UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

DEC 27 1994

CERTIFIED MAIL-RETURN RECEIPT REQUESTED P 176 163 730

(ST) Sparton Southwest
VXII

Mr. Richard D. Mico
Sparton Technology, Inc.
Vice President and General Manager
4901 Rockaway Blvd., SE
Rio Rancho, New Mexico 87124

Dear Mr. Mico:

Pursuant to Section IV.B of the Administrative Order on Consent (Order) No. VI-004(h)-87-H, the U.S. Environmental Protection Agency (EPA) is enclosing copies of the analytical results from the October 24-25, 1994, ground water split sampling event conducted at Sparton Technology.

Regarding Sparton's use of the Analytical Technology, Inc. (ATI) Phoenix Laboratory for the October ground water sampling event, I have enclosed a Notice of Suspension, dated August 31, 1994, issued by the EPA Office of Grants and Debarment to the ATI Phoenix Laboratory. Sparton Technology shall ensure that future use of the ATI Phoenix Laboratory, including the Phoenix Mobile Laboratory Unit, for analytical services is in compliance with the requirements of Section IV.B and S of the Order.

If you have any questions regarding these issues, please contact Vincent Malott of my staff at (214) 665-8313.

Sincerely,

RS Brown

Randall E. Brown, Chief
RCRA Enforcement Branch

Enclosure not Found

Enclosures (2)
1. EPA Sample Results
2. ATI Notice of Suspension

cc: Mr. Ron Kern, HRMB, NMED, (w/ enclosure)
Mr. Dennis McQuillan, GWPRB, NMED, (w/enclosure)

ROY F. WESTON, INC.
LIONVILLE ANALYTICAL LABORATORY
ANALYTICAL CASE NARRATIVE

Client: M&E SPARTON
RFW #: 9410L747

W.O. #: 03272-036-002-9999-00
Date Received: 10-26-94

GC/MS VOLATILE

The set of samples consisted of fourteen (14) water samples collected on 10-24,25-94.

The samples were analyzed according to criteria set forth in CLP SOW 02/88 (Rev. 05/89) for TCL Volatile target compounds on 10-27,28,31-94.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. Non-target compounds were not detected in these samples.

2. The following samples required dilution because they contained high levels of target compounds:

Sample ID	Dilution Factor
MW-61	5
MW-41	2.5
MW-32	10
MW-55	5
MW-13	5
MW-56, MS,MSD	2

3. All surrogate recoveries were within EPA QC limits.

4. All matrix spike recoveries were within EPA QC limits.

5. The laboratory blanks contained the common contaminant Acetone at levels less than the CRQL.

6. All internal standard area and retention time criteria were met.

7. CLP SOW 02/88 (Rev. 05/89) initial calibration concentrations were modified with client approval. The initial calibration levels were 10, 20, 50, 100, and 200 ug/L.

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

11.30.94
Date

003133

mmz/voa/10-747v.cn

2017 mt 11/30/9

GLOSSARY OF VOA DATA

DATA QUALIFIERS

U	=	Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
J	=	Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
B	=	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
E	=	Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
D	=	Identifies all compounds identified in an analysis at a secondary dilution factor.
I	=	Interference.
NQ	=	Result qualitatively confirmed but not able to quantify.
N	=	Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
X	=	This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
Y	=	Additional qualifiers used as required are explained in the case narrative.

GLOSSARY OF VOA DATA

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.

Roy F. Weston, Inc. - Lionville Laboratory
Volatiles by GC/MS, HSL List
Report Date: 11/29/94 14:26

RFW Batch Number: 9410L747 Client: M&E SPARTON Work Order: 03272036002 Page: 1a

	Cust ID:	MW-52		MW-53		MW-61		MW-61		MW-41		MW-41	
Sample Information	RFW#:	001		002		003		003 DL		004		004 DL	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		5.00		1.00		2.50	
	Units:	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
Surrogate Recovery	Toluene-d8	99	%	102	%	101	%	98	%	104	%	100	%
	Bromofluorobenzene	96	%	99	%	97	%	95	%	102	%	95	%
	1,2-Dichloroethane-d4	95	%	93	%	95	%	94	%	95	%	99	%
Chloromethane		10	U	10	U	10	U	50	U	10	U	25	U
Bromomethane		10	U	10	U	10	U	50	U	10	U	25	U
Vinyl Chloride		10	U	10	U	10	U	50	U	10	U	25	U
Chloroethane		10	U	10	U	10	U	50	U	10	U	25	U
Methylene Chloride		5	U	5	U	5	U	25	U	88		75	D
Acetone		10	U	10	U	10	U	50	U	10	U	25	U
Carbon Disulfide		5	U	5	U	5	U	25	U	5	U	12	U
1,1-Dichloroethene		5	U	5	U	36		32	D	74		70	D
1,1-Dichloroethane		5	U	5	U	5	U	25	U	5	U	12	U
1,2-Dichloroethene (total)		5	U	5	U	5	U	25	U	5	U	12	U
Chloroform		5	U	5	U	5	U	25	U	2	J	12	U
1,2-Dichloroethane		5	U	5	U	5	U	25	U	5	U	12	U
2-Butanone		10	U	10	U	10	U	50	U	10	U	25	U
1,1,1-Trichloroethane		5	U	5	U	9		8	JD	72		76	D
Carbon Tetrachloride		5	U	5	U	5	U	25	U	5	U	12	U
Vinyl Acetate		10	U	10	U	10	U	50	U	10	U	25	U
Bromodichloromethane		5	U	5	U	5	U	25	U	5	U	12	U
1,2-Dichloropropane		5	U	5	U	5	U	25	U	5	U	12	U
cis-1,3-Dichloropropene		5	U	5	U	5	U	25	U	5	U	12	U
Trichloroethene		5	U	43		710	E *	730	D	480	E	450	D
Dibromochloromethane		5	U	5	U	5	U	25	U	5	U	12	U
1,1,2-Trichloroethane		5	U	5	U	5	U	25	U	5	U	12	U
Benzene		5	U	5	U	5	U	25	U	5	U	12	U
Trans-1,3-Dichloropropene		5	U	5	U	5	U	25	U	5	U	12	U
Bromoform		5	U	5	U	5	U	25	U	5	U	12	U
4-Methyl-2-pentanone		10	U	10	U	10	U	50	U	10	U	25	U
2-Hexanone		10	U	10	U	10	U	50	U	10	U	25	U
Tetrachloroethene		5	U	5	U	6		6	JD	6		6	JD
1,1,2,2-Tetrachloroethane		5	U	5	U	5	U	25	U	5	U	12	U

*= Outside of EPA CLP QC limits.

* E = analyzed at dilution

00034136

RFW Batch Number: 9410L747 Client: M&E SPARTON Work Order: 03272036002 Page: 1b

Cust ID:	MW-52	MW-53	MW-61	MW-61	MW-41	MW-41
RFW#:	001	002	003	003 DL	004	004 DL
Toluene	5 U	5 U	5 U	25 U	5 U	12 U
Chlorobenzene	5 U	5 U	5 U	25 U	5 U	12 U
Ethylbenzene	5 U	5 U	5 U	25 U	5 U	12 U
Styrene	5 U	5 U	5 U	25 U	5 U	12 U
Xylene (total)	5 U	5 U	5 U	25 U	5 U	12 U

*= Outside of EPA CLP QC limits.

Roy F. Weston, Inc. - Lionville Laboratory
Volatiles by GC/MS, HSL List
Report Date: 11/29/94 14:26

RFW Batch Number: 9410L747 Client: M&E SPARTON Work Order: 03272036002 Page: 2a

	Cust ID:	MW-32	MW-32	MW-15	MW-55	MW-55	MW-13
Sample Information	RFW#:	005	005 DL	006	007	007 DL	008
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	10.0	1.00	1.00	5.00	1.00
	Units:	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
Surrogate Recovery	Toluene-d8	101 %	99 %	104 %	101 %	101 %	100 %
	Bromofluorobenzene	95 %	95 %	100 %	100 %	96 %	98 %
	1,2-Dichloroethane-d4	93 %	97 %	100 %	94 %	95 %	99 %
Chloromethane		10 U	100 U	10 U	10 U	50 U	10 U
Bromomethane		10 U	100 U	10 U	10 U	50 U	10 U
Vinyl Chloride		10 U	100 U	10 U	10 U	50 U	10 U
Chloroethane		10 U	100 U	10 U	10 U	50 U	10 U
Methylene Chloride		5 U	16 JD	5 U	5 U	25 U	5 U
Acetone		10 U	100 U	10 U	10 U	50 U	10 U
Carbon Disulfide		5 U	50 U	5 U	5 U	25 U	5 U
1,1-Dichloroethene		300 E	290 D	5 U	5	25 U	5
1,1-Dichloroethane		15	14 JD	5 U	5 U	25 U	5 U
1,2-Dichloroethene (total)		1 J	50 U	5 U	5 U	25 U	5 U
Chloroform		5 U	50 U	9	5 U	25 U	5 U
1,2-Dichloroethane		5 U	50 U	5 U	5 U	25 U	5 U
2-Butanone		10 U	100 U	10 U	10 U	50 U	10 U
1,1,1-Trichloroethane		120	90 D	5 U	5 U	25 U	5 U
Carbon Tetrachloride		5 U	50 U	5 U	5 U	25 U	5 U
Vinyl Acetate		10 U	100 U	10 U	10 U	50 U	10 U
Bromodichloromethane		5 U	50 U	5 U	5 U	25 U	5 U
1,2-Dichloropropane		5 U	50 U	5 U	5 U	25 U	5 U
cis-1,3-Dichloropropene		5 U	50 U	5 U	5 U	25 U	5 U
Trichloroethene		1300 E	1500 D	5 U	530 E	580 D	*490 E
Dibromochloromethane		5 U	50 U	5 U	5 U	25 U	5 U
1,1,2-Trichloroethane		2 J	50 U	5 U	5 U	25 U	5 U
Benzene		3 J	50 U	5 U	5 U	25 U	5 U
Trans-1,3-Dichloropropene		5 U	50 U	5 U	5 U	25 U	5 U
Bromoform		5 U	50 U	5 U	5 U	25 U	5 U
4-Methyl-2-pentanone		7 J	100 U	10 U	10 U	50 U	10 U
2-Hexanone		10 U	100 U	10 U	10 U	50 U	10 U
Tetrachloroethene		20	16 JD	5 U	5 U	25 U	5 U
1,1,2,2-Tetrachloroethane		5 U	50 U	5 U	5 U	25 U	5 U

*= Outside of EPA CLP QC limits.

00328

	Cust ID:	MW-32	MW-32	MW-15	MW-55	MW-55	MW-13
	RFW#:	005	005 DL	006	007	007 DL	008
Toluene		3 J	50 U	5 U	5 U	25 U	5 U
Chlorobenzene		2 J	50 U	5 U	5 U	25 U	5 U
Ethylbenzene		3 J	50 U	5 U	5 U	25 U	5 U
Styrene		5 U	50 U	5 U	5 U	25 U	5 U
Xylene (total)		5	50 U	5 U	5 U	25 U	5 U

*= Outside of EPA CLP QC limits.

Roy F. Weston, Inc. - Lionville Laboratory
Volatiles by GC/MS, HSL List
Report Date: 11/29/94 14:26

RFW Batch Number: 9410L747 Client: M&E SPARTON Work Order: 03272036002 Page: 3a

	Cust ID:	MW-13	MW-56	MW-56	MW-56	MW-56	MW-57
Sample Information	RFW#:	008 DL	009	009 DL	009 MS	009 MSD	010
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	5.00	1.00	2.00	2.00	2.00	1.00
	Units:	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
Surrogate Recovery	Toluene-d8	96 %	99 %	102 %	98 %	96 %	100 %
	Bromofluorobenzene	91 %	95 %	98 %	95 %	99 %	98 %
	1,2-Dichloroethane-d4	96 %	93 %	99 %	96 %	99 %	95 %
Chloromethane		50 U	10 U	20 U	20 U	20 U	10 U
Bromomethane		50 U	10 U	20 U	20 U	20 U	10 U
Vinyl Chloride		50 U	10 U	20 U	20 U	20 U	10 U
Chloroethane		50 U	10 U	20 U	20 U	20 U	10 U
Methylene Chloride		25 U	5 U	10 U	10 U	10 U	5 U
Acetone		50 U	10 U	20 U	20 U	20 U	10 U
Carbon Disulfide		25 U	5 U	10 U	10 U	10 U	5 U
1,1-Dichloroethene		25 U	9	9 JD	119 %	114 %	5 U
1,1-Dichloroethane		25 U	5 U	10 U	10 U	10 U	5 U
1,2-Dichloroethene (total)		25 U	5 U	10 U	10 U	10 U	5 U
Chloroform		25 U	5 U	10 U	10 U	10 U	5 U
1,2-Dichloroethane		25 U	5 U	10 U	10 U	10 U	5 U
2-Butanone		50 U	10 U	20 U	20 U	20 U	10 U
1,1,1-Trichloroethane		25 U	5 U	10 U	10 U	10 U	5 U
Carbon Tetrachloride		25 U	5 U	10 U	10 U	10 U	5 U
Vinyl Acetate		50 U	10 U	20 U	20 U	20 U	10 U
Bromodichloromethane		25 U	5 U	10 U	10 U	10 U	5 U
1,2-Dichloropropane		25 U	5 U	10 U	10 U	10 U	5 U
cis-1,3-Dichloropropene		25 U	5 U	10 U	10 U	10 U	5 U
Trichloroethene		600 D	370 E	400 D	103 %	84 %	5 U
Dibromochloromethane		25 U	5 U	10 U	10 U	10 U	5 U
1,1,2-Trichloroethane		25 U	5 U	10 U	10 U	10 U	5 U
Benzene		25 U	5 U	10 U	100 %	98 %	5 U
Trans-1,3-Dichloropropene		25 U	5 U	10 U	10 U	10 U	5 U
Bromoform		25 U	5 U	10 U	10 U	10 U	5 U
4-Methyl-2-pentanone		50 U	10 U	20 U	20 U	20 U	10 U
2-Hexanone		50 U	10 U	20 U	20 U	20 U	10 U
Tetrachloroethene		25 U	5 U	10 U	10 U	10 U	5 U
1,1,2,2-Tetrachloroethane		25 U	5 U	10 U	10 U	10 U	5 U

*= Outside of EPA CLP QC limits.

for MS

for MSD

003140

RFW Batch Number: 9410L747 Client: M&E SPARTON Work Order: 03272036002 Page: 3b

Cust ID:	MW-13	MW-56	MW-56	MW-56	MW-56	MW-57
RFW#:	008 DL	009	009 DL	009 MS	009 MSD	010
Toluene	25 U	5 U	10 U	100 % * MS	99 % * MSD	5 U
Chlorobenzene	25 U	5 U	10 U	110 % * MS	110 % * MSD	5 U
Ethylbenzene	25 U	5 U	10 U	10 U	10 U	5 U
Styrene	25 U	5 U	10 U	10 U	10 U	5 U
Xylene (total)	25 U	5 U	10 U	10 U	10 U	5 U

*= Outside of EPA CLP QC limits.

2180

0033441

Roy F. Weston, Inc. - Lionville Laboratory
Volatiles by GC/MS, HSL List
Report Date: 11/29/94 14:26

RFW Batch Number: 9410L747 Client: M&E SPARTON Work Order: 03272036002 Page: 4a

	Cust ID:	MW-60	MW-64 *	MW-14	TRIP BLANK	VBLKUV	VBLKWI
Sample Information	RFW#:	011	012	013	014	94LVQ973-MB1	94LVQ174-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
Surrogate Recovery	Toluene-d8	99 %	101 %	101 %	102 %	101 %	105 %
	Bromofluorobenzene	97 %	98 %	96 %	97 %	100 %	101 %
	1,2-Dichloroethane-d4	97 %	93 %	96 %	95 %	94 %	93 %
Chloromethane		10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane		10 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride		10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride		5 U	5 U	5 U	3 J	5 U	5 U
Acetone		10 U	10 U	10 U	11 B	5 J	5 J
Carbon Disulfide		5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene		5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane		5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethene (total)		5 U	5 U	5 U	5 U	5 U	5 U
Chloroform		5 U	5 U	9	5 U	5 U	5 U
1,2-Dichloroethane		5 U	5 U	5 U	5 U	5 U	5 U
2-Butanone		10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane		5 U	5 U	5 U	5 U	5 U	5 U
Carbon Tetrachloride		5 U	5 U	5 U	5 U	5 U	5 U
Vinyl Acetate		10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane		5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane		5 U	5 U	5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene		5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene		26	12,	5 U	5 U	5 U	5 U
Dibromochloromethane		5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane		5 U	5 U	5 U	5 U	5 U	5 U
Benzene		5 U	5 U	5 U	5 U	5 U	5 U
Trans-1,3-Dichloropropene		5 U	5 U	5 U	5 U	5 U	5 U
Bromoform		5 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone		10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone		10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene		5 U	5 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane		5 U	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

003442

RFW Batch Number: 9410L747 Client: M&E SPARTON Work Order: 03272036002 Page: 4b

Cust ID:	MW-60	MW-64	MW-14	TRIP BLANK	VBLKUV	VBLKWI
RFW#:	011	012	013	014	94LVQ973-MB1	94LVQ174-MB1
Toluene	5 U	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	5 U	5 U	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Roy F. Weston, Inc. - Lionville Laboratory
Volatiles by GC/MS, HSL List
Report Date: 11/29/94 14:26

RFW Batch Number: **9410L747** Client: **M&E SPARTON** Work Order: 03272036002 Page: 5a

Cust ID: **VBLKVM**

Sample Information
RFW#: **94LVQ175-MB1**
Matrix: WATER
D.F.: 1.00
Units: UG/L

Surrogate Recovery	Toluene-d8	100	%
	Bromofluorobenzene	99	%
	1,2-Dichloroethane-d4	93	%

Chloromethane	10	U
Bromomethane	10	U
Vinyl Chloride	10	U
Chloroethane	10	U
Methylene Chloride	5	U
Acetone	3	J
Carbon Disulfide	5	U
1,1-Dichloroethene	5	U
1,1-Dichloroethane	5	U
1,2-Dichloroethene (total)	5	U
Chloroform	5	U
1,2-Dichloroethane	5	U
2-Butanone	10	U
1,1,1-Trichloroethane	5	U
Carbon Tetrachloride	5	U
Vinyl Acetate	10	U
Bromodichloromethane	5	U
1,2-Dichloropropane	5	U
cis-1,3-Dichloropropene	5	U
Trichloroethene	5	U
Dibromochloromethane	5	U
1,1,2-Trichloroethane	5	U
Benzene	5	U
Trans-1,3-Dichloropropene	5	U
Bromoform	5	U
4-Methyl-2-pentanone	10	U
2-Hexanone	10	U
Tetrachloroethene	5	U
1,1,2,2-Tetrachloroethane	5	U

*= Outside of EPA CLP QC limits.

0015

0003444

Toluene	5	U
Chlorobenzene	5	U
Ethylbenzene	5	U
Styrene	5	U
Xylene (total)	5	U

*= Outside of EPA CLP QC limits.

00345A

00345

WESTON Analytics Use Only
9410L747

Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 2

Client: M&E - Sparton

Est. Final Proj. Sampling Date:

Work Order #: 03272-036-002-9999-00

Project Contact/Phone #:

AD Project Manager: Gail DeRuzzo

QC: CLP Del: CLP TAT: 30 Days

Date Rec'd: 10/26/94 Date Due: 11/25/94

Account #: M&E-SPSPRT

	VOA	BNA	Pest/PCB	Herb	CR6	Metal	CN
Refrigerator #	1				4	4	
#/Type Container – Liquid	3GL				1PL	1PL	
#/Type Container – Solid							
Volume – Liquid	40ml				1L	LTR	
Volume – Solid							
Preservatives	none				none	HNO3	
ANALYSES REQUESTED →	ORGANIC	ORGANIC	ORGANIC	ORGANIC		INORG	INORG
WESTON Analytics Use Only					ICRIS	see below	

MATRIX CODES:
- S - Soil
- SE - Sediment
- SO - Solid
- SL - Sludge
- W - Water
- O - Oil
- A - Air
- DS - Drum Solids
- DL - Drum Liquids
- L - EP/TCLP Leachate
- WI - Wipe
- X - Other
- F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest/PCB	Herb	CR6	Metal	CN
001	MW-52			W	10/25/94	1045	X					X	
002	MW-53			W	↓	1100	X				X	X	
003	MW-61			W	↓	1300	X				X	X	
004	MW-41			W	↓	1325	X				X	X	
005	MW-32			W	↓	1630	X				X	X	
006	MW-15			W	↓	1500	X				X	X	
007	MW-55			W	10/24/94	1130	X						
008	MW-13			W	↓	1015	X						
009	MW-56	✓	✓	W	↓	1100	X						
010	MW-57			W	↓	1430	X						

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

metals = HSL (-) Hg.

Temp = 8.2°C

Original Rewritten

DATE/REVISIONS:
1. 10/31/94 date collected 014 13 10/24/94
2. per 94pm1497.
3.
4.
5.
6.

WESTON Analytics Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # ___
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
Felix	Diane	10-26-94	9:30				

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# ___ Cooler# ___ 381-596a

003146

0002

WESTON Analytics Use Only
9410L747

Custody Transfer Record/Lab Work Request

WESTON

Client: M&E-Sparton
Est. Final Proj. Sampling Date
Work Order #
Project Contact/Phone #
AD Project Manager
QC ______ Del ______ TAT

See page 1

Date Rec'd ______ Date Due ______
Account #

Refrigerator #
#/Type Container: Liquid / Solid
Volume: Liquid / Solid
Preservatives

ANALYSES REQUESTED → ORGANIC: VOA, BNA, Pest/PCB, Herb; INORG: Metal, CN

See page 1

WESTON Analytics Use Only

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	VOA [illegible]	BNA [illegible]
011	MW-60			W	10/24/94	1330	X	
012	MW-64			W	|	1520	X	
013	MW-14			W	|	1335	X	
014	Trip Blank			W	10/24/94	—	X	

[illegible] 10/31/94

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

WESTON Analytics Use Only

Samples were:
1) Shipped __ or Hand Delivered
Airbill #
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N

See page 1

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

RFW 21-21-001/A-7/91 ____ L372 ____ L373 ____ L375 ____ L377 ____ L378 Ref# ______ Cooler# ______ 381-596a

0003

003147

CHAIN-OF-CUSTODY RECORD

Metcalf & Eddy

№ 0315 (Page 1 of 2)

9410L747 CUSTODY SEAL NO.

PROJECT NUMBER 164022 | PROJECT NAME / LOCATION Spartan

SAMPLERS: (Signature) Andrew B. Ellison Phebe Dowd

SAMPLE NO.	DATE	TIME MILITARY	COMP.	GRAB	STATION LOCATION	MATRIX: SOIL	MATRIX: WATER	MATRIX:	CONTAINERS: NUMBER AND SIZE	CONTAINERS: TYPE (P, G)	PARAMETER: TCL VOA	PARAMETER: TAL Metals (No Hg) Hexavalent Cr.	PARAMETER:	PARAMETER:	PARAMETER:	PARAMETER:	PARAMETER:	PRESERVATIVE (Type): HNO_3	PRESERVATIVE (Type): ICE	REMARKS
S08	10/25/94	1045		X	MW-52		X		3x40ml	G	X								X	
					"		X		1x1l	P		X						X		
S09	10/25/94	1100		X	MW-53		X		3x40ml	G	X								X	
					"		X		1x1l	P		X						X		
					"		X		1x1l	P			X						X	
S10	10/25/94	1300		X	MW-61		X		3x40ml	G	X								X	
					"		X		1x1l	P		X						X		
					"		X		1x250ml	P			X						X	
S11	10/25/94	1315		X	MW-41		X		3x40ml	G	X								X	
					"		X		1x1l	P		X						X		
					"		X		3x250ml	P			X						X	
S12	10/25/94	1630		X	MW-32		X		3x40ml	G	X								X	
					"				1x1l	P		X						X		
					"				3x250ml	P			X						X	

Relinquished By: (Signature)	Date/Time	Received By: (Signature)
Andrew B Ellison	10/25/94 1215	
Relinquished By: (Signature)	Date/Time	Received By: (Signature)
FedEx	10/26/94 9:30	John Kane
Relinquished By: (Signature)	Date/Time	Received for Laboratory By: (Signature) / Date/Time

Sample Sent To: Sample Custodian
Lab: Weston Analytical Division
Address: 208 Welsh Pool Rd.
Pickering Creek Ind. Park
Lionville PA 19341
Phone: 215 524 2360
Freight Co.: ~~FedEx~~ FedEx
Air Bill No.: 3263503810

Remarks: Last Samples for Project

Temp 8.2°

Send results to: Attn:
Metcalf & Eddy, Inc.
1845 Woodall Rodgers
Suite 1620, Dallas, Texas 75201
(214) 754-8725

Distribution: White: (Original) Accompanies Shipment
Pink: Copy Returns With Report
Yellow: Sampler's Copy

For Questions about samples, contact A. Ellison (print sampler's name) at (field phone) (214) 754-8725

0031148

M&E Metcalf & Eddy

№ 0316 (Page 2 of 2)

CHAIN-OF-CUSTODY RECORD

CUSTODY SEAL NO.

PROJECT NUMBER: 164022

PROJECT NAME / LOCATION: Spartan

SAMPLERS: (Signature) [signatures]

PARAMETER: TCL VOA / TAL Metals (N.E.) / Hexavalent Cr. / PRESERVATIVE (Type): HNO3 / ICE

SAMPLE NO.	DATE	TIME MILITARY	COMP.	GRAB.	STATION LOCATION	SOIL	WATER		NUMBER AND SIZE	TYPE (P-G)	TCL VOA	TAL Metals	Hexavalent Cr.					HNO3	ICE	REMARKS
S13	10/25/94	1500		X	MW-15		X		3x40ml	G	X								X	
					〃				1x1L	P		X						X		
					〃				1x1L	P			X						X	
S01	10/25/94	1130		X	MW-55		X		3x40ml	G	X								X	
S02	10/25/94	1015		X	MW-13		X		3x40ml	G	X								X	
S03	10/24/94	1100		X	MW-56		X		9x40ml	G	X								X	MS/MSD
S04	10/24/94	1430		X	MW-57		X		3x40ml	G	X								X	
S05	10/24/94	1330		X	MW-60		X		3x40ml	G	X								X	
S06	10/25/94	1520		X	MW-64		X		3x40ml	G	X								X	
S07	10/24/94	1325		X	MW-14		X		3x40ml	G	X								X	
S14	10/20/94			X	Trip Blank		X		3x40ml	G	X								X	Provided by Lab

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	
Andrew B. Ellison	10/25/94 / 1715		
UPS	10/26/94 9:30	[signature]	
Relinquished By: (Signature)	Date/Time	Received for Laboratory By: (Signature)	Date/Time

Sample Sent To: Sample Custodian
Lab: Weston Analytical Division
Address: 208 Welsh Pool Rd.
Pickering Creek Ind. Park
Lionville, PA 19341
Phone: 215 524 7360
Freight Co.: Fed Ex
Air Bill No.: 3263505810

Remarks: Last Samples for Project

Send results to: Attn:
Metcalf & Eddy, Inc.
1845 Woodall Rodgers
Suite 1620, Dallas, Texas 75201
(214) 754-8725

Distribution: White: (Original) Accompanies Shipment!
Pink: Copy Returns With Report
Yellow: Sampler's Copy

For Questions about samples, contact A. Ellison (print sampler's name) at (field phone) [illegible]

00085

ROY F. WESTON, INC.
LIONVILLE ANALYTICAL LABORATORY
ANALYTICAL CASE NARRATIVE

Client: M&E SPARTON
RFW #: 9410L737

W.O. #: 03272-036-002-9999-00
Date Received: 10-25-94

CLP METALS

1. This narrative covers the analyses of seven (7) water samples.

2. The samples were prepared and analyzed in accordance with the following protocols: CLP SOW 3/90.

3. ICVs, CCVs, and LCSs stock standards were purchased from Inorganic Ventures Laboratory and High Purity.

4. All analyses were performed within the required holding times.

5. All Initial and Continuing Calibration Verifications (ICV/CCV's) were within control limits.

6. All Initial and Continuing Calibration Blanks (ICB/CCB's) were within control limits.

7. All Preparation/Method Blanks were below Reporting Limits.

8. All ICP Interference Check Samples (ICSA and ICSAB) were within control limits.

9. All Laboratory Control Samples (LCS) were within the 80-120% control limits.

10. All Serial Dilution percent differences were within USEPA SOW control limits.

11. All Matrix Spike recoveries were within the 75-125% control limits (exception allowed when sample concentration exceeds the spike added concentration by a factor of 4 or more)
except for:

RFW #	Element	%Recovery	RFW #	Element	%Recovery
003	Arsenic	66.0	003T	Lead	67.0
	Lead	64.0		Selenium	55.0
	Selenium	67.0		Thallium	56.2
	Thallium	55.4			

For analytes where the Matrix Spike is out of control, a Post-Digestion Matrix Spike is performed (exception allowed for Ag).

Matrix Spike analyses are not required for Ca, Mg, Na, and K in waters.

12. All Matrix Spike Duplicates were within the 20% Relative Percent Difference (RPD) control limits.

13. All Duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits for samples values greater than 5X Reporting Limit, or +/- the Reporting Limits for sample values less than 5X Reporting Limit.

14. Method of Standard Additions (MSA) analyses were not required.

15. The graphite furnace time that appears on form XIV is the time of the first injection. The time that appears on the data is the print time.

16. All sample ID's were changed to accommodate the EPA naming convention which allows a maximum of 6 characters on all CLP Forms. Refer to the Cover Page of the CLP Forms to correlate the modified sample ID's to the RFW#'s. Refer to the Chain of Custody to correlate RFW#'s to the original client ID.

17. A discrepancy exists between raw data and Form XIVs analytical spikes recovery calculations performed for graphite furnace AA analytes. Instrument software calculates spike recoveries based on absolute values below the IDL for sample results. This is hard-coded by the vendor and is currently not correctable. CLP convention (SOW ILM02.0, Exhibit E, Section V, Item 6, page E-20) requires that when values fall below the IDL, the sample result is equal to zero (0) for the purposes of calculating the percent recovery. The Form XIVs contain the correct calculation.

18. The calibration range for graphite furnace is 0-60 ppb. See Form 12 for linear ranges for ICP.

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

11.21.94
Date

mlj/clp-met.nar

WESTON

USEPA CONTRACT LABORATORY PROGRAM
DATA QUALIFIER DESCRIPTIONS
INORGANIC ANALYSIS SOW 3/90

CONCENTRATION QUALIFIERS:

B	=	INDICATES THAT THE REPORTED VALUE IS LESS THAN THE CRDL BUT GREATER THAN THE IDL.
U	=	INDICATES THAT THE ANALYTE WAS ANALYZED FOR BUT NOT DETECTED.

QUALIFIERS

E	=	THE REPORTED VALUE IS ESTIMATED BECAUSE OF THE PRESENCE INTERFERENCE.
M	=	DUPLICATE INJECTION PRECISION NOT MET.
N	=	SPIKED SAMPLE RECOVERY NOT WITHIN CONTROL LIMITS.
S	=	THE REPORTED VALUE WAS DETERMINED BY THE METHOD OF STANDARD ADDITIONS (MSA).
W	=	POST DIGESTION SPIKE FOR FURNANCE AA ANALYSIS IS OUT OF CONTROL LIMITS (85-125%) WHILE SAMPLE ABSORBANCE IS LESS THAN 50% OF SPIKE ABSORBANCE.
*****	=	DUPLICATE ANALYSIS NOT WITHIN CONTROL LIMITS.
+	=	CORRELATION COEFFICIENT FOR THE MSA IS LESS THAN 0.995.

METHOD

P	=	ICP
A	=	FLAME AA
F	=	FURNACE AA
CV	=	MANUAL COLD VAPOR AA
AV	=	AUTOMATED COLD VAPOR AA
AS	=	SEMI-AUTOMATED SPECTROPHOTOMETRIC
C	=	MANUAL SPECTROPHOTOMETRIC
T	=	TITRIMETRIC
NR	=	NOT REQUIRED

DATA SUMMARY

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/21/94

CLIENT: M&E SPARTON WESTON BATCH #: 9410L737

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	501 MW-55	Silver, Total	2.0	u	UG/L	2.0	1.0
		Aluminum, Total	44.1		UG/L	18.0	1.0
		Arsenic, Total	3.0		UG/L	2.1	1.0
		Barium, Total	44.0		UG/L	2.4	1.0
		Beryllium, Total	0.70		UG/L	0.40	1.0
		Calcium, Total	53700		UG/L	18.3	1.0
		Cadmium, Total	2.6	u	UG/L	2.6	1.0
		Cobalt, Total	2.7	u	UG/L	2.7	1.0
		Chromium, Total	437		UG/L	5.8	1.0
		Copper, Total	16.3		UG/L	1.6	1.0
		Iron, Total	328		UG/L	8.4	1.0
		Potassium, Total	4950		UG/L	649	1.0
		Magnesium, Total	10600		UG/L	21.9	1.0
		Manganese, Total	2.6	u	UG/L	2.6	1.0
		Sodium, Total	39200		UG/L	21.8	1.0
		Nickel, Total	10.3	u	UG/L	10.3	1.0
		Lead, Total	1.0	u	UG/L	1.0	1.0
		Antimony, Total	23.5	u	UG/L	23.5	1.0
		Selenium, Total	2.2		UG/L	1.6	1.0
		Thallium, Total	2.9	u	UG/L	2.9	1.0
		Vanadium, Total	14.4		UG/L	2.7	1.0
		Zinc, Total	23.9		UG/L	1.7	1.0

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/21/94

CLIENT: M&E SPARTON

WESTON BATCH #: 9410L737

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	502 MW-13	Silver, Total	2.0	u	UG/L	2.0	1.0
		Aluminum, Total	21.8		UG/L	18.0	1.0
		Arsenic, Total	3.8		UG/L	2.1	1.0
		Barium, Total	43.1		UG/L	2.4	1.0
		Beryllium, Total	0.40	u	UG/L	0.40	1.0
		Calcium, Total	55700		UG/L	18.3	1.0
		Cadmium, Total	2.6	u	UG/L	2.6	1.0
		Cobalt, Total	2.7	u	UG/L	2.7	1.0
		Chromium, Total	438		UG/L	5.8	1.0
		Copper, Total	1.6	u	UG/L	1.6	1.0
		Iron, Total	10.8		UG/L	8.4	1.0
		Potassium, Total	4930		UG/L	649	1.0
		Magnesium, Total	11000		UG/L	21.9	1.0
		Manganese, Total	2.6	u	UG/L	2.6	1.0
		Sodium, Total	41300		UG/L	21.8	1.0
		Nickel, Total	10.3	u	UG/L	10.3	1.0
		Lead, Total	3.0		UG/L	1.0	1.0
		Antimony, Total	23.5	u	UG/L	23.5	1.0
		Selenium, Total	3.1		UG/L	1.6	1.0
		Thallium, Total	2.9	u	UG/L	2.9	1.0
		Vanadium, Total	11.2		UG/L	2.7	1.0
		Zinc, Total	7.7		UG/L	1.7	1.0

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/21/94

CLIENT: M&E SPARTON

WESTON BATCH #: 9410L737

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	503 MW-56	Silver, Total	2.0	u	UG/L	2.0	1.0
		Aluminum, Total	50.6		UG/L	18.0	1.0
		Arsenic, Total	2.4		UG/L	2.1	1.0
		Barium, Total	46.8		UG/L	2.4	1.0
		Beryllium, Total	0.40	u	UG/L	0.40	1.0
		Calcium, Total	60900		UG/L	18.3	1.0
		Cadmium, Total	2.6	u	UG/L	2.6	1.0
		Cobalt, Total	2.7	u	UG/L	2.7	1.0
		Chromium, Total	373		UG/L	5.8	1.0
		Copper, Total	10.2		UG/L	1.6	1.0
		Iron, Total	79.0		UG/L	8.4	1.0
		Potassium, Total	5400		UG/L	649	1.0
		Magnesium, Total	11700		UG/L	21.9	1.0
		Manganese, Total	2.6	u	UG/L	2.6	1.0
		Sodium, Total	53900		UG/L	21.8	1.0
		Nickel, Total	10.3	u	UG/L	10.3	1.0
		Lead, Total	1.0		UG/L	1.0	1.0
		Antimony, Total	23.5	u	UG/L	23.5	1.0
		Selenium, Total	2.6		UG/L	1.6	1.0
		Thallium, Total	2.9	u	UG/L	2.9	1.0
		Vanadium, Total	11.3		UG/L	2.7	1.0
		Zinc, Total	30.7		UG/L	1.7	1.0

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ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/21/94

CLIENT: M&E SPARTON

WESTON BATCH #: 9410L737

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	504 MW-57	Silver, Total	2.0	u	UG/L	2.0	1.0
		Aluminum, Total	161		UG/L	18.0	1.0
		Arsenic, Total	2.1	u	UG/L	2.1	1.0
		Barium, Total	64.4		UG/L	2.4	1.0
		Beryllium, Total	0.40	u	UG/L	0.40	1.0
		Calcium, Total	50000		UG/L	18.3	1.0
		Cadmium, Total	2.6	u	UG/L	2.6	1.0
		Cobalt, Total	2.7	u	UG/L	2.7	1.0
		Chromium, Total	17.7		UG/L	5.8	1.0
		Copper, Total	7.3		UG/L	1.6	1.0
		Iron, Total	607		UG/L	8.4	1.0
		Potassium, Total	5190		UG/L	649	1.0
		Magnesium, Total	11400		UG/L	21.9	1.0
		Manganese, Total	14.1		UG/L	2.6	1.0
		Sodium, Total	61900		UG/L	21.8	1.0
		Nickel, Total	10.3	u	UG/L	10.3	1.0
		Lead, Total	1.2		UG/L	1.0	1.0
		Antimony, Total	23.5	u	UG/L	23.5	1.0
		Selenium, Total	2.6		UG/L	1.6	1.0
		Thallium, Total	2.9	u	UG/L	2.9	1.0
		Vanadium, Total	8.5		UG/L	2.7	1.0
		Zinc, Total	51.1		UG/L	1.7	1.0

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/21/94

CLIENT: M&E SPARTON

WESTON BATCH #: 9410L737

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	505 MW-60	Silver, Total	2.0	u	UG/L	2.0	1.0
		Aluminum, Total	18.0	u	UG/L	18.0	1.0
		Arsenic, Total	2.8		UG/L	2.1	1.0
		Barium, Total	43.1		UG/L	2.4	1.0
		Beryllium, Total	0.40	u	UG/L	0.40	1.0
		Calcium, Total	58800		UG/L	18.3	1.0
		Cadmium, Total	2.6	u	UG/L	2.6	1.0
		Cobalt, Total	2.7	u	UG/L	2.7	1.0
		Chromium, Total	5.8	u	UG/L	5.8	1.0
		Copper, Total	1.6	u	UG/L	1.6	1.0
		Iron, Total	14.4		UG/L	8.4	1.0
		Potassium, Total	4680		UG/L	649	1.0
		Magnesium, Total	11300		UG/L	21.9	1.0
		Manganese, Total	2.6	u	UG/L	2.6	1.0
		Sodium, Total	41400		UG/L	21.8	1.0
		Nickel, Total	10.3	u	UG/L	10.3	1.0
		Lead, Total	1.0	u	UG/L	1.0	1.0
		Antimony, Total	23.5	u	UG/L	23.5	1.0
		Selenium, Total	1.6	u	UG/L	1.6	1.0
		Thallium, Total	2.9	u	UG/L	2.9	1.0
		Vanadium, Total	12.4		UG/L	2.7	1.0
		Zinc, Total	7.7		UG/L	1.7	1.0

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/21/94

CLIENT: M&E SPARTON

WESTON BATCH #: 9410L737

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	506 MW-64	Silver, Total	2.0	u	UG/L	2.0	1.0
		Aluminum, Total	20.5		UG/L	18.0	1.0
		Arsenic, Total	2.9		UG/L	2.1	1.0
		Barium, Total	38.9		UG/L	2.4	1.0
		Beryllium, Total	0.40	u	UG/L	0.40	1.0
		Calcium, Total	69200		UG/L	18.3	1.0
		Cadmium, Total	2.6	u	UG/L	2.6	1.0
		Cobalt, Total	2.7	u	UG/L	2.7	1.0
		Chromium, Total	5.8	u	UG/L	5.8	1.0
		Copper, Total	3.6		UG/L	1.6	1.0
		Iron, Total	146		UG/L	8.4	1.0
		Potassium, Total	4610		UG/L	649	1.0
		Magnesium, Total	11500		UG/L	21.9	1.0
		Manganese, Total	2.6	u	UG/L	2.6	1.0
		Sodium, Total	49800		UG/L	21.8	1.0
		Nickel, Total	10.3	u	UG/L	10.3	1.0
		Lead, Total	1.0	u	UG/L	1.0	1.0
		Antimony, Total	23.5	u	UG/L	23.5	1.0
		Selenium, Total	1.6	u	UG/L	1.6	1.0
		Thallium, Total	2.9	u	UG/L	2.9	1.0
		Vanadium, Total	12.1		UG/L	2.7	1.0
		Zinc, Total	34.5		UG/L	1.7	1.0

003104

0014

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/21/94

CLIENT: M&E SPARTON

WESTON BATCH #: 9410L737

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	507 MW-14	Silver, Total	2.0	u	UG/L	2.0	1.0
		Aluminum, Total	18.0	u	UG/L	18.0	1.0
		Arsenic, Total	2.1	u	UG/L	2.1	1.0
		Barium, Total	2.4	u	UG/L	2.4	1.0
		Beryllium, Total	0.40	u	UG/L	0.40	1.0
		Calcium, Total	183		UG/L	18.3	1.0
		Cadmium, Total	2.6	u	UG/L	2.6	1.0
		Cobalt, Total	2.7	u	UG/L	2.7	1.0
		Chromium, Total	5.8	u	UG/L	5.8	1.0
		Copper, Total	1.6	u	UG/L	1.6	1.0
		Iron, Total	18.3		UG/L	8.4	1.0
		Potassium, Total	649	u	UG/L	649	1.0
		Magnesium, Total	21.9	u	UG/L	21.9	1.0
		Manganese, Total	2.6	u	UG/L	2.6	1.0
		Sodium, Total	500		UG/L	21.8	1.0
		Nickel, Total	10.3	u	UG/L	10.3	1.0
		Lead, Total	1.0	u	UG/L	1.0	1.0
		Antimony, Total	23.5	u	UG/L	23.5	1.0
		Selenium, Total	1.6	u	UG/L	1.6	1.0
		Thallium, Total	2.9	u	UG/L	2.9	1.0
		Vanadium, Total	2.7	u	UG/L	2.7	1.0
		Zinc, Total	7.4		UG/L	1.7	1.0

003105

0015

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/21/94

CLIENT: M&E SPARTON

WESTON BATCH #: 9410L737

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	94L1667-MB1	Silver, Total	2.0	u	UG/L	2.0	1.0
		Aluminum, Total	22.4		UG/L	18.0	1.0
		Barium, Total	2.4	u	UG/L	2.4	1.0
		Beryllium, Total	0.40	u	UG/L	0.40	1.0
		Calcium, Total	83.7		UG/L	18.3	1.0
		Cadmium, Total	2.6	u	UG/L	2.6	1.0
		Cobalt, Total	2.7	u	UG/L	2.7	1.0
		Chromium, Total	5.8	u	UG/L	5.8	1.0
		Copper, Total	1.6	u	UG/L	1.6	1.0
		Iron, Total	10.4		UG/L	8.4	1.0
		Potassium, Total	649	u	UG/L	649	1.0
		Magnesium, Total	21.9	u	UG/L	21.9	1.0
		Manganese, Total	2.6	u	UG/L	2.6	1.0
		Sodium, Total	29.4		UG/L	21.8	1.0
		Nickel, Total	10.3	u	UG/L	10.3	1.0
		Antimony, Total	23.5	u	UG/L	23.5	1.0
		Vanadium, Total	2.7	u	UG/L	2.7	1.0
		Zinc, Total	1.9		UG/L	1.7	1.0
BLANK1	94L1666-MB1	Arsenic, Total	2.1	u	UG/L	2.1	1.0
		Lead, Total	1.0	u	UG/L	1.0	1.0
		Selenium, Total	1.6	u	UG/L	1.6	1.0
		Thallium, Total	2.9	u	UG/L	2.9	1.0

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 11/21/94

CLIENT: M&E SPARTON WESTON BATCH #: 9410L737

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-003	503 MW-56	Silver, Total	41.8	2.0 u	50.0	83.6	1.0
		Silver, Total MSD	40.6	2.0 u	50.0	81.2	1.0
		Aluminum, Total	1780	50.6	2000	86.7	1.0
		Aluminum, Total MSD	1800	50.6	2000	87.3	1.0
		Arsenic, Total	28.8	2.4	40.0	66.0	1.0
		Arsenic, Total MSD	32.7	2.4	40.0	75.8	1.0
		Barium, Total	1710	46.8	2000	83.4	1.0
		Barium, Total MSD	1750	46.8	2000	84.9	1.0
		Beryllium, Total	41.7	0.40u	50.0	83.4	1.0
		Beryllium, Total MSD	41.9	0.40u	50.0	83.8	1.0
		Calcium, Total	83800	60900	25000	91.7	1.0
		Calcium, Total MSD	84200	60900	25000	93.3	1.0
		Cadmium, Total	47.3	2.6 u	50.0	94.6	1.0
		Cadmium, Total MSD	47.5	2.6 u	50.0	95.0	1.0
		Cobalt, Total	410	2.7 u	500	82.1	1.0
		Cobalt, Total MSD	413	2.7 u	500	82.6	1.0
		Chromium, Total	533	373	200	80.4	1.0
		Chromium, Total MSD	536	373	200	81.8	1.0
		Copper, Total	234	10.2	250	89.4	1.0
		Copper, Total MSD	237	10.2	250	90.7	1.0
		Iron, Total	1030	79.0	1000	95.0	1.0
		Iron, Total MSD	1040	79.0	1000	96.4	1.0
		Potassium, Total	29000	5400	25000	94.3	1.0
		Potassium, Total MSD	29600	5400	25000	97.0	1.0
		Magnesium, Total	35900	11700	25000	96.6	1.0
		Magnesium, Total MSD	36300	11700	25000	98.2	1.0
		Manganese, Total	409	2.6 u	500	81.9	1.0
		Manganese, Total MSD	413	2.6 u	500	82.5	1.0
		Sodium, Total	77300	53900	25000	93.8	1.0
		Sodium, Total MSD	79000	53900	25000	100.5	1.0
		Nickel, Total	414	10.3 u	500	82.8	1.0
		Nickel, Total MSD	418	10.3 u	500	83.6	1.0
		Lead, Total	13.8	1.0	20.0	64.0	1.0
		Lead, Total MSD	14.4	1.0	20.0	67.0	1.0
		Antimony, Total	471	23.5 u	500	94.2	1.0
		Antimony, Total MSD	503	23.5 u	500	100.5	1.0
		Selenium, Total	9.3	2.6	10.0	67.0	1.0
		Selenium, Total MSD	8.1	2.6	10.0	55.0	1.0
		Thallium, Total	27.7	2.9 u	50.0	55.4	1.0
		Thallium, Total MSD	28.1	2.9 u	50.0	56.2	1.0

003107

0017

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 11/21/94

CLIENT: M&E SPARTON

WESTON BATCH #: 9410L737

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-003	503 MW-56	Vanadium, Total	434	11.3	500	84.5	1.0
		Vanadium, Total MSD	435	11.3	500	84.7	1.0
		Zinc, Total	450	30.7	500	83.8	1.0
		Zinc, Total MSD	452	30.7	500	84.3	1.0

003108

0018

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 11/21/94

CLIENT: M&E SPARTON

WESTON BATCH #: 9410L737

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-003	503 MW-56	Silver, Total	83.6	81.2	2.9
		Aluminum, Total	86.7	87.3	0.72
		Arsenic, Total	66.0	75.8	13.8
		Barium, Total	83.4	84.9	1.8
		Beryllium, Total	83.4	83.8	0.48
		Calcium, Total	91.7	93.3	1.7
		Cadmium, Total	94.6	95.0	0.42
		Cobalt, Total	82.1	82.6	0.63
		Chromium, Total	80.4	81.8	1.7
		Copper, Total	89.4	90.7	1.5
		Iron, Total	95.0	96.4	1.4
		Potassium, Total	94.3	97.0	2.8
		Magnesium, Total	96.6	98.2	1.6
		Manganese, Total	81.9	82.5	0.80
		Sodium, Total	93.8	100.5	6.9
		Nickel, Total	82.8	83.6	0.94
		Lead, Total	64.0	67.0	4.6
		Antimony, Total	94.2	100.5	6.6
		Selenium, Total	67.0	55.0	19.7
		Thallium, Total	55.4	56.2	1.4
		Vanadium, Total	84.5	84.7	0.31
		Zinc, Total	83.8	84.3	0.59
LCS2	94L1667-LC2	Silver, LCS	97.1	96.6	0.56
		Aluminum, LCS	105.5	102.6	2.7
		Barium, LCS	104.1	101.3	2.7
		Beryllium, LCS	103.0	100.7	2.3
		Calcium, LCS	105.0	102.6	2.3
		Cadmium, LCS	104.5	102.8	1.6
		Cobalt, LCS	102.5	100.1	2.3
		Chromium, LCS	103.4	101.0	2.4
		Copper, LCS	104.1	101.3	2.7
		Iron, LCS	104.3	101.6	2.6
		Potassium, LCS	102.8	98.1	4.6
		Magnesium, LCS	105.2	102.6	2.5
		Manganese, LCS	102.2	100	2.2
		Sodium, LCS	102.5	99.3	3.2
		Nickel, LCS	103.4	101.7	1.7
		Antimony, LCS	105.6	104.4	1.1
		Vanadium, LCS	105.4	102.7	2.5
		Zinc, LCS	103.0	100.7	2.2

003109

0019

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 11/21/94

CLIENT: M&E SPARTON

WESTON BATCH #: 9410L737

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
LCS2	94L1666-LC2	Arsenic, LCS	83.3	99.7	17.9
		Lead, LCS	82.3	80.3	2.5
		Selenium, LCS	96.0	97.3	1.4
		Thallium, LCS	90.0	88.0	2.2

003110

0020

ROY F. WESTON INC.

INORGANICS PRECISION REPORT 11/21/94

CLIENT: M&E SPARTON

WESTON BATCH #: 9410L737

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-003REP	503 MW-56	Silver, Total	2.0 u	2.0 u	NC	1.0
		Aluminum, Total	50.6	44.4	13.1	1.0
		Arsenic, Total	2.4	3.1	25.5	1.0
		Barium, Total	46.8	43.7	6.9	1.0
		Beryllium, Total	0.40u	0.40u	NC	1.0
		Calcium, Total	60900	57200	6.2	1.0
		Cadmium, Total	2.6 u	2.6 u	NC	1.0
		Cobalt, Total	2.7 u	2.7 u	NC	1.0
		Chromium, Total	373	350	6.1	1.0
		Copper, Total	10.2	6.9	38.6	1.0
		Iron, Total	79.0	77.4	2.0	1.0
		Potassium, Total	5400	5420	0.35	1.0
		Magnesium, Total	11700	11000	6.8	1.0
		Manganese, Total	2.6 u	2.6 u	NC	1.0
		Sodium, Total	53900	50500	6.5	1.0
		Nickel, Total	10.3 u	10.3 u	NC	1.0
		Lead, Total	1.0	1.0 u	NC	1.0
		Antimony, Total	23.5 u	23.5 u	NC	1.0
		Selenium, Total	2.6	2.3	12.2	1.0
		Thallium, Total	2.9 u	2.9 u	NC	1.0
		Vanadium, Total	11.3	13.9	20.6	1.0
		Zinc, Total	30.7	25.9	17.0	1.0

ROY F. WESTON INC.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/21/94

CLIENT: M&E SPARTON WESTON BATCH #: 9410L737

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	94L1667-LC1	Silver, LCS	486	500	UG/L	97.1
		Aluminum, LCS	5270	5000	UG/L	105
		Barium, LCS	5200	5000	UG/L	104
		Beryllium, LCS	258	250	UG/L	103
		Calcium, LCS	26200	25000	UG/L	105
		Cadmium, LCS	261	250	UG/L	104
		Cobalt, LCS	2560	2500	UG/L	102
		Chromium, LCS	517	500	UG/L	103
		Copper, LCS	1300	1250	UG/L	104
		Iron, LCS	5220	5000	UG/L	104
		Potassium, LCS	25700	25000	UG/L	103
		Magnesium, LCS	26300	25000	UG/L	105
		Manganese, LCS	767	750	UG/L	102
		Sodium, LCS	25600	25000	UG/L	102
		Nickel, LCS	2070	2000	UG/L	103
		Antimony, LCS	3170	3000	UG/L	106
		Vanadium, LCS	2630	2500	UG/L	105
		Zinc, LCS	1030	1000	UG/L	103
LCS2	94L1667-LC2	Silver, LCS	483	500	UG/L	96.6
		Aluminum, LCS	5130	5000	UG/L	103
		Barium, LCS	5060	5000	UG/L	101
		Beryllium, LCS	252	250	UG/L	101
		Calcium, LCS	25600	25000	UG/L	103
		Cadmium, LCS	257	250	UG/L	103
		Cobalt, LCS	2500	2500	UG/L	100
		Chromium, LCS	505	500	UG/L	101
		Copper, LCS	1270	1250	UG/L	101
		Iron, LCS	5080	5000	UG/L	102
		Potassium, LCS	24500	25000	UG/L	98.1
		Magnesium, LCS	25700	25000	UG/L	103
		Manganese, LCS	750	750	UG/L	100
		Sodium, LCS	24800	25000	UG/L	99.3
		Nickel, LCS	2030	2000	UG/L	102
		Antimony, LCS	3130	3000	UG/L	104
		Vanadium, LCS	2570	2500	UG/L	103
		Zinc, LCS	1010	1000	UG/L	101
LCS1	94L1666-LC1	Arsenic, LCS	25.0	30.0	UG/L	83.3
		Lead, LCS	24.7	30.0	UG/L	82.3

003112

0022

ROY F. WESTON INC.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/21/94

CLIENT: M&E SPARTON WESTON BATCH #: 9410L737

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	94L1666-LC1	Selenium, LCS	28.8	30.0	UG/L	96.0
		Thallium, LCS	27.0	30.0	UG/L	90.0
LCS2	94L1666-LC2	Arsenic, LCS	29.9	30.0	UG/L	99.7
		Lead, LCS	24.1	30.0	UG/L	80.3
		Selenium, LCS	29.2	30.0	UG/L	97.3
		Thallium, LCS	26.4	30.0	UG/L	88.0

ROY F. WESTON, INC.
LIONVILLE ANALYTICAL LABORATORY
ANALYTICAL CASE NARRATIVE

Client: M&E SPARTON
RFW #: 9410L747

W.O. #: 03272-036-002-9999-00
Date Received: 10-26-94

CLP METALS

1. This narrative covers the analyses of six (6) water samples.

2. The samples were prepared and analyzed in accordance with the following protocols: CLP SOW 3/90.

3. ICVs, CCVs, and LCSs stock standards were purchased from Inorganic Ventures Laboratory and High Purity.

4. All analyses were performed within the required holding times.

5. All Initial and Continuing Calibration Verifications (ICV/CCV's) were within control limits.

6. All Initial and Continuing Calibration Blanks (ICB/CCB's) were within control limits.

7. All Preparation/Method Blanks were below Reporting Limits.

8. All ICP Interference Check Samples (ICSA and ICSAB) were within control limits.

9. All Laboratory Control Samples (LCS) were within the 80-120% control limits.

10. All Serial Dilution percent differences were within USEPA SOW control limits except for:

RFW #	Element	%Difference
001	Calcium	11.4
	Magnesium	18.2

11. All Matrix Spike recoveries were within the 75-125% control limits (exception allowed when sample concentration exceeds the spike added concentration by a factor of 4 or more) except for:

RFW #	Element	%Recovery	RFW #	Element	%Recovery
001	Arsenic	70.5	001T	Selenium	70.0
	Lead	73.5		Lead	70.0
				Thallium	66.2

For analytes where the Matrix Spike is out of control, a Post-Digestion Matrix Spike is performed (exception allowed for Ag).

Matrix Spike analyses are not required for Ca, Mg, Na, and K in waters.

12. All Matrix Spike Duplicates were within the 20% Relative Percent Difference (RPD) control limits.

13. All Duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits for samples values greater than 5X Reporting Limit, or +/- the Reporting Limits for sample values less than 5X Reporting Limit except for:

RFW #	Element	%RPD
001	Calcium	31.5
	Sodium	31.2

14. Method of Standard Additions (MSA) analysis was performed on the following sample:

Element	Sample #
Lead	005

15. The code CV currently in use by the laboratory is for the mercury instrument (HG1). HG1 is complete with autosampler and software, but still requires manual digestion.

16. HG1 requires less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionally scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 ml. For soils, 0.1 gram of sample is taken to a final volume of 50 ml (including all reagents).

17. The graphite furnace time that appears on form XIV is the time of the first injection. The time that appears on the data is the print time.

18. A discrepancy exists between raw data and Form XIVs analytical spikes recovery calculations performed for graphite furnace AA analytes. Instrument software calculates spike recoveries based on absolute values below the IDL for sample results. This is hard-coded by the vendor and is currently not correctable. CLP convention (SOW ILM02.0, Exhibit E, Section V, Item 6, page E-20) requires that when values fall below the IDL, the sample result is equal to zero (0) for the purposes of calculating the percent recovery. The Form XIVs contain the correct calculation.

19. Arsenic, lead, selenium and thallium are calibrated from 0-60 ppb. See Form 12 of package for ICP Linear Ranges.

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

11.29.94
Date

mlj/clp-met.nar

WESTON

USEPA CONTRACT LABORATORY PROGRAM
DATA QUALIFIER DESCRIPTIONS
INORGANIC ANALYSIS SOW 3/90

CONCENTRATION QUALIFIERS:

B	=	INDICATES THAT THE REPORTED VALUE IS LESS THAN THE CRDL BUT GREATER THAN THE IDL.
U	=	INDICATES THAT THE ANALYTE WAS ANALYZED FOR BUT NOT DETECTED.

QUALIFIERS

E	=	THE REPORTED VALUE IS ESTIMATED BECAUSE OF THE PRESENCE INTERFERENCE.
M	=	DUPLICATE INJECTION PRECISION NOT MET.
N	=	SPIKED SAMPLE RECOVERY NOT WITHIN CONTROL LIMITS.
S	=	THE REPORTED VALUE WAS DETERMINED BY THE METHOD OF STANDARD ADDITIONS (MSA).
W	=	POST DIGESTION SPIKE FOR FURNANCE AA ANALYSIS IS OUT OF CONTROL LIMITS (85-125%) WHILE SAMPLE ABSORBANCE IS LESS THAN 50% OF SPIKE ABSORBANCE.
*****	=	DUPLICATE ANALYSIS NOT WITHIN CONTROL LIMITS.
+	=	CORRELATION COEFFICIENT FOR THE MSA IS LESS THAN 0.995.

METHOD

P	=	ICP
A	=	FLAME AA
F	=	FURNACE AA
CV	=	MANUAL COLD VAPOR AA
AV	=	AUTOMATED COLD VAPOR AA
AS	=	SEMI-AUTOMATED SPECTROPHOTOMETRIC
C	=	MANUAL SPECTROPHOTOMETRIC
T	=	TITRIMETRIC
NR	=	NOT REQUIRED

DATA SUMMARY

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/28/94

CLIENT: M&E SPARTON WESTON BATCH #: 9410L747

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	MW-52	Silver, Total	2.0	u	UG/L	2.0	1.0
		Aluminum, Total	40.2		UG/L	18.0	1.0
		Arsenic, Total	4.5		UG/L	2.1	1.0
		Barium, Total	34.6		UG/L	2.4	1.0
		Beryllium, Total	0.40	u	UG/L	0.40	1.0
		Calcium, Total	27200		UG/L	18.3	1.0
		Cadmium, Total	2.6	u	UG/L	2.6	1.0
		Cobalt, Total	2.7		UG/L	2.7	1.0
		Chromium, Total	8.0		UG/L	5.8	1.0
		Copper, Total	2.6		UG/L	1.6	1.0
		Iron, Total	29.8		UG/L	8.4	1.0
		Potassium, Total	4790		UG/L	649	1.0
		Magnesium, Total	6700		UG/L	21.9	1.0
		Manganese, Total	2.6	u	UG/L	2.6	1.0
		Sodium, Total	38600		UG/L	21.8	1.0
		Nickel, Total	10.3	u	UG/L	10.3	1.0
		Lead, Total	1.0	u	UG/L	1.0	1.0
		Antimony, Total	23.5	u	UG/L	23.5	1.0
		Selenium, Total	1.6		UG/L	1.6	1.0
		Thallium, Total	2.9	u	UG/L	2.9	1.0
		Vanadium, Total	20.1		UG/L	2.7	1.0
		Zinc, Total	12.2		UG/L	1.7	1.0

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/28/94

CLIENT: M&E SPARTON WESTON BATCH #: 9410L747

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	MW-53	Silver, Total	2.0	u	UG/L	2.0	1.0
		Aluminum, Total	25.8		UG/L	18.0	1.0
		Arsenic, Total	3.9		UG/L	2.1	1.0
		Barium, Total	55.4		UG/L	2.4	1.0
		Beryllium, Total	0.40	u	UG/L	0.40	1.0
		Calcium, Total	57500		UG/L	18.3	1.0
		Cadmium, Total	2.6	u	UG/L	2.6	1.0
		Cobalt, Total	2.7	u	UG/L	2.7	1.0
		Chromium, Total	95.7		UG/L	5.8	1.0
		Copper, Total	2.0		UG/L	1.6	1.0
		Iron, Total	21.8		UG/L	8.4	1.0
		Potassium, Total	5610		UG/L	649	1.0
		Magnesium, Total	10800		UG/L	21.9	1.0
		Manganese, Total	2.6	u	UG/L	2.6	1.0
		Sodium, Total	58300		UG/L	21.8	1.0
		Nickel, Total	10.3	u	UG/L	10.3	1.0
		Lead, Total	1.6		UG/L	1.0	1.0
		Antimony, Total	23.5	u	UG/L	23.5	1.0
		Selenium, Total	1.6	u	UG/L	1.6	1.0
		Thallium, Total	2.9	u	UG/L	2.9	1.0
		Vanadium, Total	27.7		UG/L	2.7	1.0
		Zinc, Total	32.8		UG/L	1.7	1.0

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ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/28/94

CLIENT: M&E SPARTON WESTON BATCH #: 9410L747

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	MW-61	Silver, Total	2.0	u	UG/L	2.0	1.0
		Aluminum, Total	28.5		UG/L	18.0	1.0
		Arsenic, Total	4.4		UG/L	2.1	1.0
		Barium, Total	52.5		UG/L	2.4	1.0
		Beryllium, Total	0.40	u	UG/L	0.40	1.0
		Calcium, Total	74600		UG/L	18.3	1.0
		Cadmium, Total	2.6	u	UG/L	2.6	1.0
		Cobalt, Total	2.7	u	UG/L	2.7	1.0
		Chromium, Total	8.2		UG/L	5.8	1.0
		Copper, Total	1.6	u	UG/L	1.6	1.0
		Iron, Total	18.7		UG/L	8.4	1.0
		Potassium, Total	5680		UG/L	649	1.0
		Magnesium, Total	12800		UG/L	21.9	1.0
		Manganese, Total	2.6	u	UG/L	2.6	1.0
		Sodium, Total	56000		UG/L	21.8	1.0
		Nickel, Total	10.3	u	UG/L	10.3	1.0
		Lead, Total	1.0	u	UG/L	1.0	1.0
		Antimony, Total	23.5	u	UG/L	23.5	1.0
		Selenium, Total	1.6	u	UG/L	1.6	1.0
		Thallium, Total	2.9	u	UG/L	2.9	1.0
		Vanadium, Total	29.7		UG/L	2.7	1.0
		Zinc, Total	10.3		UG/L	1.7	1.0

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/28/94

CLIENT: M&E SPARTON

WESTON BATCH #: 9410L747

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	MW-41	Silver, Total	2.0	u	UG/L	2.0	1.0
		Aluminum, Total	18.0	u	UG/L	18.0	1.0
		Arsenic, Total	2.1	u	UG/L	2.1	1.0
		Barium, Total	39.8		UG/L	2.4	1.0
		Beryllium, Total	0.40	u	UG/L	0.40	1.0
		Calcium, Total	77700		UG/L	18.3	1.0
		Cadmium, Total	2.6	u	UG/L	2.6	1.0
		Cobalt, Total	3.5		UG/L	2.7	1.0
		Chromium, Total	5.8	u	UG/L	5.8	1.0
		Copper, Total	2.0		UG/L	1.6	1.0
		Iron, Total	16.6		UG/L	8.4	1.0
		Potassium, Total	4410		UG/L	649	1.0
		Magnesium, Total	11400		UG/L	21.9	1.0
		Manganese, Total	183		UG/L	2.6	1.0
		Sodium, Total	47600		UG/L	21.8	1.0
		Nickel, Total	10.3	u	UG/L	10.3	1.0
		Lead, Total	1.0	u	UG/L	1.0	1.0
		Antimony, Total	23.5	u	UG/L	23.5	1.0
		Selenium, Total	1.6	u	UG/L	1.6	1.0
		Thallium, Total	2.9	u	UG/L	2.9	1.0
		Vanadium, Total	27.1		UG/L	2.7	1.0
		Zinc, Total	7.3		UG/L	1.7	1.0

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/28/94

CLIENT: M&E SPARTON WESTON BATCH #: 9410L747

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	MW-32	Silver, Total	2.0	u	UG/L	2.0	1.0
		Aluminum, Total	18.1		UG/L	18.0	1.0
		Arsenic, Total	6.0		UG/L	2.1	1.0
		Barium, Total	79.5		UG/L	2.4	1.0
		Beryllium, Total	0.40	u	UG/L	0.40	1.0
		Calcium, Total	89500		UG/L	18.3	1.0
		Cadmium, Total	2.6	u	UG/L	2.6	1.0
		Cobalt, Total	2.7	u	UG/L	2.7	1.0
		Chromium, Total	5.8	u	UG/L	5.8	1.0
		Copper, Total	1.6	u	UG/L	1.6	1.0
		Iron, Total	938		UG/L	8.4	1.0
		Potassium, Total	4000		UG/L	649	1.0
		Magnesium, Total	13400		UG/L	21.9	1.0
		Manganese, Total	1110		UG/L	2.6	1.0
		Sodium, Total	43300		UG/L	21.8	1.0
		Nickel, Total	10.3	u	UG/L	10.3	1.0
		Lead, Total	58.9		UG/L	2.0	2.0
		Antimony, Total	23.5	u	UG/L	23.5	1.0
		Selenium, Total	1.6	u	UG/L	1.6	1.0
		Thallium, Total	29.0	u	UG/L	29.0	10.0
		Vanadium, Total	24.0		UG/L	2.7	1.0
		Zinc, Total	24.0		UG/L	1.7	1.0

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/28/94

CLIENT: M&E SPARTON

WESTON BATCH #: 9410L747

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	MW-15	Silver, Total	2.0	u	UG/L	2.0	1.0
		Aluminum, Total	21.7		UG/L	18.0	1.0
		Arsenic, Total	2.1	u	UG/L	2.1	1.0
		Barium, Total	2.4	u	UG/L	2.4	1.0
		Beryllium, Total	0.40	u	UG/L	0.40	1.0
		Calcium, Total	339		UG/L	18.3	1.0
		Cadmium, Total	2.6	u	UG/L	2.6	1.0
		Cobalt, Total	2.7	u	UG/L	2.7	1.0
		Chromium, Total	5.8	u	UG/L	5.8	1.0
		Copper, Total	2.3		UG/L	1.6	1.0
		Iron, Total	47.9		UG/L	8.4	1.0
		Potassium, Total	649	u	UG/L	649	1.0
		Magnesium, Total	152		UG/L	21.9	1.0
		Manganese, Total	2.6	u	UG/L	2.6	1.0
		Sodium, Total	611		UG/L	21.8	1.0
		Nickel, Total	10.3	u	UG/L	10.3	1.0
		Lead, Total	1.0	u	UG/L	1.0	1.0
		Antimony, Total	23.5	u	UG/L	23.5	1.0
		Selenium, Total	1.6	u	UG/L	1.6	1.0
		Thallium, Total	2.9	u	UG/L	2.9	1.0
		Vanadium, Total	10.9		UG/L	2.7	1.0
		Zinc, Total	10.3		UG/L	1.7	1.0

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/28/94

CLIENT: M&E SPARTON

WESTON BATCH #: 9410L747

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	94L1673-MB1	Silver, Total	2.0	u	UG/L	2.0	1.0
		Aluminum, Total	20.9		UG/L	18.0	1.0
		Barium, Total	2.4	u	UG/L	2.4	1.0
		Beryllium, Total	0.40	u	UG/L	0.40	1.0
		Calcium, Total	47.6		UG/L	18.3	1.0
		Cadmium, Total	2.6	u	UG/L	2.6	1.0
		Cobalt, Total	2.7	u	UG/L	2.7	1.0
		Chromium, Total	5.8	u	UG/L	5.8	1.0
		Copper, Total	1.6	u	UG/L	1.6	1.0
		Iron, Total	8.4	u	UG/L	8.4	1.0
		Potassium, Total	649	u	UG/L	649	1.0
		Magnesium, Total	119		UG/L	21.9	1.0
		Manganese, Total	2.6	u	UG/L	2.6	1.0
		Sodium, Total	168		UG/L	21.8	1.0
		Nickel, Total	10.3	u	UG/L	10.3	1.0
		Antimony, Total	23.5	u	UG/L	23.5	1.0
		Vanadium, Total	12.5		UG/L	2.7	1.0
		Zinc, Total	2.3		UG/L	1.7	1.0
BLANK1	94L1672-MB1	Arsenic, Total	2.1	u	UG/L	2.1	1.0
		Lead, Total	1.0	u	UG/L	1.0	1.0
		Selenium, Total	1.6	u	UG/L	1.6	1.0
		Tnallium, Total	2.9	u	UG/L	2.9	1.0
BLANK1	94L1741-MB1	Zinc, Total	2.1		UG/L	1.7	1.0

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 11/28/94

CLIENT: M&E SPARTON WESTON BATCH #: 9410L747

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	MW-52	Silver, Total	38.4	2.0 u	50.0	76.8	1.0
		Silver, Total MSD	39.6	2.0 u	50.0	79.2	1.0
		Aluminum, Total	1670	40.2	2000	81.3	1.0
		Aluminum, Total MSD	1700	40.2	2000	83.1	1.0
		Arsenic, Total	32.7	4.5	40.0	70.5	1.0
		Arsenic, Total MSD	35.0	4.5	40.0	76.2	1.0
		Barium, Total	1650	34.6	2000	80.7	1.0
		Barium, Total MSD	1680	34.6	2000	82.5	1.0
		Beryllium, Total	41.3	0.40u	50.0	82.6	1.0
		Beryllium, Total MSD	42.4	0.40u	50.0	84.8	1.0
		Calcium, Total	62300	27200	25000	140.1	1.0
		Calcium, Total MSD	63900	27200	25000	146.4	1.0
		Cadmium, Total	43.1	2.6 u	50.0	86.2	1.0
		Cadmium, Total MSD	42.7	2.6 u	50.0	85.4	1.0
		Cobalt, Total	400	2.7	500	79.5	1.0
		Cobalt, Total MSD	408	2.7	500	81.2	1.0
		Chromium, Total	175	8.0	200	83.6	1.0
		Chromium, Total MSD	178	8.0	200	85.2	1.0
		Copper, Total	200	2.6	250	79.1	1.0
		Copper, Total MSD	204	2.6	250	80.4	1.0
		Iron, Total	815	29.8	1000	78.5	1.0
		Iron, Total MSD	860	29.8	1000	83.0	1.0
		Potassium, Total	30000	4790	25000	100.8	1.0
		Potassium, Total MSD	29900	4790	25000	100.6	1.0
		Magnesium, Total	32800	6700	25000	104.6	1.0
		Magnesium, Total MSD	33600	6700	25000	107.4	1.0
		Manganese, Total	394	2.6 u	500	78.9	1.0
		Manganese, Total MSD	403	2.6 u	500	80.6	1.0
		Sodium, Total	78800	38600	25000	160.8	1.0
		Sodium, Total MSD	80500	38600	25000	167.4	1.0
		Nickel, Total	404	10.3 u	500	80.8	1.0
		Nickel, Total MSD	412	10.3 u	500	82.5	1.0
		Lead, Total	14.7	1.0 u	20.0	73.5	1.0
		Lead, Total MSD	14.0	1.0 u	20.0	70.0	1.0
		Antimony, Total	456	23.5 u	500	91.3	1.0
		Antimony, Total MSD	466	23.5 u	500	93.3	1.0
		Selenium, Total	9.8	1.6	10.0	82.0	1.0
		Selenium, Total MSD	8.6	1.6	10.0	70.0	1.0
		Thallium, Total	39.0	2.9 u	50.0	78.0	1.0
		Thallium, Total MSD	33.1	2.9 u	50.0	66.2	1.0

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 11/28/94

CLIENT: M&E SPARTON

WESTON BATCH #: 9410L747

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	MW-52	Vanadium, Total	432	20.1	500	82.4	1.0
		Vanadium, Total MSD	442	20.1	500	84.3	1.0
		Zinc, Total	452	12.2	500	87.9	1.0
		Zinc, Total MSD	455	12.2	500	88.6	1.0

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ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 11/28/94

CLIENT: M&E SPARTON WESTON BATCH #: 9410L747

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-001	MW-52	Silver, Total	76.8	79.2	3.1
		Aluminum, Total	81.3	83.1	2.2
		Arsenic, Total	70.5	76.2	7.8
		Barium, Total	80.7	82.5	2.1
		Beryllium, Total	82.6	84.8	2.6
		Calcium, Total	140.1	146.4	4.4
		Cadmium, Total	86.2	85.4	0.93
		Cobalt, Total	79.5	81.2	2.1
		Chromium, Total	83.6	85.2	1.8
		Copper, Total	79.1	80.4	1.6
		Iron, Total	78.5	83.0	5.6
		Potassium, Total	100.8	100.6	0.14
		Magnesium, Total	104.6	107.4	2.7
		Manganese, Total	78.9	80.6	2.1
		Sodium, Total	160.8	167.4	4.0
		Nickel, Total	80.8	82.5	2.0
		Lead, Total	73.5	70.0	4.9
		Antimony, Total	91.3	93.3	2.1
		Selenium, Total	82.0	70.0	15.8
		Thallium, Total	78.0	66.2	16.4
		Vanadium, Total	82.4	84.3	2.2
		Zinc, Total	87.9	88.6	0.88
LCS2	94L1673-LC2	Silver, LCS	90.0	90.4	0.40
		Aluminum, LCS	97.6	98.7	1.1
		Barium, LCS	94.9	96.0	1.2
		Beryllium, LCS	96.4	97.8	1.4
		Calcium, LCS	101.1	102.6	1.5
		Cadmium, LCS	95.6	97.4	1.9
		Cobalt, LCS	97.3	98.6	1.3
		Chromium, LCS	98.2	99.8	1.6
		Copper, LCS	94.4	95.6	1.3
		Iron, LCS	97.7	99.1	1.4
		Potassium, LCS	94.4	96.6	2.3
		Magnesium, LCS	98.8	100.4	1.5
		Manganese, LCS	96.9	97.9	1.0
		Sodium, LCS	94.3	95.9	1.6
		Nickel, LCS	98.2	100.3	2.1
		Antimony, LCS	98.8	99.0	0.17
		Vanadium, LCS	98.9	100.1	1.2
		Zinc, LCS	98.0	99.9	2.0

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0020

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 11/28/94

CLIENT: M&E SPARTON WESTON BATCH #: 9410L747

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
LCS2	94L1672-LC2	Arsenic, LCS	94.3	95.7	1.4
		Lead, LCS	94.7	83.0	13.1
		Selenium, LCS	97.0	97.7	0.68
		Thallium, LCS	95.7	91.3	4.6
LCS2	94L1741-LC2	Zinc, LCS	105.0	102.7	2.1

ROY F. WESTON INC.

INORGANICS PRECISION REPORT 11/28/94

CLIENT: M&E SPARTON WESTON BATCH #: 9410L747

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	MW-52	Silver, Total	2.0 u	2.0 u	NC	1.0
		Aluminum, Total	40.2	18.1	75.8	1.0
		Arsenic, Total	4.5	5.0	10.5	1.0
		Barium, Total	34.6	43.8	23.5	1.0
		Beryllium, Total	0.40u	0.40u	NC	1.0
		Calcium, Total	27200	37500	31.5	1.0
		Cadmium, Total	2.6 u	2.6 u	NC	1.0
		Cobalt, Total	2.7	2.7 u	NC	1.0
		Chromium, Total	8.0	10.6	28.0	1.0
		Copper, Total	2.6	2.0	26.1	1.0
		Iron, Total	29.8	15.2	64.9	1.0
		Potassium, Total	4790	6480	30.1	1.0
		Magnesium, Total	6700	9170	31.1	1.0
		Manganese, Total	2.6 u	2.6 u	NC	1.0
		Sodium, Total	38600	52900	31.2	1.0
		Nickel, Total	10.3 u	10.3 u	NC	1.0
		Lead, Total	1.0 u	1.0 u	NC	1.0
		Antimony, Total	23.5 u	23.5 u	NC	1.0
		Selenium, Total	1.6	1.6 u	NC	1.0
		Thallium, Total	2.9 u	2.9 u	NC	1.0
		Vanadium, Total	20.1	24.6	20.1	1.0
		Zinc, Total	12.2	13.6	10.9	1.0

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0022

ROY F. WESTON INC.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/28/94

CLIENT: M&E SPARTON WESTON BATCH #: 9410L747

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	94L1673-LC1	Silver, LCS	450	500	UG/L	90.0
		Aluminum, LCS	4880	5000	UG/L	97.6
		Barium, LCS	4740	5000	UG/L	94.9
		Beryllium, LCS	241	250	UG/L	96.4
		Calcium, LCS	25300	25000	UG/L	101
		Cadmium, LCS	239	250	UG/L	95.6
		Cobalt, LCS	2430	2500	UG/L	97.3
		Chromium, LCS	491	500	UG/L	98.2
		Copper, LCS	1180	1250	UG/L	94.4
		Iron, LCS	4890	5000	UG/L	97.7
		Potassium, LCS	23600	25000	UG/L	94.4
		Magnesium, LCS	24700	25000	UG/L	98.8
		Manganese, LCS	727	750	UG/L	96.9
		Sodium, LCS	23600	25000	UG/L	94.3
		Nickel, LCS	1960	2000	UG/L	98.2
		Antimony, LCS	2970	3000	UG/L	98.8
		Vanadium, LCS	2470	2500	UG/L	98.9
		Zinc, LCS	980	1000	UG/L	98.0
LCS2	94L1673-LC2	Silver, LCS	452	500	UG/L	90.4
		Aluminum, LCS	4940	5000	UG/L	98.7
		Barium, LCS	4800	5000	UG/L	96.0
		Beryllium, LCS	244	250	UG/L	97.8
		Calcium, LCS	25600	25000	UG/L	103
		Cadmium, LCS	244	250	UG/L	97.4
		Cobalt, LCS	2460	2500	UG/L	98.6
		Chromium, LCS	499	500	UG/L	99.8
		Copper, LCS	1200	1250	UG/L	95.6
		Iron, LCS	4950	5000	UG/L	99.1
		Potassium, LCS	24200	25000	UG/L	96.6
		Magnesium, LCS	25100	25000	UG/L	100
		Manganese, LCS	734	750	UG/L	97.9
		Sodium, LCS	24000	25000	UG/L	95.9
		Nickel, LCS	2010	2000	UG/L	100
		Antimony, LCS	2970	3000	UG/L	99.0
		Vanadium, LCS	2500	2500	UG/L	100
		Zinc, LCS	999	1000	UG/L	99.9
LCS1	94L1672-LC1	Arsenic, LCS	28.3	30.0	UG/L	94.3
		Lead, LCS	28.4	30.0	UG/L	94.7

ROY F. WESTON INC.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/28/94

CLIENT: M&E SPARTON WESTON BATCH #: 9410L747

WORK ORDER: 03272-036-002-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	94L1672-LC1	Selenium, LCS	29.1	30.0	UG/L	97.0
		Thallium, LCS	28.7	30.0	UG/L	95.7
LCS2	94L1672-LC2	Arsenic, LCS	28.7	30.0	UG/L	95.7
		Lead, LCS	24.9	30.0	UG/L	83.0
		Selenium, LCS	29.3	30.0	UG/L	97.7
		Thallium, LCS	27.4	30.0	UG/L	91.3
LCS1	94L1741-LC1	Zinc, LCS	1050	1000	UG/L	105
LCS2	94L1741-LC2	Zinc, LCS	1030	1000	UG/L	103