

**TMA**  
Thermo Analytical Inc.

9613477-2367

0045177

B01845-TMA-298

298



TMA/Norcal  
2030 Wright Avenue  
P. O. Box 4040  
Richmond, CA 94804-0040

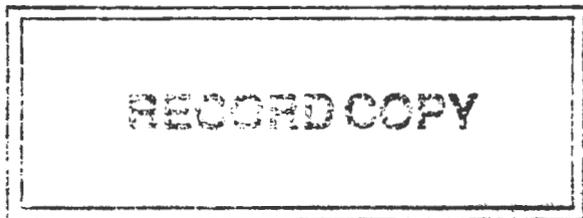
(510) 235-2633 Fax No. (510) 235-0438

December 2, 1992

SENT BY FEDERAL EXPRESS

Ref. TMA/Norcal N2-10-043-7099

Mr. John Bourgeault  
Westinghouse Hanford Company  
2355 Stevens Drive  
Richland, WA 99352



Dear Mr. Bourgeault:

Enclosed on the Summary Data Section, are the <sup>90</sup>Sr, and total uranium results for the tissue samples from 300-FF-5 Location we received 25 September 1992. The QA/QC results are also given in the Summary Data Section.

The Summary Data Section is paginated 1 through 47 and Appendices 1 through 17 are paginated 48 through 147.

Please call if you have any questions concerning this data.

Sincerely,

Dinkar P. Kharkar, Ph.D.  
Manager, Nuclear Programs

DPK/ss

Enclosures: Section 1 through 11  
Appendices



i 2-29-96  
MC

SDG 7099  
Contact Dinkar P. Kharkar

Client Westinghouse Hanford  
Contract MBH-SVV-069262

CASE NARRATIVE

1.0 GENERAL

Tissue sample results from Location 300-FF-5 (TMA/Norcal Groups 7099) are reported herein. TMA/Norcal Group 7099 is comprised of the seventeen samples listed on the Chain-of-Custody documents and are identified as samples 7099-1 through 17.

1.1 CHAINS-OF-CUSTODY

This report includes data from the samples delivered under Chain-of-Custody documents Field Logbook No. BNW 53573.

1.2 SAMPLE VOLUME

A glass or plastic jar of each sample was received for the analyses.

1.3 MISSING SAMPLES

All samples were received in an undamaged condition.

1.4 HOLDING TIMES

The collections were made on 8/20/92 and sample processing was initiated within 180 days of collection.

2.0 QUALITY CONTROL

The internal quality control consisted of one sample each of a laboratory control, a blank, and a replicate. All original analyses were performed with QC samples 7099-18 through 21.

The QC samples were prepared and labelled by the quality control officer. Copies of The QC notebook pages are included in the data package.

2.1 LABORATORY CONTROL SAMPLES

LCS recoveries for total uranium and  $^{90}\text{Sr}$  were good and MDA's for uranium and  $^{90}\text{Sr}$  meet the RDL requirements.

2.2 BLANKS

MDA's for the analyses meet the RDL requirements.

Case Narrative Section

Page 1 of 2

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Mc

SDG 7099  
Contact Dinkar P. Kharkar

Client Westinghouse Hanford  
Contract MBH-SVV-069262

CASE NARRATIVE

2.3 REPLICATES

Results were satisfactory for the replicate analyses. The MDA for  $^{90}\text{Sr}$  was underlined because it exceeded the RDL requirement of 2 pCi/g. The first count on  $^{90}\text{Y}$  planchet was taken three days after purification resulting in high MDA due to heavy instrument loading.

3.0 ANALYTICAL NOTES

3.1 Strontium-90 Analyses: The average yield for twelve analyses was  $(78 \pm 21\%)$ . The lowest yield was 54% and the highest was 93%. The average MDA was  $1.6 \pm 1.0$  pCi/g. Positive  $^{90}\text{Sr}$  concentration above RDL was not found in any of the samples. The MDA for 7099-8 was higher than RDL because the first count on  $^{90}\text{Y}$  planchet was not taken immediately after purification due to heavy instrument loading. Strontium-90 aliquots were 0.5 g while nominal aliquot for the method is 1.0 g.

3.2 Total Uranium Analyses: The average MDA was  $0.023 \pm 0.050$   $\mu\text{g/g}$ . Positive total uranium concentration above the average MDA was found in 7099-1, 11, 12, and 13.

9613473.2370

TMA NORCAL  
REPORTING GROUP 7099

N210043-01

B01845

DATA SHEET

SDG 7099  
Contact Dinkar Kharkar

Client Westinghouse Hanford  
Contract MBH-SVV-069262

Lab sample id N210043-01  
Dept sample id 7099-001  
Received 09/25/92  
% moisture \_\_\_\_\_

Client sample id B01845  
Matrix BIOTA  
Collected 08/20/92  
Chain of custody id BNW53573

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI- FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.029	0.006	0.005		X	U_T

DATA SHEETS

Page 1

SUMMARY DATA SECTION

Page 13

Lab id TMAN  
Protocol WHC-HEIS  
Version Ver 1.0  
Form DVD-DS  
Version 2.20  
Report date 12/03/92

9613473.2371

TMA NORCAL  
REPORTING GROUP 7099

DATA SHEET

N210043-02

B01846

SDG 7099  
Contact Dinkar Kharkar

Client Westinghouse Hanford  
Contract MBH-SVV-069262

Lab sample id N210043-02  
Dept sample id 7099-002  
Received 09/25/92  
% moisture \_\_\_\_\_

Client sample id B01846  
Matrix BIOTA  
Collected 08/20/92  
Chain of custody id BNW53573

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI- FIERS	TEST
Strontium 90	10098-97-2	0.81	0.87	1.8	2.0	U	Y

DATA SHEETS

Page 2

SUMMARY DATA SECTION

Page 14

Lab id TMAN  
Protocol WNC-HEIS  
Version Ver 1.0  
Form DVD-DS  
Version 2.20  
Report date 12/03/92

9613473.2372

**TMA NORCAL  
REPORTING GROUP 7099**

**DATA SHEET**

N210043-03

801847

SDG 7099  
Contact Dinkar Kharker

Client Westinghouse Hanford  
Contract MBH-SVV-069262

Lab sample id N210043-03  
Dept sample id 7099-003  
Received 09/25/92  
% moisture \_\_\_\_\_

Client sample id 801847  
Matrix BIOTA  
Collected 08/20/92  
Chain of custody id BNW53573

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI- FIERS	TEST
Strontium 90	10098-97-2	1.2	0.86	1.7	2.0	0	Y

Lab id TMAK  
Protocol WHC-HEIS  
Version Ver 1.0  
Form DVD-DS  
Version 2.20  
Report date 12/03/92

9613473.2373

TMA NORCAL  
REPORTING GROUP 7099

DATA SHEET

N210043-04

B01848

SDG 7099  
Contact Dinkar Kharkar

Client Westinghouse Hanford  
Contract MBH-SVV-069262

Lab sample id N210043-04  
Dept sample id 7099-004  
Received 09/25/92  
% moisture \_\_\_\_\_

Client sample id B01848  
Matrix BIOTA  
Collected 08/20/92  
Chain of custody id BNW53573

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI- FIERS	TEST
Strontium 90	10098-97-2	0.28	0.64	1.5	2.0	U	Y

DATA SHEETS

Page 4

SUMMARY DATA SECTION

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Lab id TMAN  
Protocol WHC-HEIS  
Version Ver 1.0  
Form DVD-DS  
Version 2.20  
Report date 12/03/92

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**TMA NORCAL**  
**REPORTING GROUP 7099**

**N210043-05**

**B01849**

**DATA SHEET**

SDG 7099  
Contact Dinkar Kharker

Client Westinghouse Hanford  
Contract MBH-SVV-069262

Lab sample id N210043-05  
Dept sample id 7099-005  
Received 09/25/92  
% moisture \_\_\_\_\_

Client sample id B01849  
Matrix BIOTA  
Collected 08/20/92  
Chain of custody id BNW53573

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI- FIERS	TEST
Total Uranium (ug/g)	7440-61-1	U		0.055		U	U_T

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TMA NORCAL  
REPORTING GROUP 7099

N210043-06

801850

DATA SHEET

SDG <u>7099</u>	Client <u>Westinghouse Hanford</u>
Contact <u>Dinkar Kharkar</u>	Contract <u>MBH-SVV-069262</u>
Lab sample id <u>N210043-06</u>	Client sample id <u>801850</u>
Dept sample id <u>7099-006</u>	Matrix <u>BIOTA</u>
Received <u>09/25/92</u>	Collected <u>08/20/92</u>
X moisture _____	Chain of custody id <u>BNW53573</u>

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI- FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.010	0.004	0.005			U_T

Lab id <u>TMAN</u>
Protocol <u>WNC-HEIS</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>2.20</u>
Report date <u>12/03/92</u>

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TMA NORCAL  
REPORTING GROUP 7099

N210043-07

B01851

DATA SHEET

SDG 7099  
Contact Dinkar Kharkar

Client Westinghouse Hanford  
Contract MBH-SVV-069262

Lab sample id N210043-07  
Dept sample id 7099-007  
Received 09/25/92  
% moisture \_\_\_\_\_

Client sample id B01851  
Matrix BIOTA  
Collected 08/20/92  
Chain of custody id BNW53573

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI- FIERS	TEST
Total Uranium (ug/g)	7440-61-1	U		0.055		U	U_T

Lab id TMAN  
Protocol WNC-HEIS  
Version Ver 1.0  
Form DVD-DS  
Version 2.20  
Report date 12/03/92

9613473.2377

TMA NORCAL  
REPORTING GROUP 7099

DATA SHEET

N210043-08

B07GD3

SDG 7099  
Contact Dinkar Kharkar

Client Westinghouse Hanford  
Contract MBH-SVV-069262

Lab sample id N210043-08  
Dept sample id 7099-008  
Received 09/25/92  
% moisture \_\_\_\_\_

Client sample id B07GD3  
Matrix BIOTA  
Collected 08/20/92  
Chain of custody id BNW53573

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI- FIERS	TEST
Strontium 90	10098-97-2	0.72	1.1	2.4	2.0	U	Y

DATA SHEETS

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SUMMARY DATA SECTION

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Lab id TMAN  
Protocol WHC-HEIS  
Version Ver 1.0  
Form DVD-DS  
Version 2.20  
Report date 12/03/92

9613473.2378

TMA NORCAL  
REPORTING GROUP 7099

N210043-09

B07GD4

DATA SHEET

SDG <u>7099</u>	Client <u>Westinghouse Hanford</u>
Contact <u>Dinkar Kharkar</u>	Contract <u>MBH-SVV-069262</u>
Lab sample id <u>N210043-09</u>	Client sample id <u>B07GD4</u>
Dept sample id <u>7099-009</u>	Matrix <u>BIOTA</u>
Received <u>09/25/92</u>	Collected <u>08/20/92</u>
% moisture _____	Chain of custody id <u>BNW53573</u>

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI- FIERS	TEST
Strontium 90	10098-97-2	1.2	1.3	1.3	2.0	U	Y

DATA SHEETS

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SUMMARY DATA SECTION

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Lab id <u>TMAN</u>
Protocol <u>WHC-HEIS</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>2.20</u>
Report date <u>12/03/92</u>

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TMA NORCAL  
REPORTING GROUP 7099

DATA SHEET

N210043-10

B07GD5

SDG 7099  
Contact Dinkar Kharkar

Client Westinghouse Hanford  
Contract MBH-SVV-069262

Lab sample id N210043-10  
Dept sample id 7099-010  
Received 09/25/92  
% moisture \_\_\_\_\_

Client sample id B07GD5  
Matrix BIOTA  
Collected 08/20/92  
Chain of custody id BNW53573

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI- FIERS	TEST
Strontium 90	10098-97-2	-0.11	0.86	1.3	2.0	U	Y

Lab id TMAN  
Protocol WHC-HEIS  
Version Ver 1.0  
Form DVD-DS  
Version 2.20  
Report date 12/03/92

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TMA NORCAL  
REPORTING GROUP 7099

N210043-11

B07GD6

DATA SHEET

SDG <u>7099</u>	Client <u>Westinghouse Hanford</u>
Contact <u>Dinkar Kharkar</u>	Contract <u>MBH-SVV-069262</u>
Lab sample id <u>N210043-11</u>	Client sample id <u>B07GD6</u>
Dept sample id <u>7099-011</u>	Matrix <u>BIOTA</u>
Received <u>09/25/92</u>	Collected <u>08/20/92</u>
% moisture _____	Chain of custody id <u>BNW53573</u>

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI- FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.092	0.034	0.005		X	U_T

Lab id	<u>TMAN</u>
Protocol	<u>WHC-HEIS</u>
Version	<u>Ver 1.0</u>
Form	<u>DVD-DS</u>
Version	<u>2.20</u>
Report date	<u>12/03/92</u>

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TMA NORCAL  
REPORTING GROUP 7099

DATA SHEET

N210043-12

B07GD7

SDG 7099  
Contact Dinkar Kharkar

Client Westinghouse Hanford  
Contract MBH-SVV-069262

Lab sample id N210043-12  
Dept sample id 7099-012  
Received 09/25/92  
% moisture \_\_\_\_\_

Client sample id B07GD7  
Matrix BIOTA  
Collected 08/20/92  
Chain of custody id BNW53573

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI- FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.14	0.051	0.055		X	U_T

DATA SHEETS

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SUMMARY DATA SECTION

Page 24

Lab id TMAN  
Protocol WHC-HEIS  
Version Ver 1.0  
Form DVD-DS  
Version 2.20  
Report date 12/03/92

9613473.2382

TMA NORCAL  
REPORTING GROUP 7099

N210043-13

DATA SHEET

B07GD8

SDG 7099  
Contact Dinkar Kharkar

Client Westinghouse Hanford  
Contract MBH-SVV-069262

Lab sample id N210043-13  
Dept sample id 7099-013  
Received 09/25/92  
% moisture \_\_\_\_\_

Client sample id B07GD8  
Matrix BIOTA  
Collected 08/20/92  
Chain of custody id BNW53573

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI- FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.082	0.032	0.055		X	U_T

DATA SHEETS

Page 13

SUMMARY DATA SECTION

Page 25

Lab id TMAN  
Protocol WHC-HEIS  
Version Ver 1.0  
Form DVD-DS  
Version 2.20  
Report date 12/03/92

9613473.2383

**TMA NORCAL**  
**REPORTING GROUP 7099**

**#210043-14**

**807GD9**

**DATA SHEET**

SDG <u>7099</u>	Client <u>Westinghouse Hanford</u>
Contact <u>Dinker Kharkar</u>	Contract <u>MBH-SVV-069262</u>
Lab sample id <u>#210043-14</u>	Client sample id <u>807GD9</u>
Dept sample id <u>7099-014</u>	Matrix <u>BIOTA</u>
Received <u>09/25/92</u>	Collected <u>08/20/92</u>
% moisture _____	Chain of custody id <u>BNW53573</u>

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI- FIERS	TEST
Strontium 90	10098-97-2	0.86	0.69	1.3	2.0	U	Y

Lab id <u>TMAN</u>
Protocol <u>WHC-MEIS</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>2.20</u>
Report date <u>12/03/92</u>

9613473.2384

TMA NORCAL  
REPORTING GROUP 7099

DATA SHEET

N210043-15

B07GF0

SDG 7099  
Contact Dinker Kharkar

Client Westinghouse Hanford  
Contract MBH-SVV-069262

Lab sample id N210043-15  
Dept sample id 7099-015  
Received 09/25/92  
% moisture \_\_\_\_\_

Client sample id B07GF0  
Matrix BIOTA  
Collected 08/20/92  
Chain of custody id BNW53573

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI- FIERS	TEST
Strontium 90	10098-97-2	0.72	1.1	1.6	2.0	U	Y

Lab id TMAN  
Protocol WHC-MEIS  
Version Ver 1.0  
Form DVD-DS  
Version 2.20  
Report date 12/03/92

9613473.2385

**TMA NORCAL**  
**REPORTING GROUP 7099**

**DATA SHEET**

N210043-16

B07GF1

SDG 7099  
 Contact Dinkar Kharkar

Client Westinghouse Hanford  
 Contract MBH-SVV-069262

Lab sample id N210043-16  
 Dept sample id 7099-016  
 Received 09/25/92  
 % moisture \_\_\_\_\_

Client sample id B07GF1  
 Matrix BIOTA  
 Collected 08/20/92  
 Chain of custody id BNW53573

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI- FIERS	TEST
Strontium 90	10098-97-2	1.6	0.89	1.5	2.0	J	Y

Lab id TMAN  
 Protocol WHC-HEIS  
 Version Ver 1.0  
 Form DVD-DS  
 Version 2.20  
 Report date 12/03/92

9613473.2386

TMA NORCAL  
REPORTING GROUP 7099

DATA SHEET

N210043-17

B07GF2

SDG 7099  
Contact Dinkar Kharkar

Client Westinghouse Hanford  
Contract MBH-SVV-069262

Lab sample id N210043-17  
Dept sample id 7099-017  
Received 09/25/92  
% moisture \_\_\_\_\_

Client sample id B07GF2  
Matrix BIOTA  
Collected 08/20/92  
Chain of custody id BNW53573

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI- FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.010	0.004	0.005		X	U_T

DATA SHEETS

Page 17

SUMMARY DATA SECTION

Page 29

Lab id TMAN  
Protocol WHC-HEIS  
Version Ver 1.0  
Form DVD-DS  
Version 2.20  
Report date 12/03/92

9613473.2387

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator Brett Tiller  
 Company Contact C. A. Blandt Telephone 376-3444  
 Project Designation/Sampling Locations 300 - FF-5 Oper. Unit Collection Date NA  
 Ice Chest No. PNL - BLT-1 Field Logbook No. BNW53573  
 Bill of Lading/Airbill No. \_\_\_\_\_ Offsite Property No. PNL-93-015  
 Method of Shipment Emery Overnight  
 Shipped to TMA / NOCCAL  
 Possible Sample Hazards/Remarks < Detection - total Activity, GEA analyzed and cleared

Sample Identification

<u>B01845</u>	<u>tissue sample</u>	<u>B076D3</u>	<u>tissue sample</u>
<u>B01846</u>	}	<u>B076D4</u>	}
<u>B01847</u>		<u>B076D5</u>	
<u>B01848</u>		<u>B076D6</u>	
<u>B01849</u>		<u>B076D7</u>	
<u>B01850</u>		<u>B076D8</u>	
<u>B01851</u>		<u>B076D9</u>	
<u>B01852</u>		<u>B076E0</u>	
<u>B01853</u>		<u>B076F1</u>	
<u>B01854</u>		<u>B076F2</u>	

Field Transfer of Custody		CHAIN OF POSSESSION	(Sign and Print Names)
Relinquished by: <u>Brett Tiller</u>	Received by:	Date/Time:	
<u>Brett Tiller</u>		<u>9/24/92 1500</u>	
Relinquished by:	Received by:	Date/Time:	
	<u>Kermit Blum</u>	<u>9-25-92 1200</u>	
Relinquished by:	Received by:	Date/Time:	
Relinquished by:	Received by:	Date/Time:	

Final Sample Disposition

Disposal Method: \_\_\_\_\_ Disposed by: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Comments: \_\_\_\_\_ 048

9613473.2388

Westinghouse  
Hanford Company

## SAMPLE ANALYSIS REQUEST

## PART I: FIELD SECTION

Collector Brett Jiller Date Sampled NA Time \_\_\_\_\_ hours  
 Company Contact Same PNL Telephone (509) 376-3444

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B01845 ✓	1 glass or plastic jar	tissue	U tot
B01846 ✓	↓	↓	Sr-90
B01847 ✓			Sr-90
B01848 ✓			Sr-90
B01849 ✓			U tot
B01850 ✓			U tot
B01851 ✓			U tot
B01852 ✓			metals
B01853 ✓			metals
B01854 ✓			metals
B07G03 ✓			Sr-90
B07G04 ✓			Sr-90
B07G05 ✓			Sr-90
B07G06 ✓			U tot
B07G07 ✓			U tot
B07G08 ✓			U tot
B07G09 ✓			Sr-90
B07GF0 ✓			Sr-90
B07GF1 ✓			Sr-90
B07GF2 ✓	U tot		

Field Information\*\* From 300 FF-5 oper unit

Special Handling and/or Storage freeze

Possible Sample Hazards None

## PART II: LABORATORY SECTION

Received by Kermit Blum Title Sample Control Supervisor Date 9-25-92  
 Analysis Required \_\_\_\_\_

049

\*Indicate whether sample is soil, sludge, water, etc.

\*\*Use back of page for additional information relative to sample location.