



24 October 2004

Mr. Steve Trent  
Fluor Hanford Inc.  
825 Jadwin Ave.  
Richland, WA 99352

**Subject: Contract No. 630  
Analytical Data Package**

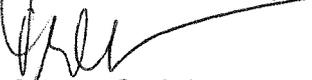
Dear Mr. Trent:

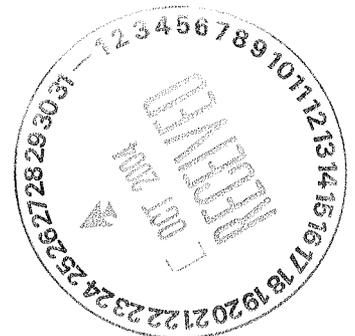
Enclosed are the hard copy analytical reports for the batch number/fraction indicated (marked X) in the following table:

LvLI Batch #	0409L598
SDG #	H2714
SAF #	F03-025
Date Received	9-10-04
# Samples	2
Matrix	Soil
Volatiles	
Semivolatiles	
Pest/PCB	
DRO/GRO/KRO	
Herbicides	
GC Alcohol	
Metals	
Inorganics	X

The electronic data deliverable (EDD) will be emailed shortly. If you have any questions, please don't hesitate to contact me at (610) 280-3012.

Sincerely,  
Lionville Laboratory Incorporated

  
Orlette S. Johnson  
Project Manager



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Lionville Laboratory, Inc.  
 INORGANIC ANALYTICAL DATA PACKAGE FOR  
 TNUHANFORD F03-025 H2714

DATE RECEIVED: 09/10/04

LVL LOT # :0409L598

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
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B191J9

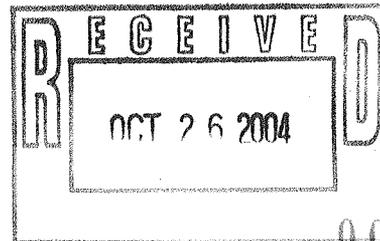
% SOLIDS	001	S	04L&S156	09/07/04	09/13/04	09/14/04
% SOLIDS	001 REP	S	04L&S156	09/07/04	09/13/04	09/14/04
CHROMIUM VI	001	S	04LVI029	09/07/04	09/23/04	09/23/04
NITRATE NITRITE	001	S	04LN3056	09/07/04	10/04/04	10/05/04
NITRATE NITRITE	001 REP	S	04LN3056	09/07/04	10/04/04	10/05/04
NITRATE NITRITE	001 MS	S	04LN3056	09/07/04	10/04/04	10/05/04
OIL & GREASE BY GRAV	001	S	04LOG025	09/07/04	09/15/04	09/16/04
OIL AND GREASE BY GR	001 REP	S	04LOG025	09/07/04	09/15/04	09/16/04
OIL AND GREASE BY GR	001 MS	S	04LOG025	09/07/04	09/15/04	09/16/04
SULFIDE	001	S	04LSD051	09/07/04	09/13/04	09/13/04
SULFIDE	001 REP	S	04LSD051	09/07/04	09/13/04	09/13/04
SULFIDE	001 MS	S	04LSD051	09/07/04	09/13/04	09/13/04

B191K0

% SOLIDS	002	S	04L&S156	09/08/04	09/13/04	09/14/04
CHROMIUM VI	002	S	04LVI029	09/08/04	09/23/04	09/23/04
CHROMIUM VI	002 REP	S	04LVI029	09/08/04	09/23/04	09/23/04
CHROMIUM VI	002 MS	S	04LVI029	09/08/04	09/23/04	09/23/04
CHROMIUM VI	002 MSD	S	04LVI029	09/08/04	09/23/04	09/23/04
NITRATE NITRITE	002	S	04LN3056	09/08/04	10/04/04	10/05/04
OIL & GREASE BY GRAV	002	S	04LOG025	09/08/04	09/15/04	09/16/04
SULFIDE	002	S	04LSD051	09/08/04	09/13/04	09/13/04

LAB QC:

CHROMIUM VI	MB1	S	04LVI029	N/A	09/23/04	09/23/04
CHROMIUM VI	MB1 BS	S	04LVI029	N/A	09/23/04	09/23/04
CHROMIUM VI	MB1 BSD	S	04LVI029	N/A	09/23/04	09/23/04
NITRATE NITRITE	MB1	S	04LN3056	N/A	10/04/04	10/05/04
NITRATE NITRITE	MB1 BS	S	04LN3056	N/A	10/04/04	10/05/04
OIL & GREASE BY GRAV	MB1	S	04LOG025	N/A	09/15/04	09/16/04
OIL AND GREASE BY GR	MB1 BS	S	04LOG025	N/A	09/15/04	09/16/04
SULFIDE	MB1	S	04LSD051	N/A	09/13/04	09/13/04
SULFIDE	MB1 BS	S	04LSD051	N/A	09/13/04	09/13/04



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Lionville Laboratory, Inc.  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
TNUHANFORD F03-025 H2714

DATE RECEIVED: 09/10/04

LVL LOT # :0409L598

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SULFIDE	MB1 BSD	S	04LSD051	N/A	09/13/04	09/13/04

000001502



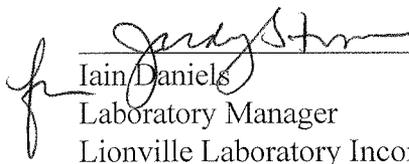
## Analytical Report

**Client:** TNU-HANFORD F03-025 H2714  
**LVL#:** 0409L598

**W.O.#:** 11343-606-001-9999-00  
**Date Received:** 9-10-04

### INORGANIC NARRATIVE

1. This narrative covers the analyses of 2 soil samples.
2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.
3. Sample holding times as required by the method and/or contract were met.
4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy.
5. The method blanks were within the method criteria.
6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS for Sulfide was within the 20% Relative Percent Difference (RPD) control limit.
7. The matrix spike recoveries for Chromium VI, Nitrate Nitrite, Oil and Grease and Sulfide were within the 75-125% control limits.
8. The replicate analyses for Percent Solids, Chromium VI, Nitrate Nitrite, Oil and Grease and Sulfide were within the 20% RPD control limit.
9. Results for solid samples are reported on a dry weight basis.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

  
Iain Daniels  
Laboratory Manager  
Lionville Laboratory Incorporated

10/19/04  
Date

njpl09-598

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 14 pages.

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Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	<u>ASTM</u>	<u>SW846</u>	<u>OTHER</u>
% Ash	___ D2216-80		
% Moisture	___ D2216-80		___ ILMO4.0 (e)
% Solids	___ ✓ D2216-80		___ ILMO4.0 (e)
% Volatile Solids	___ D2216-80		
ASTM Extraction in Water	___ D3987-81/85		
BTU	___ D240-87		
CEC		___ 9081	___ c
Chromium VI		___ ✓ 3060A/7196A	
Corrosivity ___ by coupon ___ by pH		___ 1110(mod) ___ 9045C	
Cyanide, Total		___ 9010B	___ ILMO4.0 (e)
Cyanide, Reactive		___ Section 7.3/9014	
Halides, Extractable Organic		___ 9020B	___ EPA 600/4/84-008
Halides, Total		___ 9020B	___ EPA 600/4/84-008
EP Toxicity		___ 1310A	
Flash Point		___ 1010	
Ignitability		___ 1010	
Oil & Grease		___ ✓ 9071A	___ ✓ 413.1 (mod.) (2)
Carbon, Total Organic		___ 9060	___ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	___ D240-87(mod)	___ 5050	
Petroleum Hydrocarbons, Total Recoverable		___ 9071	___ EPA 418.1
pH, Soil		___ 9045C	
Sulfide, Reactive		___ Section 7.3/9030B	
Sulfide		___ ✓ 9030B(mod) / 9034	
Specific Gravity	___ D1429-76C/	___ D5057-90	
Sulfur, Total		___ 9056	
Synthetic Preparation Leach		___ 1312	
Paint Filter		___ 9095A	
<b>Other:</b> nitrate nitrite		<b>Method:</b> EPA 353.2 (mod.)	
<b>Other:</b>		<b>Method:</b>	

# Lionville Laboratory Incorporated

## METHOD REFERENCES AND DATA QUALIFIERS

### DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

\* = Indicates that the original sample result is greater than 4x the spike amount added.

### ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LC = Laboratory Control Sample.

NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

### ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.
2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
3. Test Methods for Evaluating Solid Waste (USEPA SW-846).
  - a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).
  - b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).
  - c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).
  - d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).
  - e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
  - f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 10/06/04

CLIENT: TNUHANFORD F03-025 H2714  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0409L598

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
-001	B191J9	% Solids	84.0	%	0.01	1.0
		Chromium VI	0.24	u MG/KG	0.24	1.0
		Nitrate Nitrite	3.0	MG/KG	0.09	1.0
		Oil & Grease Gravimetri	794	u MG/KG	794	1.0
		Sulfide	46.3	u MG/KG	46.3	1.0
-002	B191K0	% Solids	94.5	%	0.01	1.0
		Chromium VI	0.21	u MG/KG	0.21	1.0
		Nitrate Nitrite	1.4	MG/KG	0.08	1.0
		Oil & Grease Gravimetri	706	u MG/KG	706	1.0
		Sulfide	39.9	u MG/KG	39.9	1.0

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Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/06/04

CLIENT: TNUHANFORD F03-025 H2714  
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0409L598

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
BLANK10	04LVI029-MB1	Chromium VI	0.20 u	MG/KG	0.20	1.0
BLANK10	04LN3056-MB1	Nitrate Nitrite	0.08 u	MG/KG	0.08	1.0
BLANK10	04LOG025-MB1	Oil & Grease Gravimetri	667	u MG/KG	667	1.0
BLANK10	04LSD051-MB1	Sulfide	40.0 u	MG/KG	40.0	1.0

0000020

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 10/06/04

CLIENT: TNUHANFORD F03-025 H2714  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0409L598

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
=====	=====	=====	=====	=====	=====	=====	=====
-001	B191J9	Nitrate Nitrite	15.1	3.0	11.2	107.9	5.0
		Oil & Grease Gravimetr	6890	794 u	6900	99.7	1.0
		Sulfide	363	4.6	401	89.3	1.0
-002	B191K0	Soluble Chromium VI	4.1	0.21u	4.2	96.9	1.0
		Insoluble Chromium VI	1310	0.21u	1250	104.6	100
BLANK10	04LVI029-MB1	Soluble Chromium VI	4.0	0.20u	4.0	101.0	1.0
		Insoluble Chromium VI	1230	0.20u	1200	101.9	100
BLANK10	04LN3056-MB1	Nitrate Nitrite	2.1	0.08u	2.0	104.0	1.0
BLANK10	04LOG025-MB1	Oil & Grease Gravimetr	5360	667 u	6010	89.1	1.0
BLANK10	04LSD051-MB1	Sulfide	322	40.0 u	352	91.6	1.0
		Sulfide MSD	334	40.0 u	352	95.1	1.0

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Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 10/06/04

CLIENT: TNUHANFORD F03-025 H2714  
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0409L598

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	04LSD051-MB1	Sulfide	91.6	95.1	3.7

0000022

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 10/06/04

CLIENT: TNUHANFORD F03-025 H2714  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0409L598

SAMPLE	SITE ID	ANALYTE	INITIAL		DILUTION
			RESULT	REPLICATE RPD	
-001REP	B191J9	% Solids	84.0	84.0	1.0
		Nitrate Nitrite	3.0	3.3	1.0
		Oil & Grease Gravimetri	794 u	794 u	1.0
		Sulfide	46.3 u	47.2 u	1.0
-002REP	B191K0	Chromium VI	0.21u	0.21u	1.0

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<b>COLLECTOR</b> Pope/Pfister/Wiberg/Tyra	<b>COMPANY CONTACT</b> TRENT, STEVE	<b>TELEPHONE NO.</b> 373-5689	<b>PROJECT COORDINATOR</b> TRENT, SJ	<b>PRICE CODE</b> 8N	<b>DATA TURNAROUND</b> 45 Days / 45 Days
<b>SAMPLING LOCATION</b> 216-S-20; 158A-160.5A 151.5' - 154' 9-7-04	<b>PROJECT DESIGNATION</b> 200-LW-1/LW-2 Characterization - Soil		<b>SAF NO.</b> F03-025	<b>AIR QUALITY</b> <input type="checkbox"/>	

<b>ICE CHEST NO.</b> SAWS - 104	<b>FIELD LOGBOOK NO.</b> HNF-N-356 1	<b>COA</b> 119143ES10	<b>METHOD OF SHIPMENT</b> Federal Express		
------------------------------------	---	--------------------------	--	--	--

<b>SHIPPED TO</b> Overline Services Peora	<b>OFFSITE PROPERTY NO.</b> See PTR 14085	<b>BILL OF LADING/AIR BILL NO.</b> See PTR 14085
--	--	---

<b>MATRIX*</b> A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	<b>POSSIBLE SAMPLE HAZARDS/ REMARKS</b> N/A  Tie to Rad Screen B19 1H7	<b>PRESERVATION</b>	Cool 4C	None							
		<b>TYPE OF CONTAINER</b>	aG	aG							
		<b>NO. OF CONTAINER(S)</b>	1	1							
		<b>VOLUME</b>	250mL	250mL							
		<b>SPECIAL HANDLING AND/OR STORAGE</b>	N/A	<b>SAMPLE ANALYSIS</b>	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS					

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME							
B191J9	SOIL	9-7-04	0765	X						

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	(1)Chromium Hex - 7196; NO2/NO3 - 353.2; Sulfides - 9030; Oil & Grease - 413.1; (2)Nickel-63; Gamma Spec - Radium (Radium-226, Radium-228) Technetium 99; Isotopic Thorium (Thorium-232) Tritium - H3; Carbon-14; Strontium-89,90 - Total Sr;	
J. S. POPE / ASST	9-7-04 1115	M10-026 / Ridge #1	9-7-04 1115		
M10-026 / Ridge #1	9/9/04 0900	Greg Thomas / Greg Thomas	9/9/04 0900		
Greg Thomas / Greg Thomas	9/9/04 0900	Fed Ex			
Fed Ex	9-10-04 0945	V. Hernandez	9-10-04 0945		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		

<b>LABORATORY SECTION</b>	<b>RECEIVED BY</b>	<b>TITLE</b>	<b>DATE/TIME</b>
<b>FINAL SAMPLE DISPOSITION</b>	<b>DISPOSAL METHOD</b>	<b>DISPOSED BY</b>	<b>DATE/TIME</b>

12  
0000025

MJ  
8-4-04

FLUOR Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F03-025-120	PAGE 1 OF 1
COLLECTOR Pope/Pfister/Wiberg/Tyra	COMPANY CONTACT TRENT, STEVE	TELEPHONE NO. 373-5689	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8N	DATA TURNAROUND 45 Days / 45 Days
SAMPLING LOCATION 216-S-20; 87.5ft-100ft	PROJECT DESIGNATION 200-LW-1/LW-2 Characterization - Soil		SAF NO. F03-025	AIR QUALITY <input type="checkbox"/>	

ICE CHEST NO. SANS-104	FIELD LOGBOOK NO. HNF-N-356 1	COA 119143ES10	METHOD OF SHIPMENT Federal Express		
SHIPPED TO Eberline Services	OFFSITE PROPERTY NO. See PTR 14085	BILL OF LADING/AIR BILL NO. See PTR 14085			

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS N/A	PRESERVATION Cool 4C	None																	
	Tie to Rad Section B191H7	TYPE OF CONTAINER	aG	aG																
		NO. OF CONTAINER(S)	1	1																
		VOLUME	250mL	250mL																
SPECIAL HANDLING AND/OR STORAGE N/A	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS																	

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME																
B191K0	SOIL	9-8-04	1115	X															

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM R. Pfister	DATE/TIME 9/8/04 1340	RECEIVED BY/STORED IN M0-026 PRIG #1
RELINQUISHED BY/REMOVED FROM M0-026 Frig #1	DATE/TIME 9/9/04 0900	RECEIVED BY/STORED IN Greg Thomas / Greg Thomas
RELINQUISHED BY/REMOVED FROM Greg Thomas / Greg Thomas	DATE/TIME 9/9/04 0900	RECEIVED BY/STORED IN Fed Ex
RELINQUISHED BY/REMOVED FROM Fed Ex	DATE/TIME 9-10-04 0945	RECEIVED BY/STORED IN V. Alexander
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

13  
0000026

ms  
84c

Lionville Laboratory Incorporated  
**SAMPLE RECEIPT CHECKLIST (SRC)**

CLIENT: *TNU - Hanford*

Date: *9-10-04*

Purchase Order / Project# /  
 SAF# / SOW# / Release #: *F03-025*

LvLI Batch #: *0409L598*

Sample Custodian: *V. Hernandez*

NOTE: EXPLAIN ALL DISCREPANCIES

- |   |   |  |
|---|---|--|
| 1. Samples Hand Delivered or <u>Shipped</u>   | Carrier <i>Fed Ex</i>   | Airbill# <i>7913 3424 048</i>                        |
| 2. Custody seals on coolers or shipping container intact, signed and dated?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals      Comments      |
| 3. Outside of coolers or shipping containers are free from damage?  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |  |
| 4. All expected paperwork received (coc and other client specific information) sealed in plastic bag and easily accessible? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |  |
| 5. Samples received cooled or ambient?  | Temp <i>4</i> °C  | Cooler # <i>SAWS-104</i>                             |
| 6. Custody seals on sample containers intact, signed and dated?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals                    |
| 7. coc signed and dated?  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |  |
| 8. Sample containers are intact?  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |  |
| 9. All samples on coc received? All samples received on coc?  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |  |
| 10. All sample label information matches coc?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |  |
| 11. Samples properly preserved?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |  |
| 12. Samples received within hold times? Short holds taken to wet lab?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |  |
| 13. VOA, TOC, TOX free of headspace?  | <input type="checkbox"/> Yes <input type="checkbox"/> No            | <input checked="" type="checkbox"/> N/A              |
| 14. QC stickers placed on bottles designated by client?   | <input type="checkbox"/> Yes <input type="checkbox"/> No            | <input checked="" type="checkbox"/> N/A              |
| 15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles not within policy. See reverse side for policy)     | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |  |
| 16. Project Manager contacted concerning discrepancies? name/date (or samples outside criteria)                             | <input type="checkbox"/> Yes <input type="checkbox"/> No            | <input checked="" type="checkbox"/> No Discrepancies |