

App E –  
Sub-Area 5.4 - COC Forms

Page: _____ of _____ Project #: _____ GEL Quote #: _____ COC Number (1): _____ PO Number: _____		<b>GEL Chain of Custody and Analytical Request</b> **See www.gel.com for GEL's Sample Acceptance SOP** <b>GEL Work Order Number:</b> _____		GEL Laboratories, LLC 2040 Savage Road Charleston, SC 29407 Phone: (843) 556-8171 Fax: (843) 766-1178											
Client Name:		Phone #:		Sample Analysis Requested (5) (Fill in the number of containers for each test)											
Project/Site Name:		Fax #:		Should this sample be considered											← Preservative Type (6)
Address:															
Collected by:		Send Results To:		TSC A Required per of											Comments: Note: extra sample is required for sample specific QC
Sample ID: <small>*For composites - indicate start and stop date/time</small>	Date Collected (mm-dd-yy)	*Time Collected (Military) (hh:mm)	QC Code (m)		Field Filtered (m)	Sample Matrix (m)									
5.4A.R.1.1	12-16-15														
5.4A.R.1.2	12-16-15														
5.4A.R.1.3	12-16-15														
5.4A.R.1.4	12-16-15														
5.4A.R.1.5	12-16-15														
5.4A.R.1.6	12-16-15														
5.1A.R.1.1	12-16-15														
5.1A.R.1.2	12-16-15														
5.1A.R.1.3	12-16-15														
5.1A.R.1.4	12-16-15														
TAT Requested: Normal		Rush:		Specify: (Subject to Surcharge)		Fax Results: Yes / No		Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4							
Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards												Sample Collection Time Zone Eastern Pacific: Central Other: Mountain			
Chain of Custody Signatures						Sample Shipping and Delivery Details									
Relinquished By (Signed):		Date:		Time:		Received by (signed):		Date:		Time:					
1						1									
2						2									
3						3									
						GEL PM:									
						Method of Shipment:									
						Date Shipped:									
						Airbill #:									
						Airbill #:									
1.) Chain of Custody Number = Client Determined 2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite 3.) Field Filtered: For liquid matrices, indicate with a Y = for yes the sample was field filtered or N = for sample was not field filtered. 4.) Matrix/Code: DW = Drinking Water, GW = Groundwater, SW = Surface Water, WW = Waste Water, W = Water, ML = Misc Liquid, SO = Soil, SD = Sediment, SL = Sludge, SS = Solid Waste, O = Oil, F = Filter, P = Wipe, U = Urine, F = Fecal, N = N/A 5.) Sample Analysis Requested: Analytical method requested (i.e. 8260B, 8210B, 8240A) and number of containers provided for each (i.e. 8260B = 3, 8210B/8240A = 1). 6.) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate. If no preservative is added = leave field blank															
WHITE = LABORATORY      YELLOW = FILE      PINK = CLIENT															

For Lab Receiving Use Only	
Custody Seal Intact?	
YES	NO
Cooler Temp:	
C	

App E –  
Sub-Area 5.4- Field Survey Checklist

## The MJW Companies

### GPS Field Survey Checklist

The following field survey checklist is used once the survey team has walked to the location that they will begin a GPS survey. This checklist is intended to verify none of the cables or settings changed or cables came loose between the initial setup location and the field survey location. Complete step 9 once the current walkover segment is complete.

1. LB Verify the Ludlum Meter is in Rate mode
2. LB Verify that the Ludlum Meter is alternating display of "DUP" and "Value"
3. LB Set Menu 1 to "Status" and Menu 2 to "Receiver"
4. LB Verify that Antenna states "External"
5. LB Set Menu 1 to "Data"
6. LB Name a file to start the current survey and start the data logger

Filename: 12 15 15 5 - 2 b

7. LB Set Menu 1 to "Status" and Menu 2 to "Sensor" 12 15 15 5 3 a 12 15 15 5 4 a
8. LB Verify that the sensor field is reading the same as the display on the Ludlum
9. LB When finished, set Menu 1 to "Data" and close the current file.

Name: Juliett. Ba

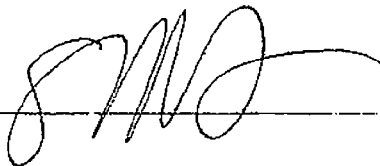
Date: 12/15/15

## The MJW Companies

### GPS Initial Setup Checklist

1. ☒ Complete source check of Ludlum Meter
2. ☒ Power off Ludlum Meter
3. ☒ Verify Trimble is shutdown (not in suspend mode)
4. ☒ Connect the Serial Interface Adapter (SIA) to the Trimble Unit
5. ☒ Connect the Serial cable to the Ludlum Meter
6. ☒ Connect the Serial cable to the Trimble SIA
7. ☒ Connect external GPS antenna cable to the Trimble
8. ☒ Power on Ludlum Meter to Rate mode
9. ☒ Verify that the Ludlum Meter is alternating display of "DUP" and "Value"
10. ☒ Power on the Trimble and wait for it to completely boot
11. ☒ Launch TerraSync and wait for it to load and acquire satellites
12. ☒ Set Menu 1 to "Status" and Menu 2 to "Receiver"
13. ☒ Verify that Antenna states "External"
14. ☒ Set Menu 1 to "Data"
15. ☒ Name a test file and start the data logger
16. ☒ Set Menu 1 to "Status" and Menu 2 to "Sensor"
17. ☒ Verify that the sensor field is reading the same as the display on the Ludlum
18. ☒ Set Menu 1 to "Data" and close the current file.

Name: \_\_\_\_\_



Date: \_\_\_\_\_

12.15.15  
8:20am

App E –  
Sub-Area 5.4 - Instrument Field Sheets

# Instrument Field Response Check Log

## 1. Instrument Information

Ratemeter: Make/Model: LUDLUM 2241-2 Serial No. 262737 Cal. Due Date: 9/2/16  
 Detector 1: Make/Model: LUDLUM 44-10 Serial No. PR 111127  
 Bicron MicroRem Meter: Serial No. A224U Cal. Due Date: 8/4/16

## 2. Check Source Information:

Source 1 Isotope: Th-232 Serial No.: 116 Activity: <0.1 units: uci Assay Date: 12/30/10  
 Response Acceptance Range (+/-20%): uRem/hr +20% uRem/hr -20% net cpm + 20% 22926 net cpm -20% 15284  
 Source 2 Isotope: Cs-137 Serial No.: 87E13-48 Activity: 0.02 units: uci Assay Date: 1/20/10  
 Response Acceptance Range (+/-20%): uRem/hr +20% uRem/hr -20% net cpm + 20% 13375 net cpm -20% 8919

## 3. Technician/Worker Performing Checks:

Name: STEVE KISMAN Title: RCT Date: 12/16/15 Time: 0815

## 4. Site or Location:

Site/Job: 5.4

Location Description: WOODS

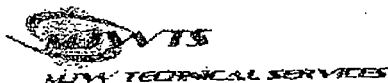
GPS Coordinates (when required): X-Coord: \_\_\_\_\_ Y-Coord: \_\_\_\_\_

Instrument Field Response					Use Acceptance Criteria					Remarks
Meter	Bkg Cnt Time (m/w)	Bkg Counts (cpm) or uRem/hr	Source Cnt Time (m/w)	Source Response (gross cpm or uRem/hr)	+/- 20% source gross cpm or uRem/hr (Y/N)	Inst. Calib. current (Y/N)	Battery Check (Y/N)	Time Of check	Ambient Temp. (°F)	Initials and Comments (add'n info: inst. Condition, etc.)
Ratemeter	1	7625	1	21116	Y	Y	Y	0815	44.8	Th-232
Ratemeter	1	7625	1	11356	Y	Y	Y	0815	44.8	Cs-137
Ratemeter	1	7556	1	19670	Y	Y	Y	1100	45.8	Th-232
Ratemeter	1	7556	1	11260	Y	Y	Y	1100	45.8	Cs-137
Ratemeter	1	7423	1	19406	Y	Y	Y	1308	45.8	Th-232
Ratemeter	1	7423	1	11391	Y	Y	Y	1313	45.8	Cs-137
Bicron	NA	6	NA	18	Y	Y	Y	0815	44.8	Th-232
Bicron	NA	6	NA	18	Y	Y	Y	1100	45.8	Th-232
Bicron	NA	6	NA	18	Y	Y	Y	1300	45.8	Th-232

- Instrument designated check source is listed on calibration sticker. Record check source response (net cpm) prior to field deployment for all check sources being used.
- Source and Background count rate should be determined from the average of three static counts at the same location. Repeat counts should be within 20%. If count rate diverges significantly, perform additional counts to evaluate instrument stability.

App E-  
Sub-Area 5.4- Sample Data Sheets





## SAMPLE LOCATION DATA SHEET

Date: 12-16-15 Project: NYSERDA Name: Tori Brown

Weather: Calvin, cloudy, 40°F

### 1. Sample Area (SA):

SA Designation: 5.4A Description: Woods  
 SA Origin Location: \_\_\_\_\_ Coord. System: \_\_\_\_\_  
 SA Land Mark Description: \_\_\_\_\_ Coord: \_\_\_\_\_

### 2. Sample Location Data:

Sample Area ID: 5.4A.R.1 Matrix: Soil

Location Coord: N 42° 31' 08.63" W 78° 58' 37.94"

Alternate Location Measurements (distance from SA origin and Local Coord.)

X Dist. from Origin (0,0) N/A Y Dist. from Origin: N/A

Site Sketch Attached (Yes) ☒ (NO) ☐

Sample Location Description: Woods, young trees, leaves

Canopy Type: Open Land Use: Hiking Soil Moisture (Wet, dry, etc.): Dry

### 3. Location Radiation Readings:

2x2 NaI (cpm)			Bicron (uRem/hr)		Notes
Count time (min)	1 cm	1m	1 cm	1m	
1	6116	5878	5	4	Bicron - LUDLUM 2241-2 Serial # 262737 Cal due 9/2/16
1	6184	5878			2x2 - LUDLUM 44-10 Serial #PR111127 #A2240 Cal due 8/4/16

### 4. Sample Information:

Sample Area ID: 5.4A.R.1.1-6

#### Description by Depth:

Depth Interval (cm)	Soil Type (Org; clay; sand, etc.)	Soil Color	Sample ID	Sampling Description (Surface litter type/depth, sample depth retention, refusal, stone or rock, topography, erosion features)
0-15	Soil	Brown	5.4A.R.1.1	litter, roots
15-30	Soil	light brown	5.4A.R.1.2	roots
30-60	soil	light brown	5.4A.R.1.3	roots & rocks
60-100	soil/rocks	light brown	5.4A.R.1.4	rocks (gravel)
0-15	Soil	Brown	5.4A.R.1.5	litter, roots
60-100	soil/rocks	light brown	5.4A.R.1.6	rocks (gravel)

Sample Recorded on Laboratory COC form and Container Labeled: ☒ (Y) ☐ (N)



## SAMPLE LOCATION DATA SHEET

Date: 12-11-15 Project: NYSERDA Name: Tori Brown

Weather: Calm, sunny, 50°F

### 1. Sample Area (SA):

SA Designation: 5.4A Description: Woods  
 SA Origin Location: \_\_\_\_\_ Coord. System: \_\_\_\_\_  
 SA Land Mark Description: \_\_\_\_\_ Coord: \_\_\_\_\_

### 2. Sample Location Data:

Sample Area ID: 5.4A.R.2 Matrix: Soil

Location Coord: N 42° 31' 08" W 78° 58' 37" 05"

Alternate Location Measurements (distance from SA origin and Local Coord.)

X Dist. from Origin (0,0) N/A Y Dist. from Origin: N/A

Site Sketch Attached (Yes) (NO)

Sample Location Description: Large trees, leaves

Canopy Type: Open Land Use: Hiking Soil Moisture (Wet, dry, etc.): Dry

### 3. Location Radiation Readings:

2x2 NaI (cpm)			Bicron (uRem/hr)		Notes
Count time (min)	1 cm	1m	1 cm	1m	
1	6368	6102	7	6	Bicron - LUDLUM 2241-2 Serial # 262737 cal due 9/2/16
1	6297	5896			2x2 - LUDLUM 44-10 Serial # PR111127 #A2240 cal due 8/4/16

### 4. Sample Information:

Sample Area ID: 5.4A.R.2.1-2

#### Description by Depth:

Depth Interval (cm)	Soil Type (Org; clay; sand, etc.)	Soil Color	Sample ID	Sampling Description (Surface litter type/depth, sample depth retention, refusal, stone or rock, topography, erosion features)
0-15	Soil	Brown	5.4A.R.2.1	roots
15-30	Soil	Brown	5.4A.R.2.2	roots

Sample Recorded on Laboratory COC form and Container Labeled: (Y) (N)

10/20/15



# SAMPLE LOCATION DATA SHEET

Date: 12-11-15 Project: NYSERDA Name: Tan Brown

Weather: calm, sunny, 56°

## 1. Sample Area (SA):

SA Designation: S.4A Description: Woods  
 SA Origin Location: \_\_\_\_\_ Coord. System: \_\_\_\_\_  
 SA Land Mark Description: \_\_\_\_\_ Coord: \_\_\_\_\_

## 2. Sample Location Data:

Sample Area ID: S.4A.R.3 Matrix: Soil

Location Coord: N 42° 32' 08.15" W 78° 58' 37.17"

Alternate Location Measurements (distance from SA origin and Local Coord.)

X Dist. from Origin (0,0) N/A Y Dist. from Origin: N/A

Site Sketch Attached (Yes) (NO)

Sample Location Description: large trees, leaves, very young saplings

Canopy Type: Open Land Use: Hiking Soil Moisture (Wet, dry, etc.): \_\_\_\_\_

## 3. Location Radiation Readings:

2x2 NaI (cpm)			Bicron (uRem/hr)		Notes
Count time (min)	1 cm	1m	1 cm	1m	
1	6495	6164	7	5	Bicron - LUDLUM 2241-2 Serial # 262737 cal due 9/2/16
1	6562	6088			2x2 - LUDLUM 44-10 Serial #PR11127 #A2240 cal due 8/4/16

## 4. Sample Information:

Sample Area ID: S.4A.R.3.1-2

### Description by Depth:

Depth Interval (cm)	Soil Type (Org, clay; sand, etc.)	Soil Color	Sample ID	Sampling Description (Surface litter type/depth, sample depth retention, refusal, stone or rock, topography, erosion features)
0-15	Soil	Brown	S.4A.R.3.1	small rocks
15-30	Soil	light Brown	S.4A.R.3.2	rocks

Sample Recorded on Laboratory COC form and Container Labeled: (Y) (N)

10/20/15

# SAMPLE LOCATION DATA SHEET

Date: 12-11-15 Project: NYSERDA Name: Tori Brown

Weather: calm, sunny, 50°F

## 1. Sample Area (SA):

SA Designation: S.4A Description: Woods  
SA Origin Location: \_\_\_\_\_ Coord. System: \_\_\_\_\_  
SA Land Mark Description: \_\_\_\_\_ Coord: \_\_\_\_\_

## 2. Sample Location Data:

Sample Area ID: S.4A.R.4 Matrix: Soil

Location Coord: N 42° 31' 08.09" W 78° 58' 37.97"

Alternate Location Measurements (distance from SA origin and Local Coord.)

X Dist. from Origin (0,0) N/A Y Dist. from Origin: N/A

Site Sketch Attached (Yes) (NO)

Sample Location Description: large trees, leaves, saplings, along trail

Canopy Type: Open Land Use: Hiking Soil Moisture (Wet, dry, etc.): Dry

## 3. Location Radiation Readings:

2x2 NaI (cpm)			Bicron (uRem/hr)		Notes
Count time (min)	1 cm	1m	1 cm	1m	
1	6323	5946	7	6	Bicron - LUDLUM 2241-2 Serial # 262737 cal due 9/2/16
1	6242	5982			2x2 - LUDLUM 44-10 Serial # PR111127 #A2240 cal due 8/4/16

## 4. Sample Information:

Sample Area ID: S.4A.R.4.1-2

### Description by Depth:

Depth Interval (cm)	Soil Type (Org; clay; sand, etc.)	Soil Color	Sample ID	Sampling Description (Surface litter type/depth, sample depth retention, refusal, stone or rock, topography, erosion features)
0-15	soil	Brown	S.4A.R.4.1	very small roots
15-30	soil	light brown	S.4A.R.4.2	small roots

Sample Recorded on Laboratory COC form and Container Labeled: (Y) (N)