	30603433
HR-060293 I-6R 06/02/93	30603434
HR-060293 I-7T 06/02/93	30603435
HR-060293 I-7R 06/02/93	30603436
TRIP BLANK 06/02/93	30603437
HR-060293 I-1T 6/2 DIGESTION	30603438
HR-060293 I-1R 6/2 DIGESTION	30603439
HR-060293 I-2T 6/2 DIGESTION	30603440
HR-060293 I-2R 6/2 DIGESTION	30603441
HR-060293 I-3T 6/2 DIGESTION	30603442
HR-060293 I-3R DIGESTION	30603443
HR-060293 I-4T DIGESTION	30603444
HR-060293 I-4R DIGESTION	30603445
HR-060293 I-5T DIGESTION	30603446
HR-060293 I-5R DIGESTION	30603447
HR-060293 I-6R DIGESTION	30603448
HR-060293 I-7T DIGESTION	30603449
HR-060293 I-7R DIGESTION	30603450
TRIP BLANK 06/02/93 DIGESTION	30603451



FREE-COL LABORATORIES, INC.

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PHONE: (814) 724-6242
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PHONE: (703) 265-2544
FAX: (703) 362-1663

06/14/93

TO: FREE-COL LABORATORIES

P.O. BOX 557, COTTON RD.
MEADVILLE PA 16335-0557

P.O. #

ACCOUNT NO. 1

ANALYTICAL REPORT FORM

LAB ID	SAMPLE ID	PARAMETER	RESULT
30603456	BLANK	ACID DIGESTION PREP	COMPLETE
30603457	PRC%	ACID DIGESTION PREP	COMPLETE

DATE AND ANALYST
06/04/93 CONLEY

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06/16/93

TO: FREE-COL LABORATORIES

P.O. #

P.O. BOX 557, COTTON RD.
MEADVILLE PA 16335-0557

ACCOUNT NO. 1

ANALYTICAL REPORT FORM

SAMPLE ID : BLANK
DIGESTION

LAB ID 30603458
DATE RECEIVED: 06/03/93

PARAMETER	RESULTS	UNITS	DATE AND	ANALYST
Zinc	0.007	MG/L	06/16/93	PRUTZMAN
Cadmium (flameless)	<0.0001	MG/L	06/10/93	BAKER
Chromium (flameless)	<0.001	MG/L	06/09/93	BAKER/ LIM
Copper (flameless)	<0.001	MG/L	06/07/93	LIM/ BAKER
Lead (flameless)	<0.001	MG/L	06/04/93	LIM/ BAKER

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06/14/93

TO: FREE-COL LABORATORIES

P.O. BOX 557, COTTON RD.
MEADVILLE PA 16335-0557

P.O. #

ACCOUNT NO. 1

ANALYTICAL REPORT FORM

SAMPLE ID : PRC%
DIGESTION

LAB ID 30603459
DATE RECEIVED: 06/03/93

PARAMETER	RESULTS	UNITS	DATE AND	ANALYST
Zinc	101	%	06/07/93	PRUTZMAN
Cadmium (flameless)	110	%	06/10/93	BAKER
Chromium (flameless)	94	%	06/09/93	BAKER/ LIM
Copper (flameless)	89	%	06/07/93	LIM/ BAKER
Lead (flameless)	93	%	06/04/93	LIM/ BAKER

Andrew K. Ecklund
ASST. LABORATORY DIRECTOR

Form II

INITIAL AND CONTINUING CALIBRATION VERIFICATION

LAB NAME Free-Col Labs
SAMPLE BATCH: LAB ID 306-03-424\459

Units: mg/L

Compound	Initial Calib.[1] True Value	Found	%R	Continuing Calib.[2] True Value	Found	%R	Found	%R	Method[4]
Metals:									
Cadmium	0.0050	0.0049	98	0.0050	0.0050	100	0.0051	102	F
Chromium	0.0300	0.0310	103	0.0300	0.0300	100	0.0300	100	F
Copper	0.0300	0.0310	103	0.0300	0.0280	93	0.0300	100	F
	0.0300	0.0300	100						
Lead	0.0500	0.0440	88	0.0500	0.0470	94	0.0480	96	F
	0.0500	0.0510	102	0.0500	0.0520	104	0.0530	106	
	0.0500	0.0530	106	0.0500	0.0520	104			
Zinc	0.080	0.075	94	0.080	0.076	95			A
	0.800	0.800	100	0.800	0.812	102			A

[1]Initial Calibration
Source Fisher Scientific

[2]Continuing Calibration
Source Fisher Scientific

[4]Indicate Analytical Method Used: P - ICP; A - Flame AA;
F - Furnace AA; CV-Cold Vapor

Form III

BLANKS

LAB NAME Free-Col Labs

SAMPLE BATCH: LAB ID 306-03-424\459

Units mg/L

Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value
Cadmium	0.0000	0.0001,-0.0001, 0.0000
Chromium	0.0002	0.0004, 0.0000, 0.0002
Copper	0.0004	0.0005, 0.0007, 0.0006 0.0002
Lead	-0.0003	0.0001, 0.0000, 0.0002 0.0003, 0.0006, 0.0003
Zinc	-0.003	-0.001,-0.002

Form V

SPIKE SAMPLE RECOVERY

LAB NAME Free-Col Labs

Free-Col Laboratories spikes each sample digested for metals run by graphite furnace AFTER the sample has been digested. If the recovery is not between 90-110%, the method of standard additions is performed in order to obtain the result (see Form VIII).

Lab ID	Percent Recovery				
	Cadmium	Chromium	Copper	Lead	Zinc
306-03-438	106	110	95	103	
306-03-439	110	106	98	110	
306-03-440	102	101	90	99	
306-03-441	100	108	92	98	
306-03-442	100	105	90	97	
306-03-443	104	102	94	96	
306-03-444	104	101	*	92	
306-03-445	102	100	91	92	
306-03-446	104	108	93	*	
306-03-447	108	99	98	98	
306-03-448	98	92	102	102	
306-03-449	98	97	102	99	
306-03-450	98	98	101	99	
306-03-451	102	104	106	100	

* Result obtained by method of standard addition.

Zinc analysis performed by AA.

FORM VI

DUPLICATES

LAB NAME Free-Col Labs
SAMPLE BATCH: LAB ID 306-03-424\459

Units: mg/L unless noted

Lab ID	Compound	AD/RPD[1] Control Limit	Sample(S)	Duplicate(D)	RPD[2]
306-03-438	Chromium	0.002/20.1	0.001	0.002	NA
306-03-449	Chromium	0.002/20.1	0.002	0.002	NA
306-03-446	Copper	0.002/27.4	0.010	0.012	NA
306-03-440	Lead	0.002/15.9	0.003	0.003	NA
306-03-449	Lead	0.002/15.9	0.004	0.005	NA
306-03-439	Zinc	0.01/3.8	0.410	0.416	NA
306-03-449	Zinc	0.01/3.8	0.044	0.046	NA
306-03-438	Cadmium	0.0002/19.6	0.0006	0.0006	NA
306-03-448	Cadmium	0.0002/19.6	0.0002	<0.0001	NA

[1] AD = Absolute Difference Control Limit which is established by plus or minus two times the detection limit. The RPD Control Limit is statistically established based on past data. Data must be acceptable according to one of the limits.

[2] RPD = [abs(S-D)/((S+D)/2)] x 100

NC = Non calculable RPD due to value(s) less than detection limit.

NA = Not Applicable because acceptability is determined by meeting the AD limit (see footnote 1).

FORM VII

LABORATORY REFERENCE CONTROL SAMPLE

LAB NAME Free-Col Labs

SAMPLE BATCH: LAB ID 306-03-424\459

Units mg/L

Compound	True Value	Found	% Recovery
Cadmium	0.0050	0.0049	98
Chromium	0.0300	0.0310	103
Copper	0.0300	0.0310	103
Lead	0.0500	0.0440	88
Zinc	0.080	0.075	94
	0.800	0.800	100

Acceptance limits are 80% - 120% recovery.

Form VIII

STANDARD ADDITION RESULTS

Lab Name: Free-Col Labs

Sample Batch: 206-04-439\474

Units: mg/L

		Concentration Added				
Sample #	Element	0.00	0.020	0.030	0.040	Final Conc.[1]
306-03-446	Lead	0.001	0.014	0.019	0.026	0.002
Sample #	Element	0.00	0.015	0.020	0.025	Final Conc.[1]
306-03-444	Copper	0.005	0.017	0.020	0.024	0.007

[1]Concentration as determined by the method of standard additions.

QUALITY CONTROL DATA I

PARAMETER: Zinc ANALYST: [signature] DATE: 6-7-93

REFERENCE CONTROL UNITS: mg/L

Target	Acceptance Limits					
0.08	0.063	to 0.095	0.075,	0.076,	____,	____
0.8	0.716	to 0.874	0.800,	0.812,	____,	____
____	____	to ____	____,	____,	____,	____

SEPARATION REFERENCE CONTROL Units: mg/L

Target	Acceptance Limits		Assayed Value:		
0.500	____	to ____	0.510,	0.492,	____
			Date Prepped:	6/3,	6/4, ____

REPEAT CONTROL AD = Absolute Difference RPD = Relative Percent Difference
Units: mg/L Acceptable AD: 0.01 Acceptable RPD: 3.8 %

Sample I.D.	Sample Result	Repeat Result	AD	RPD
306-01-066	0.105	0.106	0.001	— %
306-03-439	0.410	0.416	0.006	— %
306-03-449	0.044	0.046	0.002	— %
				%
				%
				%

SPIKE CONTROL Units: mg/L
Acceptable Limits for Percent Recovery: 76 % to 120 %

Sample ID	Spike Added	Spike Result	Sample Result	% Recovery
306-03-457	0.507	0.502	0.010	97 %
				%
				%
				%

BLANK Units: mg/L Lab Blank 0.006 : 0.005

Result: −0.003, −0.001, −0.002, ____ Date Prepped 6/3 6/4

DETECTION LIMIT Units: mg/L

Limit Value: 0.005 Assayed Value: 0.003, ____, ____

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LIMITS IN EFFECT AS OF MAY 17, 1993

QUALITY CONTROL DATA I

RAMETER: Cadmium - GF ANALYST: Lim DATE: 6.9.93

ERENCE CONTROL UNITS: ug/L

arget	Acceptance Limits					
5	4.0	to 6.4	4.9,	5.0,	5.1,	
		to				
		to				

EPARATION REFERENCE CONTROL Units: ug/L

Target	Acceptance Limits		Assayed Value:			
5	3.4	to	4.5/5.3,	5.6,	5.3	
			Date Prepped:	6.3/6.4,	306-07-PRC,	306-08-PRC

EPEAT CONTROL AD = Absolute Difference RPD = Relative Percent Difference
nits: mg/L Acceptable AD: 0.0002 Acceptable RPD: 19.6 %

ample I.D.	Sample Result	Repeat Result	AD	RPD
306-03-438	0.0006	0.0006	0.0000	— %
306-03-448	0.0002	<0.0001	—	— %
306-04-041	<0.0001	0.0001	—	— %
				%
				%
				%

SPIKE CONTROL Units: ngu
Acceptable Limits for Percent Recovery: 90 % to 110 %

Sample ID	Spike Added	Spike Result	Sample Result	% Recovery
306-03-438	0.0050	0.0059	0.0006	106 %
439		0.0089	0.0034	110 %
440		0.0054	0.0003	102 %
441	↓	0.0087	0.0037	100 %

BLANK Units: mg/L Lab Blank

Result: 0.0000, 0.0001, -0.0001, 0.0000 Date Prepped

DETECTION LIMIT Units: mg/L

Limit Value: 0.0001 Assayed Value: -0.0001, ,

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306-03-BI: 0.0001
306-04-BI: 0.0001
306-07-BI: 0.0000
306-08-BI: 0.0001

QUALITY CONTROL DATA

PARAMETER: Cd - gf. ANALYST: Lim / Baker DATE: 6.9.93

SPIKE CONTROL UNITS: mgl

Acceptable Limits for Percent Recovery; 90 % to 110 %

Sample I.D.	Spike Added	Spiked Result	Sample Result	% Recovery
306-03-442	0.0050	0.0068	0.0018	100 %
443		0.0068	0.0016	104 %
444		0.0068	0.0016	104 %
445		0.0065	0.0014	102 %
446		0.0069	0.0017	104 %
447		0.0063	0.0009	108 %
448		0.0051	0.0002	98 %
449		0.0052	0.0003	98 %
450		0.0049	-0.0000	98 %
451		0.0050	-0.0001	102 %
458		0.0052	0.0000	104 %
				%
				%
				%
				%
				%
				%
				%
				%
				%

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QUALITY CONTROL DATA I

RAMETER: Chromium - GF ANALYST: Baker/Lim DATE: 6.9.93

RENCE CONTROL UNITS: ug/L

Target	Acceptance Limits					
30	27	to 35	31	30	30	
		to				
		to				

REPARATION REFERENCE CONTROL Units: ug/L

Target	Acceptance Limits		Assayed Value:			
30		to	29	29	29	
			Date Prepped:	306-04-PRC	306-07-PRC	08-PRC

EPEAT CONTROL AD = Absolute Difference RPD = Relative Percent Difference

Units: mg/L Acceptable AD: 0.002 Acceptable RPD: 20.1 %

Sample I.D.	Sample Result	Repeat Result	AD	RPD
306-03-438	0.001	0.002	0.001	— %
306-03-449	0.002	0.002	0.000	— %
306-04-041	<0.001	<0.001	—	— %
				%
				%
				%

SPIKE CONTROL Units: mg/L

Acceptable Limits for Percent Recovery: 90 % to 110 %

Sample ID	Spike Added	Spike Result	Sample Result	% Recovery
306-03-438	*0.0250 0.0236	0.0271	0.0012	110 %
439	0.0236	0.0283	0.0033	106 %
440	0.0236	0.0248	0.0009	101 %
441	0.0236	0.0307	0.0052	108 %

BLANK Units: mg/L Lab Blank

Result: 0.0002, 0.0004, 0.0000, 0.0002 Date Prepped

DETECTION LIMIT Units: mg/L

Limit Value: 0.001 Assayed Value: 0.0010, ,

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306-04-BP: -0.0002
306-07-BP: 0.0000
306-08-BP: -0.0001

LIMITS IN EFFECT AS OF MAY 17, 1993

QUALITY CONTROL DATA

PARAMETER: Cr-gf. ANALYST: Baker DATE: 6.9.93

SPIKE CONTROL UNITS: mgl

Acceptable Limits for Percent Recovery: 90 % to 110 %

Sample I.D.	Spike Added	Spiked Result	Sample Result	% Recovery
306-03-442	*0.0250 0.0236	0.0259	0.0011	105 %
443	0.0236	0.0248	0.0008	102 %
444	0.0236	0.0255	0.0016	101 %
445	0.0236	0.0265	0.0030	100 %
446	0.0236	0.0292	0.0037	108 %
447	0.0252	0.0261	0.0012	99 %
448 **	0.0252	0.0398	0.0166	92 %
449	0.0252	0.0261	0.0017	97 %
450	0.0252	0.0257	0.0009	98 %
451	0.0252	0.0269	0.0008	104 %
458	0.0252	0.0248	0.0004	97 %
				%
				%
				%
				%
				%
				%
				%
				%
				%
				%

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QUALITY CONTROL DATA I

RAMETER: Copper - GF ANALYST: Lim/Baker DATE: 6.7.93

FERENCE CONTROL UNITS: ug/L

Target	Acceptance Limits						
30	24	to	36	31,	28,	30,	30
		to		,	,	,	
		to		,	,	,	

REPARATION REFERENCE CONTROL Units:

Target	Acceptance Limits		Assayed Value:		
		to	28,	29,	29

Date Prepped: 306-02-PRC, 03 PRC, 00 PRC

EPEAT CONTROL AD = Absolute Difference RPD = Relative Percent Difference
nits: mg/L Acceptable AD: 0.002 Acceptable RPD: 27.4 %

ample I.D.	Sample Result	Repeat Result	AD	RPD
306-01-402 2X	0.025	0.027	0.002	— %
306-03-401	0.010	0.011	0.001	— %
306-03-446	0.010	0.012	0.002	— %
306-03-726 2X	0.027	0.027	0.000	— %
				%
				%

SPIKE CONTROL Units: mgl
Acceptable Limits for Percent Recovery: 90 % to 110 %

Sample ID	Spike Added	Spike Result	Sample Result	% Recovery
306-01-408 2X	*0.0200 0.0183	0.0429	0.0253	96 %
306-01-409	0.0183	0.0351	0.0171	98 %
306-01-410	0.0183	0.0365	0.0190	96 %
306-01-411	0.0183	0.0335	0.0163	94 %

BLANK Units: mg/L 0.0002 Lab Blank

Result: 0.0004, 0.0005, 0.0007, 0.0006 Date Prepped

DETECTION LIMIT Units: mg/L

imit Value: 0.001 Assayed Value: 0.0013, ,

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306-02-PRC BL 0.000
306-03-BL 0.000
306-04-BL 0.000

LIMITS IN EFFECT AS OF MAY 17, 1993

QUALITY CONTROL DATA

PARAMETER: Cu-gf. **ANALYST:** Lim / Baker **DATE:** 6 7 93

IKE CONTROL **UNITS:** mgl

Acceptable Limits for Percent Recovery: 90 % to 110 %

Sample I.D.	Spike Added	Spiked Result	Sample Result	% Recovery
306-01-412 10x	*0.0200 0.0183	0.0458	0.0278	98 %
306-01-413 5x		0.0462	0.0280	99 %
306-01-414 5x		0.0432	0.0253	98 %
306-01-415 5x		0.0503	0.0331	94 %
305-24-400		0.0206	0.0041	90 %
305-24-406 2x		0.0405	0.0217	103 %
306-03-401		0.0307	0.0105	110 %
438		0.0264	0.0090	95 %
439		0.0332	0.0152	98 %
440		0.0314	0.0149	90 %
441		0.0272	0.0104	92 %
442		0.0235	0.0070	90 %
443		0.0291	0.0118	94 %
444		STANDARD	ADDITIONS	%
445		0.0237	0.0071	91 %
446		0.0270	0.0100	93 %
447		0.0222	0.0043	98 %
448		0.0233	0.0047	102 %
449		0.0295	0.0108	102 %
450	√	0.0211	0.0026	101 %

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QUALITY CONTROL DATA

PARAMETER: Cu gfb ANALYST: Lim / BAKer DATE: 6-7-93

IKE CONTROL UNITS: mg/L

Acceptable Limits for Percent Recovery; 90 % to 110 %

Sample I.D.	Spike Added	Spiked Result	Sample Result	% Recovery
306-03-451	0.0183	0.0242	0.0047	106 %
458	↓	0.0202	0.0002	109 %
				%
				%
				%
				%
				%
				%
				%
				%
				%
				%
				%
				%
				%
				%
				%
				%
				%
				%
				%
				%

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QUALITY CONTROL DATA I

RAMETER: Lead - GF ANALYST: Lim / Baker DATE: 6.4.93 / 6.6.93

FERENCE CONTROL UNITS: ug/L

Target	Acceptance Limits					
50	31	to 64	44	47	48	51
		to	52	53	53	
		to				

REPARATION REFERENCE CONTROL Units: ug/L

Target	Acceptance Limits	Assayed Value:		
50	to	47	48	
		Date Prepped:	306-02-PRC	306-03-PRC

EPEAT CONTROL AD = Absolute Difference RPD = Relative Percent Difference
Units: mg/L Acceptable AD: 0.002 Acceptable RPD: 15.9 %

Sample I.D.	Sample Result	Repeat Result	AD	RPD
305-27-732	0.001	0.001	0.000	—
305-27-734	<0.001	0.001	—	—
305-27-744	0.003	0.003	0.000	—
305-27-754	0.004	0.004	0.000	—
305-27-779	0.007	0.008	0.001	—
306-03-401	0.021	0.022	0.001	—

SPIKE CONTROL Units: mg/L
Acceptable Limits for Percent Recovery: 90 % to 110 %

Sample ID	Spike Added	Spike Result	Sample Result	% Recovery
306-03-401	0.0282	0.0473	0.0212	92 %
306-03-450	0.0323	0.0335	0.0015	99 %
451		0.0329	0.0005	100 %
458	√	0.0334	-0.0001	104 %

BLANK Units: mg/L 0.0003 0.0006 0.0003 Lab Blank 0.0004 / 0.00

Result: -0.0003, 0.0001, 0.0000, 0.0002 Date Prepped 6.2 / 6.3

DETECTION LIMIT Units: mg/L

Limit Value: 0.001 Assayed Value: 0.0013, 0.0010,

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LIMITS IN EFFECT AS OF MAY 17, 1993

PART II

QUALITY CONTROL DATA I

RAMETER: Lead - GF ANALYST: Lm \Baker DATE: _____

RENCE CONTROL UNITS: ug/L

arget	Acceptance Limits						
50	31	to	64	52	,	,	,
		to		,	,	,	,
		to		,	,	,	,

EPARATION REFERENCE CONTROL Units: _____

Target	Acceptance Limits		Assayed Value:			
		to	Date Prepped:	,	,	,

EPEAT CONTROL AD = Absolute Difference RPD = Relative Percent Difference

nits: mg/L Acceptable AD: 0.002 Acceptable RPD: 15.9 %

ample I.D.	Sample Result	Repeat Result	AD	RPD
306-03-440	0.003	0.003	0	— %
306-03-449	0.004	0.005	0.001	— %
				%
				%
				%
				%

SPIKE CONTROL Units: _____

Acceptable Limits for Percent Recovery: _____ % to _____ %

Sample ID	Spike Added	Spike Result	Sample Result	% Recovery
				%
				%
				%
				%

BLANK Units: mg/L Lab Blank _____

Result: -0.0002, -0.0005, _____, _____ Date Prepped _____

DETECTION LIMIT Units: mg/L

mit Value: 0.001 Assayed Value: _____, _____, _____

FREE-COL LABORATORIES, INC.
P.O. Box 557, Cotton Road
Meadville, PA 16335
(814) 724-6242

LIMITS IN EFFECT AS OF MAY 17, 1993

QUALITY CONTROL DATA

PARAMETER: Pb GF ANALYST: Lin Baker DATE: 6-7-93

SPIKE CONTROL UNITS: mg/L

Acceptable Limits for Percent Recovery; 90 % to 110 %

Sample I.D.	Spike Added	Spiked Result	Sample Result	% Recovery
306-01-408 5X	0.0282	0.0784	0.0506	98 %
409		0.0587	0.0318	95 %
410		0.0406	0.0125	100 %
411		0.0533	0.0248	101 %
412 30X		0.0740	0.0454	101 %
413 10X		0.0837	0.0570	95 %
414 10X		0.0779	0.0478	107 %
415 10X		0.0908	0.0644	94 %
306-03-438		0.0388	0.0097	103 %
439		0.0392	0.0083	110 %
440	0.0323	0.0350	0.0029	99 %
441		0.0337	0.0019	98 %
442		0.0328	0.0014	97 %
443		0.0331	0.0022	96 %
444		0.0311	0.0013	92 %
445		0.0316	0.0018	92 %
446		STANDARD	ADDITIONS	%
447		0.0328	0.0013	98 %
448		0.0344	0.0016	102 %
449		0.0363	0.0044	99 %

Free-Col Laboratories, Inc.
P.O. Box 557, Cotton Road
Meadville, Pa. 16335-0557

GZA
GeoEnvironmental
of New York

Engineers and
Scientists

June 8, 1993
File: 5805

364 Nagel Drive
Buffalo, New York
14225
716-685-2300
FAX 716-685-3629

Mr. Roy Knapp
Harrison, Division of
General Motors Corporation
200 Upper Mountain Road
Lockport, New York 14094

Re: Long-Term Groundwater Monitoring
Field Measurements and Equipment
Calibration Records

Dear Mr. Knapp:

Enclosed is a summary of groundwater field measurements, equipment calibration measurements and a copy of the chain-of-custody form completed by GZA GeoEnvironmental of New York (GZA) during the sampling event of June 1 and 2, 1993. The water levels in all wells were measured and wells I-1T, I-2T and I-7T were purged on June 1. The remaining wells were purged and all wells were sampled on June 2.

The matrix spike/matrix spike duplicate sample for this round was collected from I-4R. Additionally, a trip blank was prepared by Free-Col Laboratories and accompanied the samples during the sample round.

If you have any questions or require additional information, please do not hesitate to contact the undersigned.

Very truly yours,

GZA GEOENVIRONMENTAL OF NEW YORK

Stephen H. Blair
Project Engineer

SHB/tm
Enclosure

SUMMARY OF IN-SITU FIELD MEASUREMENTS

PROJECT: Harrison Facility Groundwater Monitoring Program	GZA FILE: R5805.00
LOCATION: Lockport, New York	SAMPLE COLLECTION DATE: June 2, 1993

GROUP 1: BEDROCK MONITORING WELLS

Sample Location	Sample Date	Water Elevation (feet)	Temp (ºC)	Turbidity (NTU)	pH (Standard Units)	Specific Conductance (μMHOS/cm)
I-1R	6/2/93	623.2	12	42	8.2	670
I-2R	"	623.4	16	8	8.5	580
I-3R	"	616.1	12	8	7.7	970
I-4R	"	612.3	12	5	7.5	1460
I-5R	"	612.3	14	8	7.6	620
I-6R	"	611.6	12	10	8.1	780
I-7R	"	611.2	12	5	8.4	770

GROUP 2: TOP OF ROCK GROUNDWATER SAMPLING WELLS

Sample Location	Sample Date	Water Elevation (feet)	Temp (ºC)	Turbidity (NTU)	pH (Standard Units)	Specific Conductance (μMHOS/cm)
I-1T	6/2/93	623.3	14	28	8.1	830
I-2T	"	622.9	17	10	7.8	780
I-3T	"	616.1	14	15	7.6	980
I-4T	"	613.4	13	7	7.3	1800
I-5T	"	612.5	15	15	7.4	2730
I-7T	"	611.3	12	12	8.4	790

GROUP 3: GROUNDWATER OBSERVATION WELLS

Sample Location	Date	Water Elevation (feet)	Sample Location	Date	Water Elevation (feet)
II-AT	6/1/93	616.7	II-CT	6/1/93	613.3
II-AR	"	614.9	II-DR	"	615.7
II-BT	"	617.7	II-DT	"	615.2

NOTE: Groundwater elevations in the I series wells were measured on 6/1/93

pH METER CALIBRATION WORKSHEET

PROJECT: Harrison Facility Groundwater Monitoring Program	**GZA FILE:** R5805.00
LOCATION: Lockport, New York	**SAMPLE COLLECTION DATE:** June 2, 1993

pH METER MODEL: Corning pH meter, Model 103, S/N 2005, with Corning calomel combination electrode.

CALIBRATION[1]

Date	Set Point(s)[2] (pH units)	Target[3] Value(s) (pH units)	Actual[4] Reading(s) (pH units)	Analyst's Initials	Remarks
6/1/93	4.01 9.98	7.00	6.98	SHB	Two point calibration in field prior to sampling event.
6/2/93	3.99 9.99	7.00	7.05	SHB	Two point calibration in field prior to sampling event.

NOTES:

1. These calibrations were done in accordance with the NYSDOH's Environmental Laboratory Approval Program (ELAP) manual, item 231, revised as of April 1,1986.
2. For a one point calibration, the set point is the pH of the standard buffer solution used to initially calibrate the pH meter. For a two point calibration, the set points are the pH of the standard buffers used to initially calibrate the slope of the pH meter.
3. For a one point calibration, the target values are the pH of the standard buffers used to check the slope of the pH meter. For a two point calibration, the target value is the pH of the standard buffer used to check the initial calibration.
4. The accepted accuracy for the actual readings using a one point calibration is $\pm$0.2 pH units of the target value. The accepted accuracy for the actual reading using a two point calibration is $\pm$0.05 pH units of the target value.

CONDUCTIVITY METER CALIBRATION WORKSHEET

PROJECT: Harrison Facility Groundwater Monitoring Program	**GZA FILE:** R5805.00
LOCATION: Lockport, New York	**SAMPLE COLLECTION DATE:** June 2, 1993

CONDUCTIVITY METER MODEL: Extech Conductivity Meter S/N 2-1649/IOE86

CALIBRATION[1]

Date	Temperature (ºC)	Target[2] Value (μMHOS/cm)	Actual[3] Reading (μMHOS/cm)	Analyst's Initials	Remarks
6/1/93	21	1413	1178	SHB	Calibrated in GZA laboratory prior to sampling event using 0.01 N KCL solution.
6/1/93	20	147	175	SHB	Calibrated in field prior to sampling using 0.001 N KCL solution.
6/2/93	20	147	150	SHB	Calibrated in field prior to sampling using 0.001 N KCL solution.

NOTES:

1. These calibrations were done in accordance with the NYSDOH's Environmental Laboratory Approval Program (ELAP) manual, item 231, revised as of April 1,1986
2. Target value is the concentration of the potassium chloride (KCl) standard solutions.
3. Accepted accuracy for the actual reading is ±20 percent of the target value.

TURBIDIMETER CALIBRATION WORKSHEET

PROJECT: Harrison Facility Groundwater Monitoring Program	**GZA FILE:** R5805
LOCATION: Lockport, New York	**SAMPLE COLLECTION DATE:** June 2, 1993
TURBIDIMETER MODEL: Cole Parmer Model 8391-85	

CALIBRATION [1]

Date	Target[2] Value (NTU)	Observed Value (NTU)	Analyst's Initials	Remarks
6/2/93	40	40	SHB	Measured in field prior to sampling event.

NOTES:

1. These calibrations were done in accordance with the NYSDOH's Environmental Laboratory Approval Program (ELAP) manual, item 231 revised as of April 1, 1986.

2. Target value of primary AMCO-AEPA-1 standards.

THERMOMETER CALIBRATION WORKSHEET

PROJECT: Harrison Facility Groundwater Monitoring Program	**GZA FILE:** R5805.00
LOCATION: Lockport, New York	**SAMPLE COLLECTION DATE:** June 2, 1993
THERMOMETER MODEL: Fisher Scientific glass S/N 2005	

CALIBRATION[1]

Date	Target[2] Temperature (ºC)	Actual[3] Temperature (ºC)	Analyst's Initials	Remarks
6/2/92	3.9 20.0 40.1	4.0 20.1 40.2	GJK	See Note 4.

NOTES:

1. These calibrations were done in accordance with the NYSDOH's Environmental Laboratory Approval Program (ELAP) manual, item 231, revised as of April 1, 1986.

2. Target temperature is the temperature reading of the National Bureau of Standards (NBS) traceable thermometer. The NBS thermometer was certified on July 11, 1985 and checked at the ice point on September 19, 1988.

3. Actual temperature is the temperature of the calibrated thermometer.

4. The correction factor of the calibrated thermometer is:

$$\text{Corrected Temperature} = (1.01 \times \text{Actual Temperature}) - 0.05$$