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VLT XRF CHARACTERIZATION

MAY 2010

"Rite in the Rain"®

ALL-WEATHER

JOURNAL

No. 391

5/11/2010 TUES

VLT XRF Characterization

0745 Meet at Weed Heights office to complete project safety training and planning

BC Workers: Chad Haley
Penny Bassett

Weather: Rained/snowed yesterday, ground is damp, today is cold + windy (high ~50°F), partly cloudy but not expected to rain.

XRF Instrument:

Innov-X Systems DX-2000AS model#
Serial # 5681
Rental unit from EquipCo
Certificate of calibration on instrument dated 2/10/2009
for instrument # 10870 model DC-6500
Certif # 011687O-1
⊗ looks like it is wrong calibration certif. Contacted Equipco to get correct calibration certif.
Instrument rental does not contain all calibration stds, instrument blank required. Asked Equipco to overnight.

PB

10:30 Tom Dunkleman (EPA) indicated that Howard _____ will observe + may collect sample or review data from XRF results. Met w/ Howard in Weed Hts office. He is primarily interested in being able to verify usability of data for EPA purpose of using VLT material from same borrow source w/out having to duplicate sampling.

11:30 ⊘ Determined that we will not be able to take XRF readings until we receive check stds from EquipCo. Will hand auger + collect samples today + will take XRF readings in field office tomorrow

1200 Lunch

1245 Gather field sampling supplies

14:10 Set up at first location to begin sample collection

VLT-XRF-1 located on north borrow area near toe of ramp,

_____ PB

1415 Collect VLT-XRF-1A
- Depth 6-12"
- Deconned auger before collecting
- Soil is moist but not enough to require drying
- Typical VLT, tan color, gravel to ~½" w/ ~30% fines of sand + silt, no red or green colors observed
- Bagged 2 auger buckets into 1 gal ziplock + mixed

1435 Collect VLT-XRF-1B
- Depth 30-36"
- Decon right before sampling
- moist not wet
- Typical tan color

VLT-XRF-2 - North borrow area near top of ramp, no visible discoloration

14:50 Collect VLT-XRF-2A
- 6-12"
- Decon right before sampling
- Moist not wet
- Typical VLT, tan

14:55 Collect VLT-XRF-2B
- 30-36", decon before sampling

PB

VLT-XRF-3 - North borrow area, lower bench near top of ramp. No visible discoloration, soil moist

15:05 Collect VLT-XRF-3A
VLT-XRF-Dup1
- 6-12", collect same volume as normal sample + still have enough to split for dup. Will make the split back in field lab/office to sep bags.
- Typical VLT, tan, moist
- More compact, harder to dig.

15:20 Collect VLT-XRF-3B
- 30-36", decon before, slightly moist, tan, normal VLT

VLT-XRF-4 - North borrow area, lower bench, no discoloration, moist.

15:34 Collect VLT-XRF-4A
- 6-12", moist, tan, normal VLT w/ coarse + fines. Decon before collecting

15:45 Collect VLT-XRF-4B
- 30-36", moist, tan, decon before collecting

PB

VLT-XRF-5 North borrow area, lower bench
no discoloration

16:05 Collect VLT-XRF-5A
0-6", decon before sample, normal tan VLT, no discoloration, moist. but some rock chips that are Cu green and deep red. (see photos)

16:15 Collect VLT-XRF-5B
VLT-XRF-DUP2
30-36", Collect same volume as usual but will split into normal + dup samples back in field office. Some reddish color rock chips but doesn't look like the fine red powder of Fe bleed tails.

16:30 Pack up and return to lab. Decon auger at completion of day + collect equipment blank VLT-EB-1 by pouring lab grade water from TA Irvine lab over auger tip + collect directly into 500 ml nitric preserved sample bottle, sample not filtered.

PB

16:45 Placed all samples, soil + water, into fridge for cold preservation. VLT samples still in 1 gal ziplock bags so that XRF readings can be taken when ready.

19:30 Penny + Chad off site + Sign out.

Summary of decon procedure:
3 bucket decon – 1) alconox soap, w/ scrub brush
2) preliminary rinse (tap or Distilled)
3) final rinse in distilled water
Decon is completed immediately before Sample is collected (i.e. as auger hole has reached top of sample interval)

SAMPLES COLLECTED 5/11/10:
VLT-XRF-1A +1B
VLT-XRF-2A +2B
VLT-XRF-3A +3B + DUP1
VLT-XRF-4A +4B
VLT-XRF-5A +5B + DUP2
VLT-EB-1 - equip blank on auger

Penny Barrett 5/11/10

5/12/10 WED

VLT XRF CHARACTERIZATION

08:00 Penny Bassett + Chad Haley onsite, complete morning safety meeting Call EquipCo to determine status on sending needed standards + quartz blank. They have not sent yet + looks like we will not be able to do XRF readings today. Will continue collecting hand auger samples.

Tried to sharpen hand auger w/ hand file but hardened edge does not allow sharpening

BC Workers: Chad Haley
Penny Bassett

Weather: Sunny/partly cloudy, forcast high ~ 60-65°F, not too windy (< 5-8 mph)

09:15 Mobilize to north borrow area to begin sampling

VLT-XRF-6 - North borrow area on lower bench

09:30 Collect VLT-XRF-6A
6-12", normal VLT, tan color, slightly moist but not wet

PB

5/12/10 cont.

09:46 Collect VLT-XRF-6B
30-36", decon before collecting sample, 2 auger buckets collected for 6" sample interval, place sample into 1 gal ziplock bag to be XRF read + split into sample jar back in field lab

VLT-XRF-7

10:00 Collect VLT-XRF-7A
6-12", moist, no discoloration normal VLT

10:10 Collect VLT-XRF-7B
30-36", normal VLT no discoloration moist not wet, decon before sample

VLT-XRF-8 North borrow area lower bench, no discoloration visible on surface or nearby.

10:46 Collect VLT-XRF-8A
VLT-XRF-DUP3
Collect same volume as normal all in single ziplock bag. Will split out dup in field lab. Normal VLT, no color

10:50 Collect VLT-XRF-8B
Decon before sampling, moist, no discoloration.

PB

5/12/10 cont.

VLT-XRF-9 - North borrow area, top most bench near Arimetco acid tank, Bricks + other debris visible on surface nearby. Relocated sample location from ground level up to this bench because original location looked like there was not much thickness of VLT + potential safety concern.

11:15 Collect VLT-XRF-9A
6-12", moist, normal VLT no discoloration, no pieces of brick or other non-VLT material in sample.

VLT-XRF-10 - North borrow area, top-most bench. Ground very hard + compacted but no bricks or other debris in hole.

11:42 Collect VLT-XRF-10A
6-12", normal VLT no discoloration, moist but not wet. In or near area that may have ponded standing water after storm event but VLT looks same as other locations. Hard.

11:58 Collect VLT-XRF-10B
VLT-XRF-DUP4
20-26" Ground very hard collected shallower than planned. Sample has more coarse rocky material but still VLT
Dup + normal sample in one Ziplock

PB

5/12/10 cont.

11:25 Collect VLT-XRF-9B
30-36" Tan, moist, no discoloration, normal VLT

12:05 Lunch

13:40 PICKED RAMON UP FROM OFFICE. Mob to VLT-XRF-11. STILL at top-most bench. North borrow area. EAST OF Berm. Normal VLT material. Not as compacted, augering seems easier, no discoloration, semi-moist, 3.0-3.5 interval had a greater moisture content

14:27 At VLT-XRF-12

14:32 Collect A interval. Normal VLT material. Semi-moist, but not wet. ON middle-bench of North borrow area. No discoloration.

14:40 Collect B interval. VLT-XRF-12B

14:45 At VLT-XRF-13

1455 Collected A interval. DUP-5 will be from this interval also.
VLT-XRF-13A
VLT-XRF-DUP5
Normal VLT material

CH

5/12/10 Cont.

1505 VLT-XRF-13B. Both intervals contained Normal VLT material. No discoloration was observed in auger cuttings.

1510 VLT-XRF-14

1514 VLT-XRF-14A. Middle-bench of North borrow area, Normal VLT material, No discoloration. More compacted then usual, Tough augering.

1520 VLT-XRF-14B

1535 VLT XRF-15A Normal VLT MATERIAL. North Borrow AREA, typical compaction. No discolorations

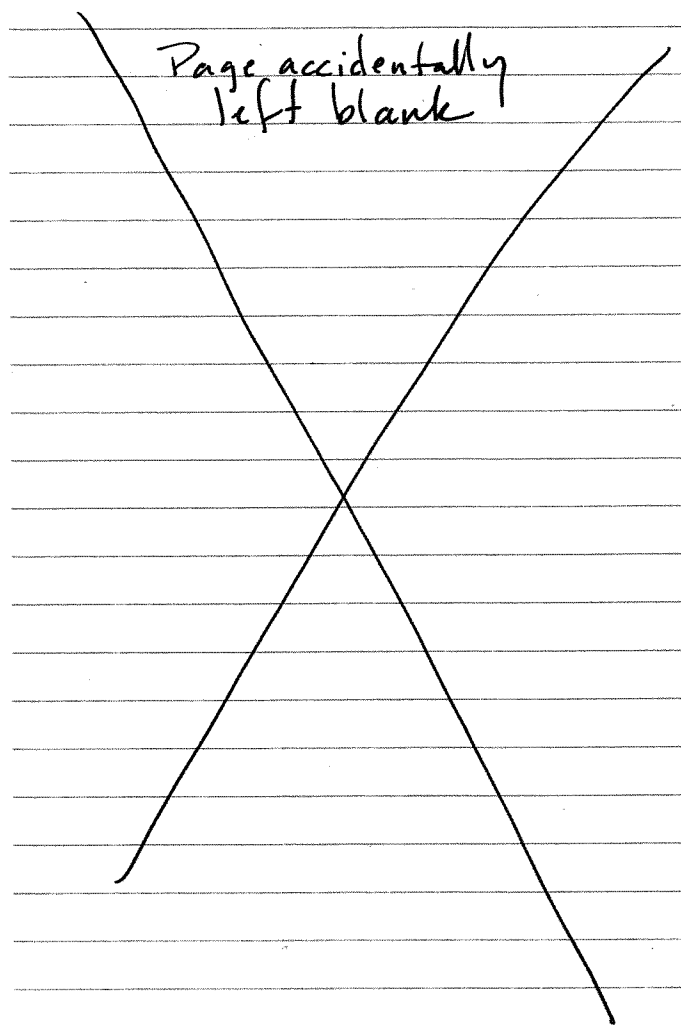
1540 Apx 2' DOWN (1.8-2.3) encounted reddish material. BAGGED for inspection.

1550 - Collect VLT-XRF-15B
VLT-XRF-15 CH Duple

1644 - Collect VLT-XRF-EB 2

(by PB 5/26)

Chad Haley 5/12/10



Thurs 5/13/10

VLT XRF Characterization

0730 - Penny B. & Chad. H onsite. Daily toolbox form filled in.
BC: Penny B
Chad H
DE: DAN RAMSEY
WEATHER: Sunny, cool ~ 65
slight wind 5-10 mph from N.

0800 - At Lab collected soil sampling supplies. Penny is bringing onsite trailer over. Loading trailer w/ wagon + excess supplies. Heading to North Borrow Area this morning.

0830 - Mob out from office.

0835 - At Staging Area

0845 - VLT-XRF-16

0847 - COLLECT VLT-XRF-16A
North borrow Area. Lowest bench. Normal VLT MATERIAL. No discoloration seen.

0910 - VLT-XRF-16B. Excess material collected in 5 gal buckets
Labeled VLT-XRF-16

CH

5/13/10 cont.

0925 - VLT-XRF-17

0928 - VLT-XRF-17A. North borrow area. 1st bench from road. Sample contains Red colored material. Apx 3" of red material was encountered from 6"-12" interval.

0930 - Howard w/ EPA is going to be leaving, New contact, Adam Smith, will be doing oversight during XRF Analysis.

0950 - VLT-XRF-17B. Collected borehole material in 5 gal bucket for analysis

10:00 VLT-XRF-18

10:08 VLT-XRF-18A
VLT-XRF-DUP7
North Borrow Area, 1st bench from road. Normal VLT material. No discoloration seen.

1030 - VLT-XRF-18B

1040 - DAN has to leave, needs to do other work. I'm mobbing to #19

CH

5/13/10 cont

1055- VLT-XRF-19

1100- DAN back w/ me.
VLT-XRF-19A
North borrow area. 1st bench from road. Normal VLT material. No discoloration seen. Digging easy from 2' down.

1107 VLT-XRF-19B

1115 VLT-XRF-20

1120 VLT-XRF-20A. North borrow area. 1st bench from road. Normal VLT material. No discoloration seen. Some wood chips coming from borehole.

1130- VLT-XRF-20B
VLT-XRF-DUP8

1145- Collected borehole cuttings from
VLT-XRF-7
for analysis

1150- LUNCH

1410- VLT-XRF-21
VLT-XRF-21A. South borrow area. Normal VLT material

CH

5/13/10 cont.

... no discoloration noticed in cuttings.

1414- VLT-XRF-21B

1425- VLT-XRF-22

1427- VLT-XRF-22A
VLT-XRF-DUP9
South borrow area. Normal VLT material. No discoloration noticed.

1435- VLT-XRF-22B

1446- VLT-XRF-23

1450- VLT-XRF-23A
South borrow area. Normal VLT material. No discoloration noticed in sample.

1454- VLT-XRF-23B

1505- VLT-XRF-24

1506- VLT-XRF-24A
South borrow area. Normal VLT material, No discoloration noticed in cuttings

1514 VLT-XRF-24B
VLT-XRF-DUP10

CH

5/13/10 cont.

1520 - LOAD Equipment + head to Lab.

1544 Collect VLT-XRF-EB 3 w/ H_2O + pouring it over decoid auger bucket. HNO_3 preserved bottle

1550 collect VLT-XRF-EB4 w/ H_2O + pouring it into new 1 gallon ziplock bag, then into HNO_3 preserved bottle

1630 - Penny B + Chad H off mine site.

5/13/10

5/14/10 VLT CHARACTERIZATION

0730 - At WEED Heights office.
Chad Haley

0830 - At Lab, splitting samples

1130 - FINISHED splitting SAMPLES. Going to return XRF analyzer to EQUIPCO due to lack of supplies. Renting unit from Houston TX. Penny B. arranged this rental.

Chad Haley 5/14/10 (by PB 5/26)

5-18-10 ULT XRF Characterization

1430 - Arrive at Lab.

1450 - STANDARDIZING XRF
"Sucessful Standardization, resolution = 230"

1455 - Shooting SiO_2 BLOCK for "INSTRUMENT BLANK 1"
ND - NON DETECT for elements.

1500 - "VERIFICATION CHECK 1"
Shoot standard 7029-04
All results within acceptable range of listed metals.

1505 - Beginning "Precision optimization"

o60t1	Cu ppm	1395	± 26
o60t2		1393	
o60t3		1335	
o60t4		1381	
o60t5		1374	
o60t6		1341	
o60t7		1394	
o60t8		1366	
o60t9		1339	
o60t10		1351	

o = optimization 60: 60 sec
t = test # = test number

CH

5/18/10 Cont'd

1530 - Beginning 80 sec test block

o80t1	Cu ppm	1331	
o80t2		1388	
o80t3		1315	
o80t4		1349	
o80t5		1345	
o80t6		1355	
o80t7		1395	
o80t8		1340	
o80t9		1375	
o80t10		1321	

1600	o100t1	Cu ppm	1390
	o100t2		1308
	o100t3		1376
	o100t4		1374
	o100t5		1371
	o100t6		1353
	o100t7		1398
	o100t8		1388
	o100t9		1341
	o100t10		1351

CH

5/18/10 Cont'd

1630-	0/120 t 1	Cu ppm	1355
	0/120 t 2		1328
	0/120 t 3		1390
	0/120 t 4		1366
	0/120 t 5		1361
	0/120 t 6		1375
	0/120 t 7		1344
	0/120 t 8		1339
	0/120 t 9		1376
	0/120 t 10		1352

*These were shot on VLT-XRF-248

1700- At Weed heights office. DATA sent to Pat Wiegand.

1745 - offsite.

Chad T Haley 5/18/10

5-19-10 VLT-XRF. characterization

0800- Chad Haley.
AT Weed Heights office. Waiting on response from Pat W. to determin sample analysis time interval.

0830- Response from Pat: No clear inflection point could be determined.
According to submitted workplan, the 120 second interval will be used if no clear time can be determined. Pushing forward using 120 sec interval.

0900- At lab, setting up XRF

0936- STANDARDIZATION OF XAF
"Successful Standardization, resolution = 234"

0941 INSTRUMENT BLANK 2
ALL ND except

Fe	42 ppm	± 9
Ag	28	± 9

0953 INSTrument BLANK 3

Zr	5	± 1
Ag	51	± 9

5-19-10 cont.

1000 - Wiped the window on the XRF DOWN w/ blue paper towel + distilled water.

1010 - IB-4 (VLT-XRF-IB4)
ALL ND

1020 - VLT-XRF-VC-1
Verification check, shooting provided standard.

1021 - VLT-XRF-24B

1114 - VLT-XRF-24A
Before reading "3" the battery needed to be changed on the XRF. After changing the readings seemed out of normal range, re-read w/ same results. Re-standardized unit. Sample results look within normal range, recording VLT-XRF-24A
3c

1200 - Finished 24A
Lunch.

1230 - Back at Lab, power off due to other work on site ...

CH

5-19-10 cont.

... will continue until XRF Battery power gone. Other battery should have some charge.
Standardized unit
resolution = 231

1245 VLT-XRF-23●

1255 - Maggie w/ Ecology & Environment stopped by. Gave her update & let her view sampling process. Will give her a progress update @ end of day.

1300 - Maggie left lab.

1340 - VLT-XRF-22

1406 - 22B done, this makes 20 readings. Going to take IB, VC

1410 - Took VLT-XRF-IB5
Fe & Zr present, cleaning & re-shooting.

1415 - VLT-XRF-IB6
ALL ND

1427 - VLT-XRF-VC2

CH

5-19-10 cont.

1430 - Called rental company about readings on standard. Some are high & out of range, rental company stated that some metals interfer w/ others in the standard. As long as the standardization process completes w/out any errors, the unit is in good working order.

1438 - Standardized Unit.
resolution = 236

1440 - VLT-XRF-22 A

1515 - VLT-XRF-21 B

1540 - VLT-XRF-21 A

1605 - VLT-XRF-20 B

1638 - VLT-XRF-20 A

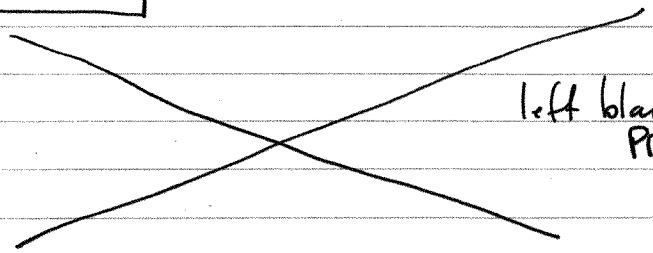
1700 - VLT-XRF-IB 7
ALL ND

1702 - VLT-XRF-VC 3
ALL results look acceptable

1706 - Standardizing
resolution = 233

(by PBS 5/26/10)
Chad Haley 5/19/10

5-20-10 VLT XRF Characterization



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PBS 5/26/10

735 - Power on XRF, complete startup Standardization.
resolution = 234

743 - VLT-XRF-IB-8
Cr detected, cleaning lens + SiO_2 block.
IB-9 - Ag detected, re-cleaning
IB 10 - Ag detected, re-cleaning.
IB 11 - Ag detected, re-cleaning.
IB 12 - Ag detected, re-standardizing

810 - Standardization Successful
resolution = 233

814 IB-13 - Ag still detected, going to move forward & review yesterday's results w/ today's results

820 - VLT-XRF-VC-4
Verification check w/standard, results look w/in range.

5-20-10 cont.

0825- Beginning Precision Measurements.

0826- XRF-VLT-PM-1
Will shoot same spot 10 times. Data will be used to determine a relative standard deviation

0905- PM shots complete
Starting on VLT-XRF-19B
1

912- Maggie w/ Ecology & Environment called. She needs to see the boring locations. Leaving lab & mobbing over to the South borrow area or the North, will document.

0940- Back at lab continuing w/ VLT-XRF-19B

0952- Finished 19B

0956- Starting VLT-XRF 19A

1020- Finished 19A

1023- Start VLT-XRF-18B

1047- Finished 18B

1050- Start 18A

1110- Finished 18A

1112 Start VLT-XRF 17B

1133- Finshed 17B.
AT 20 reading mark, going to take IB, VC, & standardize

5-20-10 cont.

1135- Standardization
resolution = 232

1138- VLT-XRF-IB-13
Zr detected, cleaning & re-Shooting.
IB-14 - ALL ND

1145 - VLT-XRF-VC-5
ALL results within listed "acceptance limits" provided w/ the standard.

1150- VLT-XRF-17A

1215- Finished 17A

1220- Start VLT-XRF-16B

1241- Finished 16B

1242- START 16A

1302- FINished 16A

1307- Start VLT-XRF-15A

1328- Finished 15A

1330- START 15B

1336- AFTER Second reading, had to change battery, re-standardize resolution: 233

1340- resuming readings

1350- Finished 15B, AT 20 reading mark. will collect IB, VC, & standardize

CH

5-20-10 Cont.

1355- VLT-XRF-IB-15
ALL ND
1358 VLT-XRF-VC-6
ALL concentrations within "Acceptance Limits" provided.
1400 - VLT-XRF-15C
1420. FINISHED 15C
1422- START VLT-XRF-14B
1445. FINISH 14B
1496-START 14A
1506- FINISH 14A
1508 - START VLT-XRF-13B
1530. FINISHED ~~13B~~ end 13B
1532- START 13A.
1550- FINISHED 13A. 20 reading mark. Will collect IB, VC, + Standardize XRF.
1555- VLT-XRF-IB-16
ALL ND
1558 - VLT-XRF-VC-7
ALL results within "Acceptance Limits" range provided w/ standard.
1602- Standardization successful
resolution = 231

CH

5/20/10 Cont

1604- Start VLT-XRF-12B
1624- FINISH 12B
1625- Start 12A
1645- Finish 12A
1646 - Start VLT-XRF-11B
1704- FINISH 11B
1705- Start 11A.
1730- Finish 11A. Packing up + taking samples w/ me to Analyze more this evening.
tte
2030- Standardized XRF
resolution = 233
2032 - VLT-XRF-10B
2055- FINISHED 10B.
20 reading mark. Will collect IB, VC, + standardize
2101 - VLT-XRF-IB-17
Ag detected, cleaning + reshooting.
IB-18 Zr, Ag detected. Cleaning + reshooting.
IB-19 Ag detected, going to standardize the re-shoot

CH

5/20/10 Cont

2115

~~2105~~ CH - Standardization

resolution = 235

2123 - VLT - XRF - IB - 20

All results ND

2129 - VLT - XRF - VC - 8

All results within "acceptable limits" provided by manufacturer.

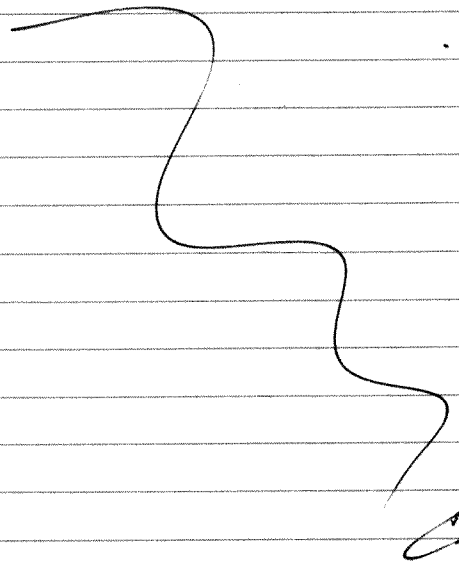
2135 VLT - XRF - 10A

2157 - Finished w 10A

2200 - VLT - XRF - PM

11 - 20

Finished for evening



Chad Haley 5-20-10

5-21-10 VLT XRF Characterization

0845 - Arrive at Lab

Chad Haley

0912 - Standardize XRF unit

resolution successful = 234

0914 - VLT - XRF - IB - 21

ALL ND

0920 - VLT - XRF - VC - 9

ALL results w/in manufacturers "Acceptance Limits" provided w the standard.

0925 - Starting Precision measurements

VLT - XRF - PM - (21-30)

0950 - VLT - XRF - 9B

1010 - Finish 9B

1015 - start 9A

1033 - Finish 9A

1034 - VLT - XRF - 8B

1055 - Finish 8B

1056 - Start 8A

1114 - Finish 8A

1116 - Start VLT - XRF - 7B

1134 - Finish 7B

At 20 reading mark will collect IB, VC, + re-standardize

CH

5-21-10 Cont.

1136- VLT-XRF-IB-21
ALL ND

1146 - VLT-XRF-VL-10
All results within "acceptable Limits" provided w/ standard.

1143- Standardization successful
resolution = 233

1145- Start VLT-XRF-7A

1204- Finish 7A

1205- START VLT-XRF-6B

1223- Finish 6B

1224- Start 6A

1244- Finish 6A

1245- VLT-XRF-5B

1303- FINISH 5B, START 5A

1324- Finish 5A
AT 20 reading mark.
Will collect IB, VL, + Re-Standardize.

1330- Ag detected in VLT-XRF-IB-23
Cleaning + re-shooting

1334 - VLT-XRF-IB-24
ALL ND

1337- VLT-XRF-VL-11
ALL results w/in manufacturers Acceptable limits

——— CH ———

5-21-10 cont.

1340 - Standardization successful
resolution = 233

1342- VLT-XRF-4B

1400- FINISHED ~~#~~ CH 4B, start 4A

1420- Finish 4A, start
~~VLT-XRF~~ CH VLT-XRF-3B

1438 - FINISH 3B, start 3A

1500- FINISH 3A

1504 VLT-XRF-2B

1505- Battery dead, test did not start, changing batteries, + Standardizing

1507- Standardization Successful
resolution = 233

1508 VLT-XRF-2B

1528- Finish 2B. 20 reading mark. Will collect IB, VL, + re standardize

1530- Ag detected, re cleaning (IB-25) & re shooting
IB-26 - Ag detected, re cleaning + re shooting

1540- VLT-XRF-IB-27
ALL ND

——— CH ———

5-21-10 Cont

1543 - ~~VLT~~ cal
VLT-XRF-VC-12
All results within "acceptable limits" provided w/ standard.
1547 - Standardization successful
resolution = 234
1548 - VLT-XRF-2A
1606 - Finished 2A
1607
~~1587~~ - VLT-XRF-1B
1625 - Finished 1B
1626 - Start 1A
1643 - Finished 1A.
Completes soil XRF samples
will collect: 1B, VC, PM, then standardize the unit.
1653 - VLT-XRF-1B-28
ALL ND
1656 - VLT-XRF-VC-13
All results within "Acceptable Limits" provided w/ standard.
1700 - Standardization successful
resolution = ~~233~~ 231
1703 - VLT-XRF-PM (31-40)
1524 - Finished collecting PM.
Handing XRF + data to ...
CH

5-21-10 Cont

... Penny B. Data will be downloaded onto a computer at the Carson City office.

Chad Hathy (by PB 5/26)
5-21-10

5/22/10 VLT XRF CHARACT.

Penny B.

11:30 Download data from iPAQ handheld PDA attached to Innov-X XRF unit. Data saved as raw data file in comma-delim .csv file format titled:
VLT_XRF_RESULT.CSV

12:30 Converted + saved data file to Excel spreadsheet format + organized data results.

PBarnett 5/22/10

5/24/10

Returned XRF unit to AJAX Rentals by FedEx overnight. Made copies of calibration record + check std certified analysis. Copied relevant portions of user manual for proj file.

Rental Co.:
AJAX Environ. + Safety Supply
2537 S. Gessner, Suite 128
Houston, Tx 77063
ph (877)-386-2480

5/25/10 Cont

- Scan + save copies of field notes + field data forms for proj file.
- Share data results (electronic data dump from XRF unit) as excel spreadsheet w/ Chuck Zimmerman to provide to Tom Dunkleman (EPA)

PBarnett 5/25/10

5/26/10 VLT XRF CHARACT.

SUMMARY OF FIELD IMPEMENTATION:

5/11/10 – Started collecting hand auger soil samples from previously designated + marked locations (4 loc in S. borrow area, 20 loc. in N. borrow area)

– 3" diam hand auger deconned between each sample + each loc.

– Sample depths:

"A" sample = 6-12" interval = 2 auger buckets ~~for~~ achieve interval

"B" Sample = 30-36" interval

– Samples collected into 1-gal ziplock bag at field location. ~~Then~~ An aliquot was transferred into 8 oz plastic sample jar for submittal to lab after sample was ~~the~~ homogenized by hand tumbling bag.

– Samples we refrigerated upon collection during overnight storage + shipped to lab on ice. No other preservation required.

– No XRF readings taken until 2nd week because of missing parts from rental co.

– Took photos of each bagged sample

SUMMARY CONTD

5/12/10 – Penny + Chad continue to collect hand auger samples. Assistance from Ramone Castellon (DE) in p.m. while Penny preps + splits samples.

5/13/10 – Penny + Chad finish collecting hand auger samples. Total 49 samples from 24 loc. (One extra sample "C" collected at VLT-XRF-15 to test red colored material)

QC samples included:

- Dups every 10th sample (= every 5th location). Alt. shallow + deep samples. Collected same volume as normal sample in 1gal ziplock but filled 2 aliquots from bag for lab analysis. Labeled as VLT-XRF-DUP1 → DUP10
- Equip. Blanks (EB) – Collected one EB per day @ end of day on hand auger by pouring lab pure water over deconned auger + collecting in HNO_3 preserved sample bottle. Also one EB on Ziplock bags (VLT-XRF-EB1 → EB4)

SUMMARY CONT'D

5/18/10 - Chad begins XRF readings using new rental XRF unit from AJAX
- Precision Optimization readings done by taking one sample, + taking 10 readings from one location (never moving XRF unit) at each of the following read durations:
60, 80, 100, 120 sec.
- Data results provided to Pat Wiegan to determine optimal time needed for most accurate results.
* Analysis of std. dev. + variance did not clearly define an optimal measurement duration so we defaulted to 120 sec read time

5/19/10 - Begin XRF readings of actual collected VLT samples. Readings done in BC field lab area on non-metallic bench.
- Each sample bag ~~sub~~ divided into 4 quadrants by drawing a grid on the bag + label 1, 2, 3, 4

2	1
3	4

SUMMARY CONT'D

5/19/10 CONT'D
- Read each quadrant for 120 sec. Record data on hand written field form + save in electronic data file on iPaq
- XRF QC samples/data
• XRF Standardization - Snap-on standardization cover placed on unit + read. Done each time unit powered on + ~~#~~ every ~20th read. thru out day.
• Instrument Blank (IB) - XRF reading taken of the manufacturer supplied "quartz/silica blank" to verify all metals are non-detect
• Verification check (VC) - XRF reading of manufacturer supplied soil sample w/corresponding certified analysis to determine if w/in acceptable limits. Both IB + VC reads done every ~20th read.
• Precision ~~check~~ measurement (Pm) - 10 reads done on a VLT sample + same spot. Done at start + end of each day.

SUMMARY CONT'D

5/19/10 CONT.

- Royanne B. packed + shipped all sample jars to The TestAmerica Richland lab. Shipped on ice by FedEx overnight. Remaining material in ziplock bags will be saved + stored for potential radiochem analysis at ambient temp. 5-gal buckets of some locations will be saved for possible MWMP leach test.
  - ⊛ Last 10 sample locations, collected entire auger hole cuttings (except bagged samples) in 5-gal bucket for MWMP testing if needed.

5/20 - 5/21/10 - Chad finished all VLT sample XRF readings

P. Bassett 5/26/10