Appendix B

Munitions and Explosives of Concern Report, TNT DropEx Screening Data and Radiological Screening Data

Phase IV RI
MEC Field Screening

Munitions and Explosives of Concern
LOOW Phase IV Investigation Summary

1.0 INTRODUCTION

Under contract number W912DR-06-D-0002, Delivery Order 0009 with the U.S. Army Corps of Engineers-Baltimore District (USACE-Baltimore), Earth Resources Technology, Inc. (ERT) has been tasked with conducting a Remedial Investigation (RI) at the Town of Lewiston property associated with the former Wastewater Treatment Plant (WWTP) facilities (identified as Exposure Unit 7) on the former Lake Ontario Ordnance Works (LOOW) site in Niagara County, New York (NY).

The work is being conducted under the ongoing authorized Defense Environmental Restoration Program—Formerly Used Defense Sites (DERP-FUDS) Hazardous, Toxic, and Radioactive Waste (HTRW) project and as outlined in the scope of work (SOW) dated 13 May 2008. The field activities for the Phase IV RI were performed between July and December 2009.

A Munitions and Explosives of Concern (MEC) Support Services Plan (MECSSP) Addendum was prepared by USACE/ERT/EA (2009a) as a prudent cautionary measure due to the historical use of the LOOW site to produce trinitrotoluene (TNT). In addition, the two TNT waste lines, which are located on the WWTP property, have undergone an interim removal action (IRA).

This investigation summary report documents the field activities associated with the MEC-related activities that were preformed while conducting the field activities for the Phase IV RI. These MEC-specific activities included:

- A visual inspection of the ground surface above the abandoned TNT waste lines, focusing especially on areas that were disturbed during the IRA to gain access to the buried lines;
- Performing field screening of surface soils along the TNT line for explosive compounds using DropEx® kits;
- Performing field screening of subsurface soils from soil borings along the TNT line;
- Performing field screening on various surfaces of the various structures at the WWTP that might have been exposed to the TNT wastewater.

Explosive compounds were also part of the analytical suite for the entire site, so the field screening results from the surface and subsurface borings along the TNT waste line would be confirmed by laboratory analytical methods (USEPA Method 8330).

ERT provided personnel certified by an accredited DoD unexploded ordnance (UXO)/explosive ordnance disposal (EOD) training course for MEC oversight of intrusive field operations associated with the RI. Activities were performed in accordance with the *Site Safety and Health Plan for Phase IV Remedial Investigation/Feasibility Studies at the Former LOOW* (USACE/ERT, 2009b), *Safety and Occupational Health Requirements For Hazardous Toxic and Radioactive Waste (HTRW) Activities, ER 385 1-92* (USACE, 2007a), and *Safety and Health Requirements for Ordnance and Explosives Operations, ER 385 1-95* (USACE, 2007b).

2.0 BACKGROUND

2.1 Site History

The WWTP associated with the former LOOW site is located in the Town of Lewiston, Niagara County, New York. The Field Sampling Plan (USACE/ERT/EA, 2009b) contains a detailed site description as well as figures illustrating the site and areas of investigation. A summary of the site description is presented below.

The WWTP was constructed in 1942 to support the LOOW facility and was used to treat wastes from the LOOW sanitary sewer and acid lines. The WWTP was comprised of a sewage pump house, venturi vault, Imhoff settling tank, sludge beds, a chlorine contact tank, acid neutralization building, collection tank and final mixing houses, as well as underground utility lines used to convey wastes between these facilities. TNT process wastewater was diluted at the WWTP with the treated sanitary and other industrial wastewaters prior to discharge. Wastes were discharged to a 30-in. diameter outfall line that exited the WWTP to the west and traversed from the WWTP to the Niagara River. After LOOW activities ceased, the WWTP was utilized by Air Force Plant 68 (AFP-68), Air Force Plant 38 (AFP-38), the Navy IPPP, the NIKE Base, the Boron-10 Plant (a non-DOD facility), and for disposal of thiocyanate wastes (NYSATF 1981). AFP-38 operated from approximately 1950-1979 and was used for rocket, missile, and laser research and development. AFP-68 operated from approximately 1957-1959 and was a boron-based high energy fuels research and development project. The former LOOW WWTP was used for treatment of production wastes from both of these facilities. The NIKE Missile Base was operated by the U.S. Army from 1954 to 1966, and the former LOOW WWTP received sanitary wastes from the facility. The Navy IPPP was built in 1956 for the production of high efficiency fuels. This facility utilized some of the existing TNT production lines and the former LOOW WWTP.

2.2 TNT Line Interim Removal Action

The portion of the TNT waste lines on the Town of Lewiston property have been remediated in-place (plugged or grouted). The interior of the lines is not included in this Phase IV RI. The ISSI OESP (USACE/ISSI, undated, Appendix A1), was developed to support the TNT waste line remedial effort which took place, in part, in 2000.

The ISSI UXO Project Report (USACE/ISSI, 2000) and After Action Report (USACE/ISSI, 2001), described the presence of various sized crystalline TNT nodules on the ground surface in the vicinity of the former LOOW TNT waste lines and within the pipelines, respectively. During the IRA associated with the cleaning, removing and sealing-in-place of the TNT lines, a total of approximately 12.5 pounds (lbs) of crystalline TNT was encountered and disposed (Radian 2000).

Crystalline TNT has been found on the surface and within piping removed during previous investigations. Although IRA have been concluded along the portion of TNT lines within the Town of Lewiston property, a review of available historic information indicates the potential for small amounts of TNT to remain in place and constitue a MEC hazard to personnel performing field activities associated with the Phase IV RI. .

3.0 SITE ACTIVITIES

The RI focused on evaluating the nature and extent of contamination and assessing risk to human health and the environment at the WWTP on the Town of Lewiston Property. The RI is specific to the WWTP and represents Phase IV of an ongoing RI on the Town of Lewiston Property. Field activities for this RI were conducted in two mobilizations. The first mobilization focused on surface and subsurface soil characterization. Soil sample locations were determined based on a review of historical site information. The second mobilization focused on groundwater characterization. Groundwater sample locations were selected by reviewing historical site information and an evaluating soil data collected during the first mobilization for the Phase IV RI.

The overall objective of this Phase IV RI was to comprehensively characterize both soil and groundwater media at the Town of Lewiston property, delineate the nature and extent of any identified constituents of potential concern, and to provided an evaluation of potential risk to human and environmental health posed by constituent concentrations in investigated media.

ERT employed project-specific explosive safety procedures as detailed in the following sections.

3.1 Safety Training

3.1.1 Site-Specific Safety Training

Site-specific MEC awareness training program was conducted by the ERT UXO Technician/Site Safety and Health Officer (SSHO) prior to the start of field activities. This training program covered safe and proper work practices as well as site-specific hazards, hazards associated with site activities, including the appearance of crystalline TNT. Daily safety briefings were provided as part of the general site safety protocols (USACE/ERT, 2009b). During the daily safety briefings, the SSHO included topics on safety specific to MEC hazards and general site hazards.

3.1.2 Medical Emergency Procedures

ERT medical, emergency, and safety procedures complied with the approved SSHP and MECSSP for this site. There were no emergency or medical conditions encountered during these field activities, therefore the emergency plan was never activated.

3.1.3 Visitor Control

All visitors to site were required to check in at the trailer at the site and receive a safety briefing by the SSHO. All subcontractor work and visitor tours were closely coordinated to ensure safety of all personnel.

3.2 Field Activities and Results

3.2.1 Visual Survey

The ERT SSHO/UXO Technician performed a 100% visual survey of the TNT waste line path and all boring locations. No evidence of MEC or raw TNT was found.

3.2.2 Brush Clearance

Brush clearance was required to access certain sample locations throughout the WWTP area on the Town of Lewiston property. There was no anticipated contact with TNT during brush

clearance, however, as a measure of prudent safety, the SSHO performed a visual survey of the area prior to commencing of this task and was present during all clearing activities.

3.3 Soil Screening Activities:

In order to confirm that soil remaining in place after the IRA in the vicinity of the TNT lines was not impacted with explosives, field screening analysis of 226 surface soil and 8 subsurface soil samples (from borings along the TNT line) was conducting utilizing DropEx® filed screening kits. In addition, 8 DropEx® wipe samples were collected from the acid neutralization building slab and field screened in order to identify any inherent potential explosive impacts. To ensure sample preparation and field analysis techniques were consistent with the establish standard operating procedure, a total of 11 duplicate field screen samples were collected and analyzed using a combination of DropEx® and Expray® field screen kits. All samples were collected and field analyzed in accordance with the approved FSP Addendum (USACE/ERT/EA, 2009c)

3.4 Soil Screening Results:

Surface and subsurface explosives field screening was conducted along the TNT waste lines that traverse the former WWTP. DropEx®, a non-aerosol explosives detection kit, was used for the field screening analysis of 226 surface sample locations established in a grid pattern across the TNT waste lines and along eight Geoprobe® soil borings located along the TNT waste lines. None of the 234 individual soil samples screened along the TNT waste lines tested positive, which would have indicated the presence of TNT or other explosive compound.

Eight soil borings were advanced within four identified areas along the TNT waste lines that had previously been excavated in order to gain access to the TNT waste lines for scouring during the IRA. Each of the eight soil borings were advance to depths of between 14 ft and 20 ft bgs. Each 4 ft macrocore section that was collected was screened along the entire length using the DropEx® detection kits. None of the eight soil cores returned positive screening results for potential explosives.

3.5 Sampling Activities

As a measure of prudent safety, the SSHO was on site during all intrusive sampling activities. The following sampling activities were completed during RI:

- Collection of soil samples for field screen analysis.
- Collection of soil samples for laboratory analysis.
- Installation of three groundwater monitoring wells and collection of groundwater samples.

4.0 CONCLUSIONS

During field activities there was no MEC was encountered at any time. Soil screenings and borings were sampled in the field for explosives, all of which yielded negative results. Laboratory analytical results for groundwater and soil samples did not present concentrations of explosives exceeding the project screening criteria.

5.0 REFERENCES

USACE/Prepared by ERT/EA, 2009a. *Munitions and Explosives of Concern Support Services Plan Addendum for Phase IV Remedial Investigation/Feasibility Studies at the Former Lake Ontario Ordnance Works (LOOW), Niagara County, New York*. June.

USACE/ERT/EA, 2009b. *Site Specific Health and Safety Plan for Phase IV Remedial Investigation/Feasibility Studies at the Former Lake Ontario Ordnance Works (LOOW), Niagara County, New York*. June.

USACE/ERT/EA, 2009c. *Field Sampling Plan for Phase IV Remedial Investigation/Feasibility Studies at the Former LOOW*. January.

USACE/Prepared by ISSI, undated. *Ordnance And Explosives Support Services Plan, Lake Ontario Ordnance Works TNT Pipeline Removal Project, Lewiston, New York, Work Plan.*

USACE/ISSI, 2000. *Project Report, Second Phase Emergency Ordnance Explosive Services, LOOW TNT Pipeline Removal Project, Lewiston, New York.* September.

USACE/ISSI, 2001. *After Action Activity Report, TNT Resizing Operation, Former LOOW, Model City, New York.* January.

USACE, 2007a. *Safety and Occupational Health Requirements for HTRW Activities* (ER 385-1-92), May.

USACE, 2007b. *Safety and Health Requirements for Ordnance and Explosives Operations* (ER 385-1-95). March.

Phase IV RI
DropEx Results

Phase IV RI at the former LOOW
Former TNT Line DropEx Field Sampling Form

Sample ID	Date	Time	Positive	Negative	Duplicate Positive	Duplicate Negative	Expray/ DropEx Used for Duplicate	Comments
C3-WWTP-SO-TNT01-0.0-0.6	7/7/2009	1429		X		X	DropEx	Sampler: C. Scism
C3-WWTP-SO-TNT02-0.0-0.6	7/7/2009	1431		X				Sampler: C. Scism
C3-WWTP-SO-TNT03-0.0-0.6	7/7/2009	1433		X				Sampler: C. Scism
C3-WWTP-SO-TNT04-0.0-0.6	7/7/2009	1434		X				Sampler: C. Scism
C3-WWTP-SO-TNT05-0.0-0.6	7/7/2009	1436		X				Sampler: C. Scism
C3-WWTP-SO-TNT06-0.0-0.6	7/7/2009	1437		X				Sampler: C. Scism
C3-WWTP-SO-TNT07-0.0-0.6	7/7/2009	1438		X				Sampler: C. Scism
C3-WWTP-SO-TNT08-0.0-0.6	7/7/2009	1439		X				Sampler: C. Scism
C3-WWTP-SO-TNT09-0.0-0.6	7/7/2009	1449		X				Sampler: C. Scism
C3-WWTP-SO-TNT10-0.0-0.6	7/7/2009	1450		X				Sampler: C. Scism
C3-WWTP-SO-TNT11-0.0-0.6	7/7/2009	1451		X				Sampler: C. Scism
C3-WWTP-SO-TNT12-0.0-0.6	7/7/2009	1455		X				Sampler: C. Scism
C3-WWTP-SO-TNT13-0.0-0.6	7/7/2009	1457		X				Sampler: C. Scism
C3-WWTP-SO-TNT14-0.0-0.6	7/7/2009	1458		X				Sampler: C. Scism
C3-WWTP-SO-TNT15-0.0-0.6	7/7/2009	1459		X				Sampler: C. Scism
C3-WWTP-SO-TNT16-0.0-0.6	7/7/2009	1500		X				Sampler: C. Scism
C3-WWTP-SO-TNT17-0.0-0.6	7/7/2009	1502		X				Sampler: C. Scism
C3-WWTP-SO-TNT18-0.0-0.6	7/7/2009	1504		X				Sampler: C. Scism
C3-WWTP-SO-TNT19-0.0-0.6	7/7/2009	1505		X				Sampler: C. Scism
C3-WWTP-SO-TNT20-0.0-0.6	7/7/2009	1506		X		X	Expray	Sampler: C. Scism
C3-WWTP-SO-TNT21-0.0-0.6	7/7/2009	1511		X				Sampler: C. Scism
C3-WWTP-SO-TNT22-0.0-0.6	7/7/2009	1512		X				Sampler: C. Scism
C3-WWTP-SO-TNT23-0.0-0.6	7/7/2009	1513		X				Sampler: C. Scism
C3-WWTP-SO-TNT24-0.0-0.6	7/7/2009	1531		X				Sampler: C. Scism
C3-WWTP-SO-TNT25-0.0-0.6	7/7/2009	1532		X				Sampler: C. Scism
C3-WWTP-SO-TNT26-0.0-0.6	7/7/2009	1533		X				Sampler: C. Scism
C3-WWTP-SO-TNT27-0.0-0.6	7/7/2009	1534		X				Sampler: C. Scism
C3-WWTP-SO-TNT28-0.0-0.6	7/7/2009	1535		X				Sampler: C. Scism
C3-WWTP-SO-TNT29-0.0-0.6	7/7/2009	1536		X				Sampler: C. Scism
C3-WWTP-SO-TNT30-0.0-0.6	7/7/2009	1537		X				Sampler: C. Scism
C3-WWTP-SO-TNT31-0.0-0.6	7/7/2009	1538		X				Sampler: C. Scism
C3-WWTP-SO-TNT32-0.0-0.6	7/7/2009	1539		X				Sampler: C. Scism
C3-WWTP-SO-TNT33-0.0-0.6	7/7/2009	1540		X				Sampler: C. Scism
C3-WWTP-SO-TNT34-0.0-0.6	7/7/2009	1541		X				Sampler: C. Scism
C3-WWTP-SO-TNT35-0.0-0.6	7/7/2009	1542		X				Sampler: C. Scism
C3-WWTP-SO-TNT36-0.0-0.6	7/7/2009	1543		X				Sampler: C. Scism
C3-WWTP-SO-TNT37-0.0-0.6	7/7/2009	1544		X				Sampler: C. Scism
C3-WWTP-SO-TNT38-0.0-0.6	7/7/2009	1545		X				Sampler: C. Scism
C3-WWTP-SO-TNT39-0.0-0.6	7/7/2009	1546		X				Sampler: C. Scism
C3-WWTP-SO-TNT40-0.0-0.6	7/7/2009	1547		X		X	Expray	Sampler: C. Scism

Phase IV RI at the former LOOW
Former TNT Line DropEx Field Sampling Form

Sample ID	Date	Time	Positive	Negative	Duplicate Positive	Duplicate Negative	Expray/ DropEx Used for Duplicate	Comments
C3-WWTP-SO-TNT41-0.0-0.6	7/7/2009	1610		X				Sampler: C. Scism
C3-WWTP-SO-TNT42-0.0-0.6	7/7/2009	1611		X				Sampler: C. Scism
C3-WWTP-SO-TNT43-0.0-0.6	7/7/2009	1612		X				Sampler: C. Scism
C3-WWTP-SO-TNT44-0.0-0.6	7/7/2009	1613		X				Sampler: C. Scism
C3-WWTP-SO-TNT45-0.0-0.6	7/7/2009	1614		X				Sampler: C. Scism
C3-WWTP-SO-TNT46-0.0-0.6	7/7/2009	1615		X				Sampler: C. Scism
C3-WWTP-SO-TNT47-0.0-0.6	7/7/2009	1616		X				Sampler: C. Scism
C3-WWTP-SO-TNT48-0.0-0.6	7/7/2009	1617		X				Sampler: C. Scism
C3-WWTP-SO-TNT49-0.0-0.6	7/7/2009	1618		X				Sampler: C. Scism
C3-WWTP-SO-TNT50-0.0-0.6	7/7/2009	1619		X				Sampler: C. Scism
C3-WWTP-SO-TNT51-0.0-0.6	7/7/2009	1620		X				Sampler: C. Scism
C3-WWTP-SO-TNT52-0.0-0.6	7/7/2009	1621		X				Sampler: C. Scism
C3-WWTP-SO-TNT53-0.0-0.6	7/7/2009	1544		X				Sampler: G. Payne
C3-WWTP-SO-TNT54-0.0-0.6	7/7/2009	1542		X				Sampler: G. Payne
C3-WWTP-SO-TNT55-0.0-0.6	7/7/2009	1541		X				Sampler: G. Payne
C3-WWTP-SO-TNT56-0.0-0.6	7/7/2009	1539		X				Sampler: G. Payne
C3-WWTP-SO-TNT57-0.0-0.6	7/7/2009	1536		X				Sampler: G. Payne
C3-WWTP-SO-TNT58-0.0-0.6	7/7/2009	1534		X				Sampler: G. Payne
C3-WWTP-SO-TNT59-0.0-0.6	7/7/2009	1533		X				Sampler: G. Payne
C3-WWTP-SO-TNT60-0.0-0.6	7/7/2009	1528		X		X	Expray	Sampler: G. Payne
C3-WWTP-SO-TNT61-0.0-0.6	7/7/2009	1527		X				Sampler: G. Payne
C3-WWTP-SO-TNT62-0.0-0.6	7/7/2009	1526		X				Sampler: G. Payne
C3-WWTP-SO-TNT63-0.0-0.6	7/7/2009	1524		X				Sampler: G. Payne
C3-WWTP-SO-TNT64-0.0-0.6	7/7/2009	1523		X				Sampler: G. Payne
C3-WWTP-SO-TNT65-0.0-0.6	7/7/2009	1521		X				Sampler: G. Payne
C3-WWTP-SO-TNT66-0.0-0.6	7/7/2009	1504		X				Sampler: G. Payne
C3-WWTP-SO-TNT67-0.0-0.6	7/7/2009	1450		X				Sampler: G. Payne
C3-WWTP-SO-TNT68-0.0-0.6	7/7/2009	1452		X				Sampler: G. Payne
C3-WWTP-SO-TNT69-0.0-0.6	7/7/2009	1459		X				Sampler: G. Payne
C3-WWTP-SO-TNT70-0.0-0.6	7/7/2009	1500		X				Sampler: G. Payne
C3-WWTP-SO-TNT71-0.0-0.6	7/7/2009	1502		X				Sampler: G. Payne
C3-WWTP-SO-TNT72-0.0-0.6	7/7/2009	1503		X				Sampler: G. Payne
C3-WWTP-SO-TNT73-0.0-0.6	7/7/2009	1449		X				Sampler: G. Payne
C3-WWTP-SO-TNT74-0.0-0.6	7/7/2009	1451		X				Sampler: G. Payne
C3-WWTP-SO-TNT75-0.0-0.6	7/7/2009	1446		X				Sampler: G. Payne
C3-WWTP-SO-TNT76-0.0-0.6	7/7/2009	1444		X				Sampler: G. Payne
C3-WWTP-SO-TNT77-0.0-0.6	7/7/2009	1438		X				Sampler: G. Payne
C3-WWTP-SO-TNT78-0.0-0.6	7/7/2009	1436		X				Sampler: G. Payne
C3-WWTP-SO-TNT79-0.0-0.6	7/7/2009	1435		X				Sampler: G. Payne
C3-WWTP-SO-TNT80-0.0-0.6	7/7/2009	1432		X		X	Expray	Sampler: G. Payne

Phase IV RI at the former LOOW
Former TNT Line DropEx Field Sampling Form

Sample ID	Date	Time	Positive	Negative	Duplicate Positive	Duplicate Negative	Expray/ DropEx Used for Duplicate	Comments
C3-WWTP-SO-TNT81-0.0-0.6	7/7/2009	1604		X				Sampler: G. Payne
C3-WWTP-SO-TNT82-0.0-0.6	7/7/2009	1606		X				Sampler: G. Payne
C3-WWTP-SO-TNT83-0.0-0.6	7/7/2009	1607		X				Sampler: G. Payne
C3-WWTP-SO-TNT84-0.0-0.6	7/7/2009	1609		X				Sampler: G. Payne
C3-WWTP-SO-TNT85-0.0-0.6	7/7/2009	1611		X				Sampler: G. Payne
C3-WWTP-SO-TNT86-0.0-0.6	7/7/2009	1614		X				Sampler: G. Payne
C3-WWTP-SO-TNT87-0.0-0.6	7/7/2009	1616		X				Sampler: G. Payne
C3-WWTP-SO-TNT88-0.0-0.6	7/7/2009	1618		X				Sampler: G. Payne
C3-WWTP-SO-TNT89-0.0-0.6	7/7/2009	1621		X				Sampler: G. Payne
C3-WWTP-SO-TNT90-0.0-0.6	7/7/2009	1623		X				Sampler: G. Payne
C3-WWTP-SO-TNT91-0.0-0.6	7/7/2009	1625		X				Sampler: G. Payne
C3-WWTP-SO-TNT92-0.0-0.6	7/7/2009	1627		X				Sampler: G. Payne
C3-WWTP-SO-TNT93-0.0-0.6	7/7/2009	1630		X				Sampler: G. Payne
C3-WWTP-SO-TNT94-0.0-0.6	7/7/2009	1632		X				Sampler: G. Payne
C3-WWTP-SO-TNT95-0.0-0.6	7/7/2009	1634		X				Sampler: G. Payne
C3-WWTP-SO-TNT96-0.0-0.6	7/7/2009	1636		X				Sampler: G. Payne
C3-WWTP-SO-TNT97-0.0-0.6	7/7/2009	1639		X				Sampler: G. Payne
C3-WWTP-SO-TNT98-0.0-0.6	7/7/2009	1641		X				Sampler: G. Payne
C3-WWTP-SO-TNT99-0.0-0.6	7/7/2009	1643		X				Sampler: G. Payne
C3-WWTP-SO-TNT100-0.0-0.6	7/7/2009	1646		X		X	Expray	Sampler: G. Payne
C3-WWTP-SO-TNT101-0.0-0.6	7/7/2009	1649		X				Sampler: G. Payne
C3-WWTP-SO-TNT102-0.0-0.6	7/8/2009	0745		X				Sampler: G. Payne
C3-WWTP-SO-TNT103-0.0-0.6	7/8/2009	0752		X				Sampler: G. Payne
C3-WWTP-SO-TNT104-0.0-0.6	7/8/2009	0753		X				Sampler: G. Payne
C3-WWTP-SO-TNT105-0.0-0.6	7/8/2009	0755		X				Sampler: G. Payne
C3-WWTP-SO-TNT106-0.0-0.6	7/8/2009	0756		X				Sampler: G. Payne
C3-WWTP-SO-TNT107-0.0-0.6	7/8/2009	0759		X				Sampler: G. Payne
C3-WWTP-SO-TNT108-0.0-0.6	7/8/2009	0800		X				Sampler: G. Payne
C3-WWTP-SO-TNT109-0.0-0.6	7/8/2009	0801		X				Sampler: G. Payne
C3-WWTP-SO-TNT110-0.0-0.6	7/8/2009	0803		X				Sampler: G. Payne
C3-WWTP-SO-TNT111-0.0-0.6	7/8/2009	0804		X				Sampler: G. Payne
C3-WWTP-SO-TNT112-0.0-0.6	7/8/2009	0806		X				Sampler: G. Payne
C3-WWTP-SO-TNT113-0.0-0.6	7/8/2009	0807		X				Sampler: G. Payne
C3-WWTP-SO-TNT114-0.0-0.6	7/8/2009	0808		X				Sampler: G. Payne
C3-WWTP-SO-TNT115-0.0-0.6	7/8/2009	0810		X				Sampler: G. Payne
C3-WWTP-SO-TNT116-0.0-0.6	7/8/2009	0811		X				Sampler: G. Payne
C3-WWTP-SO-TNT117-0.0-0.6	7/8/2009	0812		X				Sampler: G. Payne
C3-WWTP-SO-TNT118-0.0-0.6	7/8/2009	0814		X				Sampler: G. Payne
C3-WWTP-SO-TNT119-0.0-0.6	7/8/2009	0815		X				Sampler: G. Payne
C3-WWTP-SO-TNT120-0.0-0.6	7/8/2009	0817		X		X	Expray	Sampler: G. Payne
C3-WWTP-SO-TNT121-0.0-0.6	7/8/2009	0832		X				Sampler: G. Payne

Phase IV RI at the former LOOW
Former TNT Line DropEx Field Sampling Form

Sample ID	Date	Time	Positive	Negative	Duplicate Positive	Duplicate Negative	Expray/ DropEx Used for Duplicate	Comments
C3-WWTP-SO-TNT122-0.0-0.6	7/8/2009	0834		X				Sampler: G. Payne
C3-WWTP-SO-TNT123-0.0-0.6	7/8/2009	0835		X				Sampler: G. Payne
C3-WWTP-SO-TNT124-0.0-0.6	7/8/2009	0836		X				Sampler: G. Payne
C3-WWTP-SO-TNT125-0.0-0.6	7/8/2009	0837		X				Sampler: G. Payne
C3-WWTP-SO-TNT126-0.0-0.6	7/8/2009	0839		X				Sampler: G. Payne
C3-WWTP-SO-TNT127-0.0-0.6	7/8/2009	0840		X				Sampler: G. Payne
C3-WWTP-SO-TNT128-0.0-0.6	7/8/2009	0841		X				Sampler: G. Payne
C3-WWTP-SO-TNT129-0.0-0.6	7/8/2009	0842		X				Sampler: G. Payne
C3-WWTP-SO-TNT130-0.0-0.6	7/8/2009	0844		X				Sampler: G. Payne
C3-WWTP-SO-TNT131-0.0-0.6	7/8/2009	0846		X				Sampler: G. Payne
C3-WWTP-SO-TNT132-0.0-0.6	7/8/2009	0849		X				Sampler: G. Payne
C3-WWTP-SO-TNT133-0.0-0.6	7/8/2009	0850		X				Sampler: G. Payne
C3-WWTP-SO-TNT134-0.0-0.6	7/8/2009	0851		X				Sampler: G. Payne
C3-WWTP-SO-TNT135-0.0-0.6	7/8/2009	0853		X				Sampler: G. Payne
C3-WWTP-SO-TNT136-0.0-0.6	7/8/2009	0854		X				Sampler: G. Payne
C3-WWTP-SO-TNT137-0.0-0.6	7/8/2009	0858		X				Sampler: G. Payne
C3-WWTP-SO-TNT138-0.0-0.6	7/8/2009	0859		X				Sampler: G. Payne
C3-WWTP-SO-TNT139-0.0-0.6	7/8/2009	0900		X				Sampler: G. Payne
C3-WWTP-SO-TNT140-0.0-0.6	7/8/2009	0901		X		X	Expray	Sampler: G. Payne
C3-WWTP-SO-TNT141-0.0-0.6	7/8/2009	0904		X				Sampler: G. Payne
C3-WWTP-SO-TNT142-0.0-0.6	7/8/2009	0906		X				Sampler: G. Payne
C3-WWTP-SO-TNT143-0.0-0.6	7/8/2009	0907		X				Sampler: G. Payne
C3-WWTP-SO-TNT144-0.0-0.6	7/8/2009	0908		X				Sampler: G. Payne
C3-WWTP-SO-TNT145-0.0-0.6	7/8/2009	0911		X				Sampler: G. Payne
C3-WWTP-SO-TNT146-0.0-0.6	7/8/2009	0912		X				Sampler: C. Scism
C3-WWTP-SO-TNT147-0.0-0.6	7/8/2009	0911		X				Sampler: C. Scism
C3-WWTP-SO-TNT148-0.0-0.6	7/8/2009	0910		X				Sampler: C. Scism
C3-WWTP-SO-TNT149-0.0-0.6	7/8/2009	0909		X				Sampler: C. Scism
C3-WWTP-SO-TNT150-0.0-0.6	7/8/2009	0908		X				Sampler: C. Scism
C3-WWTP-SO-TNT151-0.0-0.6	7/8/2009	0907		X				Sampler: C. Scism
C3-WWTP-SO-TNT152-0.0-0.6	7/8/2009	0906		X				Sampler: C. Scism
C3-WWTP-SO-TNT153-0.0-0.6	7/8/2009	0905		X				Sampler: C. Scism
C3-WWTP-SO-TNT154-0.0-0.6	7/8/2009	0904		X				Sampler: C. Scism
C3-WWTP-SO-TNT155-0.0-0.6	7/8/2009	0903		X				Sampler: C. Scism
C3-WWTP-SO-TNT156-0.0-0.6	7/8/2009	0902		X				Sampler: C. Scism
C3-WWTP-SO-TNT157-0.0-0.6	7/8/2009	0901		X				Sampler: C. Scism
C3-WWTP-SO-TNT158-0.0-0.6	7/8/2009	0900		X				Sampler: C. Scism
C3-WWTP-SO-TNT159-0.0-0.6	Dropped by USACE Representative due to standing water in WDD							
C3-WWTP-SO-TNT160-0.0-0.6	Dropped by USACE Representative due to standing water in WDD							
C3-WWTP-SO-TNT161-0.0-0.6	Dropped by USACE Representative due to standing water in WDD							

Phase IV RI at the former LOOW
Former TNT Line DropEx Field Sampling Form

Sample ID	Date	Time	Positive	Negative	Duplicate Positive	Duplicate Negative	Expray/ DropEx Used for Duplicate	Comments
C3-WWTP-SO-TNT162-0.0-0.6	Dropped by USACE Representative due to standing water in WDD							
C3-WWTP-SO-TNT163-0.0-0.6	Dropped by USACE Representative due to standing water in WDD							
C3-WWTP-SO-TNT164-0.0-0.6	Dropped by USACE Representative due to standing water in WDD							
C3-WWTP-SO-TNT165-0.0-0.6	Dropped by USACE Representative due to standing water in WDD							
C3-WWTP-SO-TNT166-0.0-0.6	Dropped by USACE Representative due to standing water in WDD							
C3-WWTP-SO-TNT167-0.0-0.6	7/8/2009	1226		X				Sampler: C. Scism
C3-WWTP-SO-TNT168-0.0-0.6	Dropped by USACE Representative due to standing water in WDD							
C3-WWTP-SO-TNT169-0.0-0.6	Dropped by USACE Representative due to standing water in WDD							
C3-WWTP-SO-TNT170-0.0-0.6	Dropped by USACE Representative due to standing water in WDD							
C3-WWTP-SO-TNT171-0.0-0.6	7/8/2009	1227		X				Sampler: C. Scism
C3-WWTP-SO-TNT172-0.0-0.6	7/8/2009	1228		X				Sampler: C. Scism
C3-WWTP-SO-TNT173-0.0-0.6	7/8/2009	1229		X				Sampler: C. Scism
C3-WWTP-SO-TNT174-0.0-0.6	7/8/2009	1230		X				Sampler: C. Scism
C3-WWTP-SO-TNT175-0.0-0.6	Dropped by USACE Representative due to standing water in WDD							
C3-WWTP-SO-TNT176-0.0-0.6	Dropped by USACE Representative due to standing water in WDD							
C3-WWTP-SO-TNT177-0.0-0.6	7/8/2009	1233		X				Sampler: C. Scism
C3-WWTP-SO-TNT178-0.0-0.6	7/8/2009	1235		X				Sampler: C. Scism
C3-WWTP-SO-TNT179-0.0-0.6	7/8/2009	1236		X				Sampler: C. Scism
C3-WWTP-SO-TNT180-0.0-0.6	7/8/2009	1237		X				Sampler: C. Scism
C3-WWTP-SO-TNT181-0.0-0.6	7/8/2009	1238		X				Sampler: C. Scism
C3-WWTP-SO-TNT182-0.0-0.6	7/8/2009	1239		X				Sampler: C. Scism
C3-WWTP-SO-TNT183-0.0-0.6	7/8/2009	1240		X				Sampler: C. Scism
C3-WWTP-SO-TNT184-0.0-0.6	7/8/2009	1241		X				Sampler: C. Scism
C3-WWTP-SO-TNT185-0.0-0.6	7/8/2009	1242		X				Sampler: C. Scism
C3-WWTP-SO-TNT186-0.0-0.6	7/8/2009	1244		X				Sampler: C. Scism
C3-WWTP-SO-TNT187-0.0-0.6	7/8/2009	1245		X				Sampler: C. Scism
C3-WWTP-SO-TNT188-0.0-0.6	7/8/2009	1259		X				Sampler: C. Scism
C3-WWTP-SO-TNT189-0.0-0.6	7/8/2009	1301		X				Sampler: C. Scism
C3-WWTP-SO-TNT190-0.0-0.6	7/8/2009	1303		X				Sampler: C. Scism
C3-WWTP-SO-TNT191-0.0-0.6	7/8/2009	1305		X		X	DropEx	Sampler: C. Scism
C3-WWTP-SO-TNT192-0.0-0.6	7/8/2009	1306		X				Sampler: C. Scism
C3-WWTP-SO-TNT193-0.0-0.6	7/8/2009	1308		X				Sampler: C. Scism
C3-WWTP-SO-TNT194-0.0-0.6	7/8/2009	1309		X				Sampler: C. Scism
C3-WWTP-SO-TNT195-0.0-0.6	7/8/2009	1310		X				Sampler: C. Scism
C3-WWTP-SO-TNT196-0.0-0.6	7/8/2009	1311		X				Sampler: C. Scism
C3-WWTP-SO-TNT197-0.0-0.6	7/8/2009	1312		X				Sampler: C. Scism
C3-WWTP-SO-TNT198-0.0-0.6	7/8/2009	1313		X				Sampler: C. Scism
C3-WWTP-SO-TNT199-0.0-0.6	7/8/2009	1314		X				Sampler: C. Scism
C3-WWTP-SO-TNT200-0.0-0.6	7/8/2009	1316		X				Sampler: C. Scism
C3-WWTP-SO-TNT201-0.0-0.6	7/8/2009	1317		X				Sampler: C. Scism

Phase IV RI at the former LOOW
Former TNT Line DropEx Field Sampling Form

Sample ID	Date	Time	Positive	Negative	Duplicate Positive	Duplicate Negative	Expray/ DropEx Used for Duplicate	Comments
C3-WWTP-SO-TNT202-0.0-0.6	7/8/2009	1318		X				Sampler: C. Scism
C3-WWTP-SO-TNT203-0.0-0.6	7/8/2009	1319		X				Sampler: C. Scism
C3-WWTP-SO-TNT204-0.0-0.6	7/8/2009	1320		X				Sampler: C. Scism
C3-WWTP-SO-TNT205-0.0-0.6	7/8/2009	1321		X				Sampler: C. Scism
C3-WWTP-SO-TNT206-0.0-0.6	7/8/2009	1323		X				Sampler: C. Scism
C3-WWTP-SO-TNT207-0.0-0.6	7/8/2009	1324		X				Sampler: C. Scism
C3-WWTP-SO-TNT208-0.0-0.6	7/8/2009	1327		X				Sampler: C. Scism
C3-WWTP-SO-TNT209-0.0-0.6	7/8/2009	1328		X				Sampler: C. Scism
C3-WWTP-SO-TNT210-0.0-0.6	7/8/2009	1329		X				Sampler: C. Scism
C3-WWTP-SO-TNT211-0.0-0.6	7/8/2009	1330		X		X	DropEx	Sampler: C. Scism
C3-WWTP-SO-TNT212-0.0-0.6	7/8/2009	1333		X				Sampler: C. Scism
C3-WWTP-SO-TNT213-0.0-0.6	7/8/2009	1334		X				Sampler: C. Scism
C3-WWTP-SO-TNT214-0.0-0.6	7/8/2009	1335		X				Sampler: C. Scism
C3-WWTP-SO-TNT215-0.0-0.6	7/8/2009	1336		X				Sampler: C. Scism
C3-WWTP-SO-TNT216-0.0-0.6	7/8/2009	1334		X				Sampler: G. Payne
C3-WWTP-SO-TNT217-0.0-0.6	7/8/2009	1333		X				Sampler: G. Payne
C3-WWTP-SO-TNT218-0.0-0.6	7/8/2009	1332		X				Sampler: G. Payne
C3-WWTP-SO-TNT219-0.0-0.6	7/8/2009	1331		X				Sampler: G. Payne
C3-WWTP-SO-TNT220-0.0-0.6	7/8/2009	1330		X				Sampler: G. Payne
C3-WWTP-SO-TNT221-0.0-0.6	7/8/2009	1329		X				Sampler: G. Payne
C3-WWTP-SO-TNT222-0.0-0.6	7/8/2009	1328		X				Sampler: G. Payne
C3-WWTP-SO-TNT223-0.0-0.6	7/8/2009	1326		X				Sampler: G. Payne
C3-WWTP-SO-TNT224-0.0-0.6	7/8/2009	1325		X				Sampler: G. Payne
C3-WWTP-SO-TNT225-0.0-0.6	7/8/2009	1324		X				Sampler: G. Payne
C3-WWTP-SO-TNT226-0.0-0.6	7/8/2009	1322		X				Sampler: G. Payne
C3-WWTP-SO-TNT227-0.0-0.6	7/8/2009	1320		X				Sampler: G. Payne
C3-WWTP-SO-TNT228-0.0-0.6	7/8/2009	1319		X				Sampler: G. Payne
C3-WWTP-SO-TNT229-0.0-0.6	7/8/2009	1318		X				Sampler: G. Payne
C3-WWTP-SO-TNT230-0.0-0.6	7/8/2009	1317		X				Sampler: G. Payne
C3-WWTP-SO-TNT231-0.0-0.6	7/8/2009	1316		X		X	DropEx	Sampler: G. Payne
C3-WWTP-SO-TNT232-0.0-0.6	7/8/2009	1314		X				Sampler: G. Payne
C3-WWTP-SO-TNT233-0.0-0.6	7/8/2009	1313		X				Sampler: G. Payne
C3-WWTP-SO-TNT234-0.0-0.6	7/8/2009	1311		X				Sampler: G. Payne
C3-WWTP-SO-TNT235-0.0-0.6	7/8/2009	1309		X				Sampler: G. Payne
C3-WWTP-SO-TNT236-0.0-0.6	7/8/2009	1308		X				Sampler: G. Payne
C3-WWTP-SO-TNT237-0.0-0.6	7/8/2009	1306		X				Sampler: G. Payne
C3-WWTP-SO-TNT238-0.0-0.6	7/8/2009	1304		X				Sampler: G. Payne
C3-WWTP-SO-TNT239-0.0-0.6	7/8/2009	1302		X				Sampler: G. Payne
C3-WWTP-SO-TNT240-0.0-0.6	7/8/2009	1300		X				Sampler: G. Payne

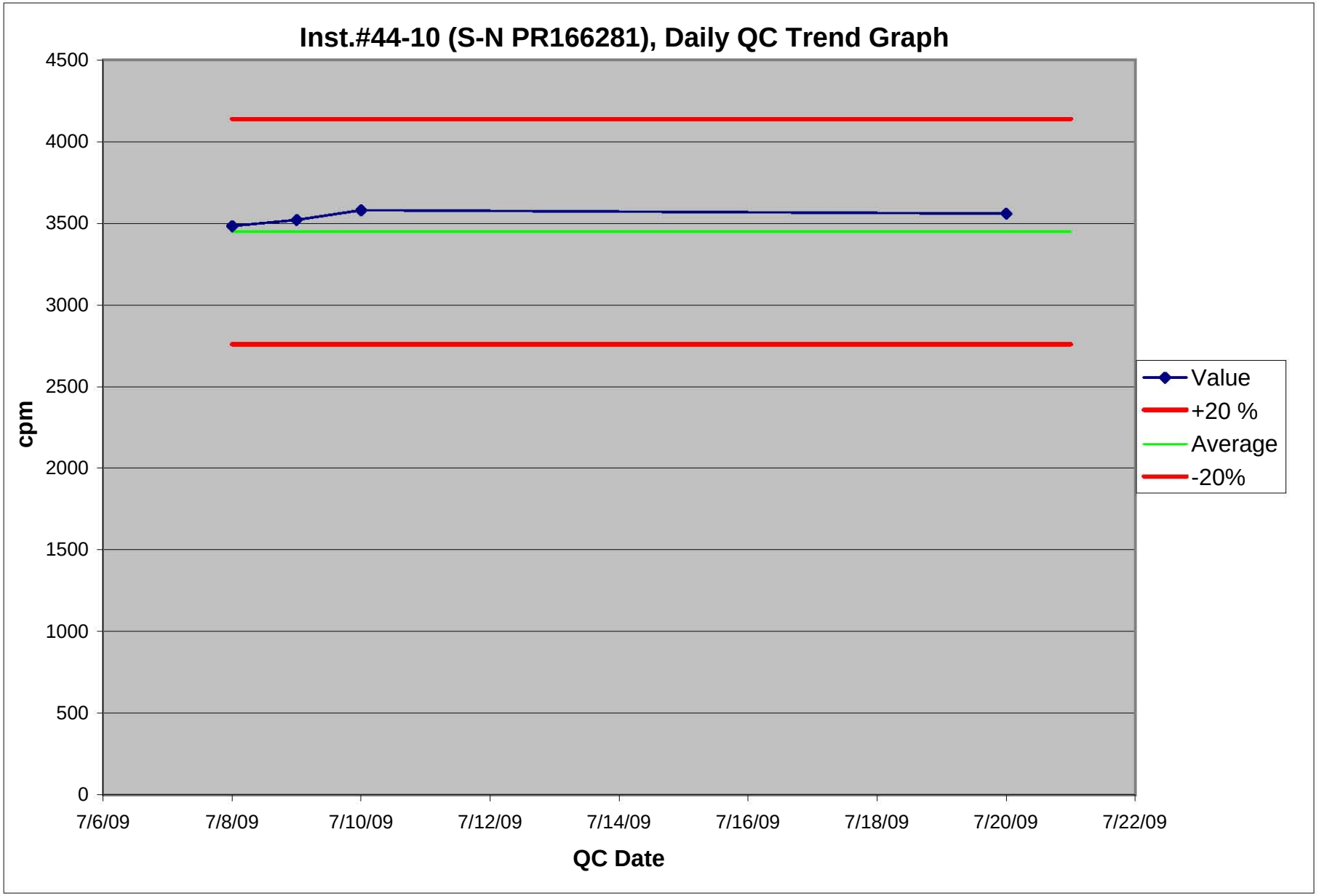
Phase IV RI Radiological Field Screening

Daily QC Checks

Radiological Equipment

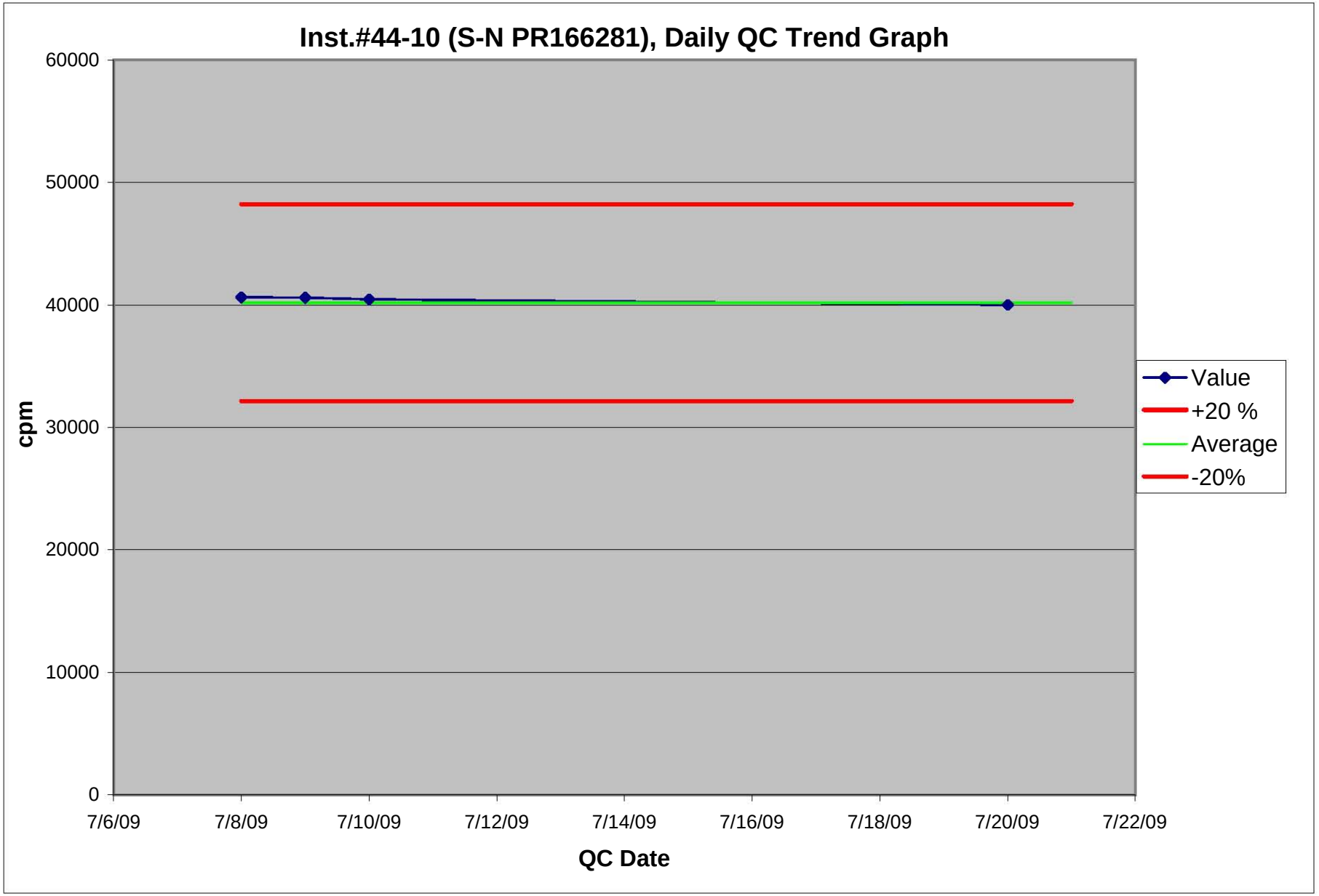
Inst.#44-10 (S-N PR166281)		
QC Daily Source		
Date	Result (cpm)	P/F
7/8/2009	3482	Pass
7/9/2009	3520	Pass
7/10/2009	3580	Pass
7/20/2009	3558	Pass
7/21/2009		

Inst.#44-10 (S-N PR166281)		Source Ser. #	N/A
Initial Source Readings		Nuclide	BKGD
Date	Result (cpm)		
7/7/2009	3432		
7/7/2009	3502		
7/7/2009	3470		
7/7/2009	3355		
7/7/2009	3246		
7/7/2009	3294		
7/7/2009	3410		
7/7/2009	3478		
7/7/2009	3571		
7/7/2009	3727		
	Average		
	3449		


Inst.#44-10 (S-N PR166281), Daily QC Trend Graph
4500
4000
3500
3000
2500
2000
1500
1000
500
0
cpm
7/6/09
7/8/09
7/10/09
7/12/09
7/14/09
7/16/09
7/18/09
7/20/09
7/22/09
QC Date
Value
+20 %
Average
-20%

Inst.#44-10 (S-N PR166281)		
QC Daily Source		
Date	Result (cpm)	P/F
7/8/2009	40617	Pass
7/9/2009	40590	Pass
7/10/2009	40447	Pass
7/20/2009	39997	Pass
7/21/2009		

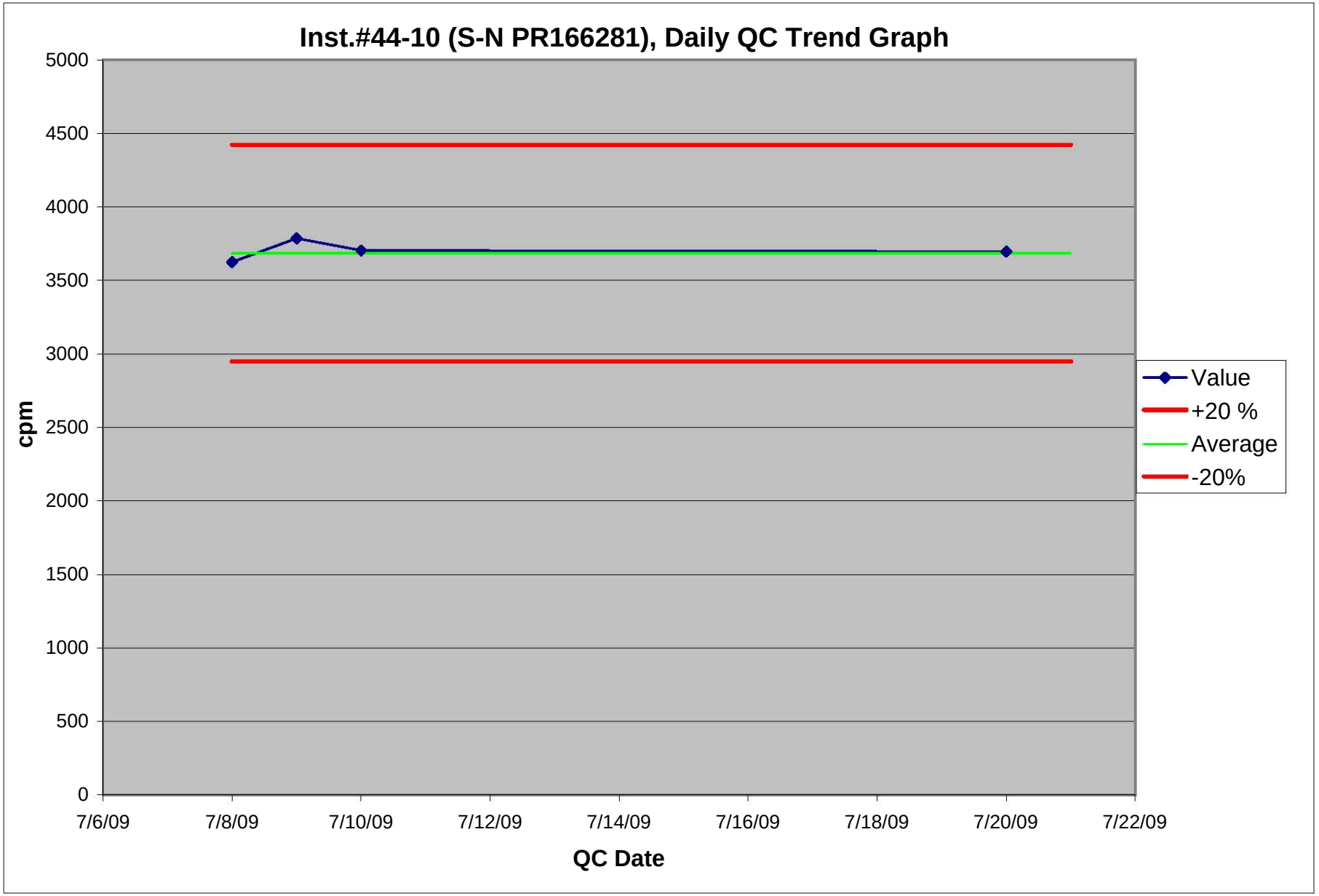
Inst.#44-10 (S-N PR166281)		Source Ser. #	N/A
Initial Source Readings		Nuclide	Cs-137
Date	Result (cpm)		
7/7/2009	40123		
7/7/2009	40097		
7/7/2009	39888		
7/7/2009	40332		
7/7/2009	40589		
7/7/2009	40233		
7/7/2009	40284		
7/7/2009	40100		
7/7/2009	40146		
7/7/2009	40121		
	Average		
	40191		


Inst.#44-10 (S-N PR166281), Daily QC Trend Graph
60000
50000
40000
30000
20000
10000
0
cpm
7/6/09
7/8/09
7/10/09
7/12/09
7/14/09
7/16/09
7/18/09
7/20/09
7/22/09
QC Date
Value
+20 %
Average
-20%

Inst.#44-10 (S-N PR166281)		
QC Daily Source		
Date	Result (cpm)	P/F
7/8/2009	3624	Pass
7/9/2009	3786	Pass
7/10/2009	3704	Pass
7/20/2009	3696	Pass
7/21/2009		

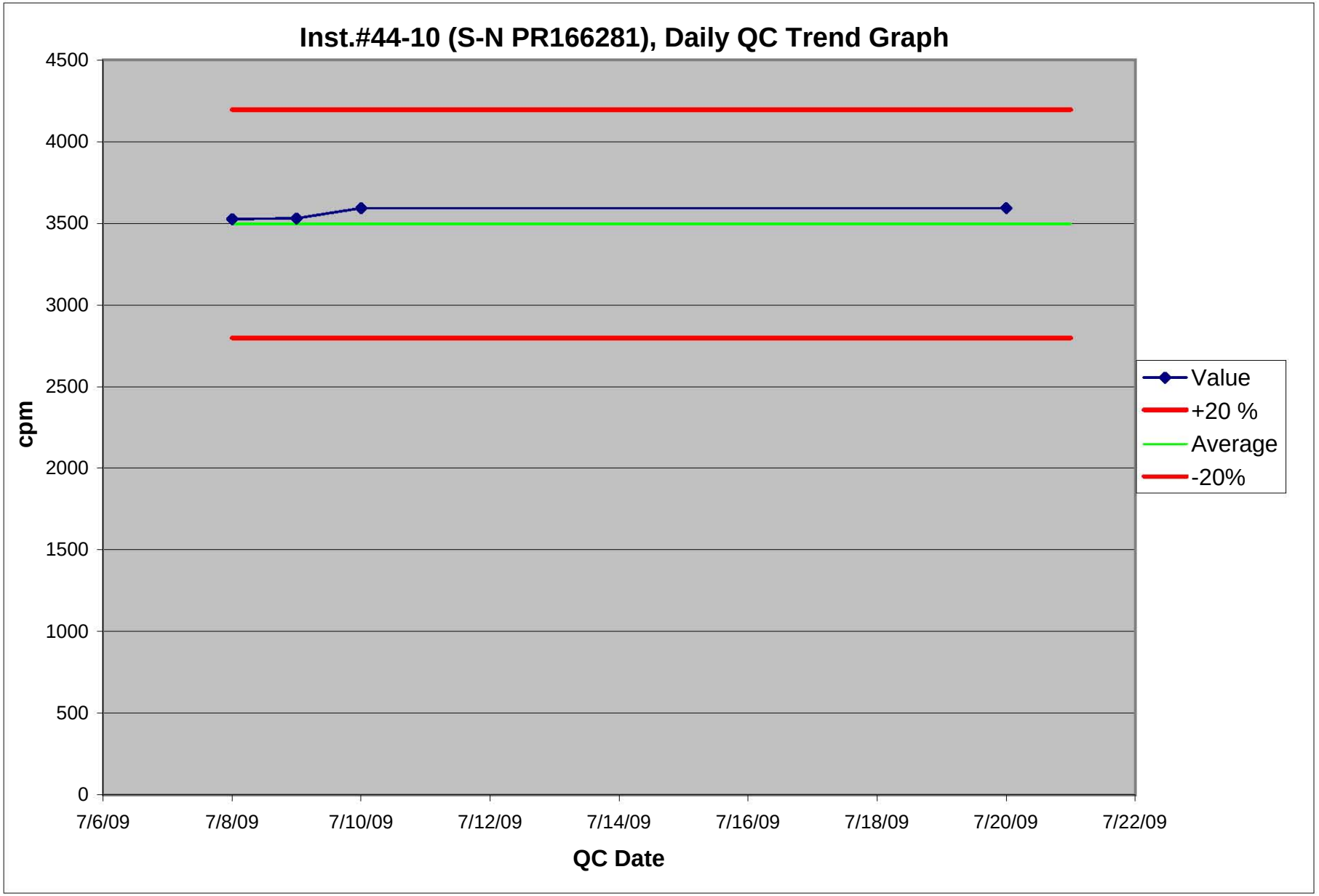
Inst.#44-10 (S-N PR166281)	
Initial Source Readings	
Date	Result (cpm)
7/7/2009	3732
7/7/2009	3704
7/7/2009	3775
7/7/2009	3750
7/7/2009	3762
7/7/2009	3658
7/7/2009	3682
7/7/2009	3572
7/7/2009	3565
7/7/2009	3648
	Average
	3685

Source Ser. #	N/A
Nuclide	Tc-99m


Inst.#44-10 (S-N PR166281), Daily QC Trend Graph
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
cpm
7/6/09
7/8/09
7/10/09
7/12/09
7/14/09
7/16/09
7/18/09
7/20/09
7/22/09
QC Date
Value
+20 %
Average
-20%

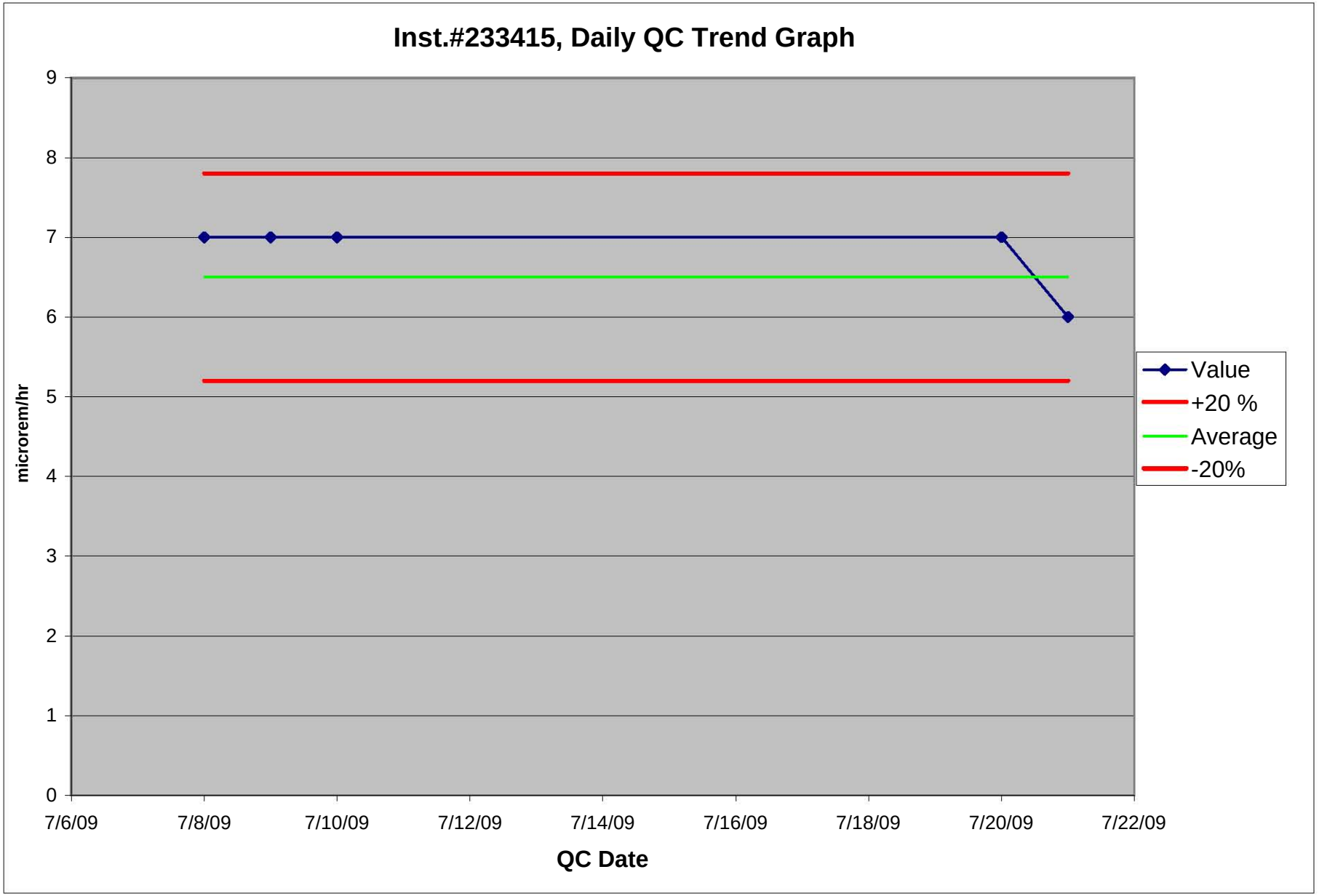
Inst.#44-10 (S-N PR166281)		
QC Daily Source		
Date	Result (cpm)	P/F
7/8/2009	3525	Pass
7/9/2009	3530	Pass
7/10/2009	3592	Pass
7/20/2009	3592	Pass
7/21/2009		

Inst.#44-10 (S-N PR166281)		Source Ser. #	N/A
Initial Source Readings		Nuclide	Th-230
Date	Result (cpm)		
7/7/2009	3518		
7/7/2009	3562		
7/7/2009	3551		
7/7/2009	3447		
7/7/2009	3487		
7/7/2009	3483		
7/7/2009	3487		
7/7/2009	3429		
7/7/2009	3493		
7/7/2009	3499		
	Average		
	3496		


Inst.#44-10 (S-N PR166281), Daily QC Trend Graph
4500
4000
3500
3000
2500
2000
1500
1000
500
0
cpm
7/6/09
7/8/09
7/10/09
7/12/09
7/14/09
7/16/09
7/18/09
7/20/09
7/22/09
QC Date
Value
+20 %
Average
-20%

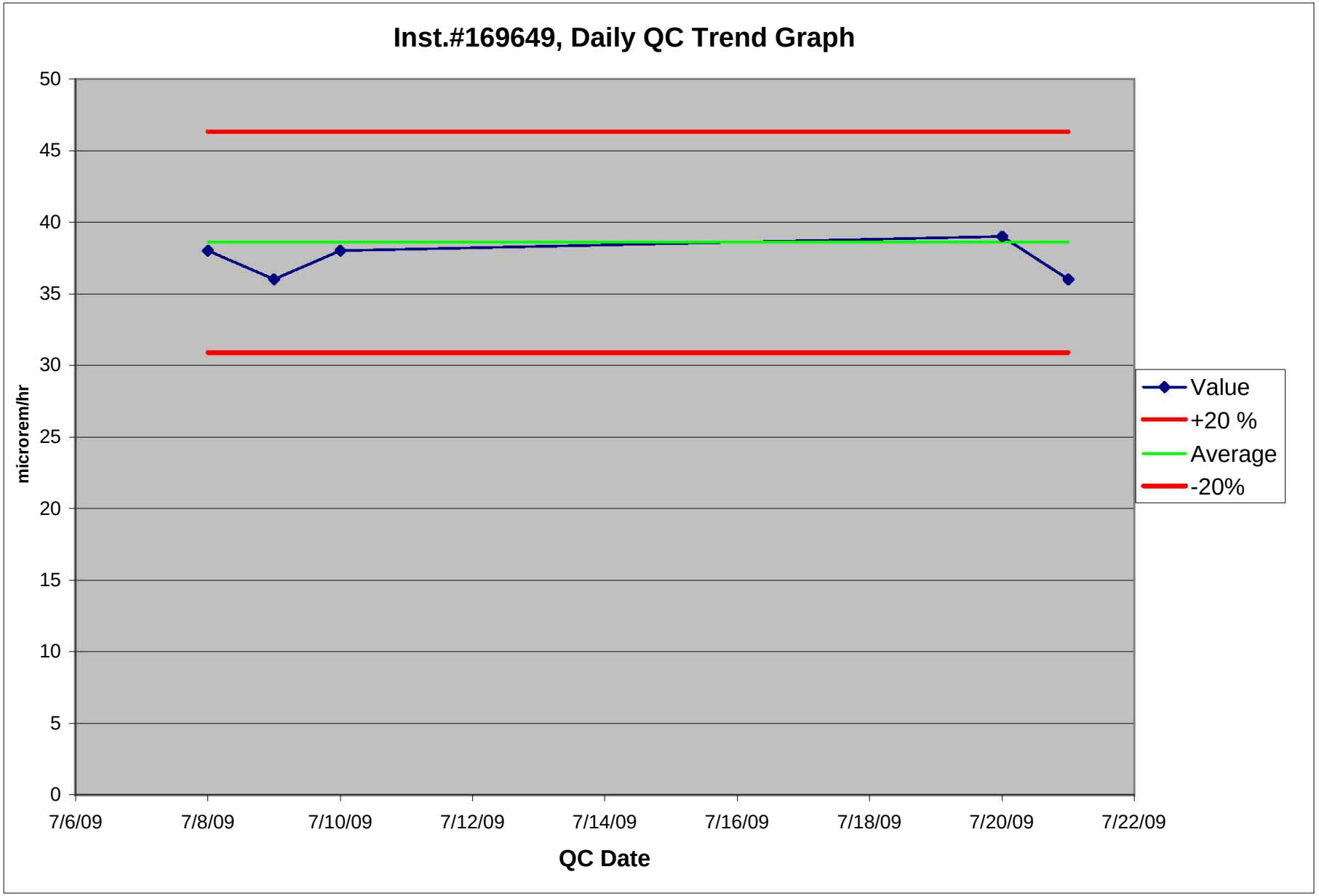
Inst.#233415		
QC Daily Source		
Date	**Result (μrem/hr)**	**P/F**
7/8/2009	38	Pass
7/9/2009	36	Pass
7/10/2009	38	Pass
7/20/2009	39	Pass
7/21/2009	37	Pass

Inst.#233415		Source Ser. #	N/A
Initial Source Readings		**Nuclide**	**Cs-137**
Date	**Result (μrem/hr)**		
7/7/2009	38		
7/7/2009	39		
7/7/2009	38		
7/7/2009	38		
7/7/2009	39		
7/7/2009	38		
7/7/2009	38		
7/7/2009	36		
7/7/2009	38		
7/7/2009	38		
	Average		
	38		


Inst.#233415, Daily QC Trend Graph
microrem/hr
9
8
7
6
5
4
3
2
1
0
7/6/09
7/8/09
7/10/09
7/12/09
7/14/09
7/16/09
7/18/09
7/20/09
7/22/09
QC Date
Value
+20 %
Average
-20%

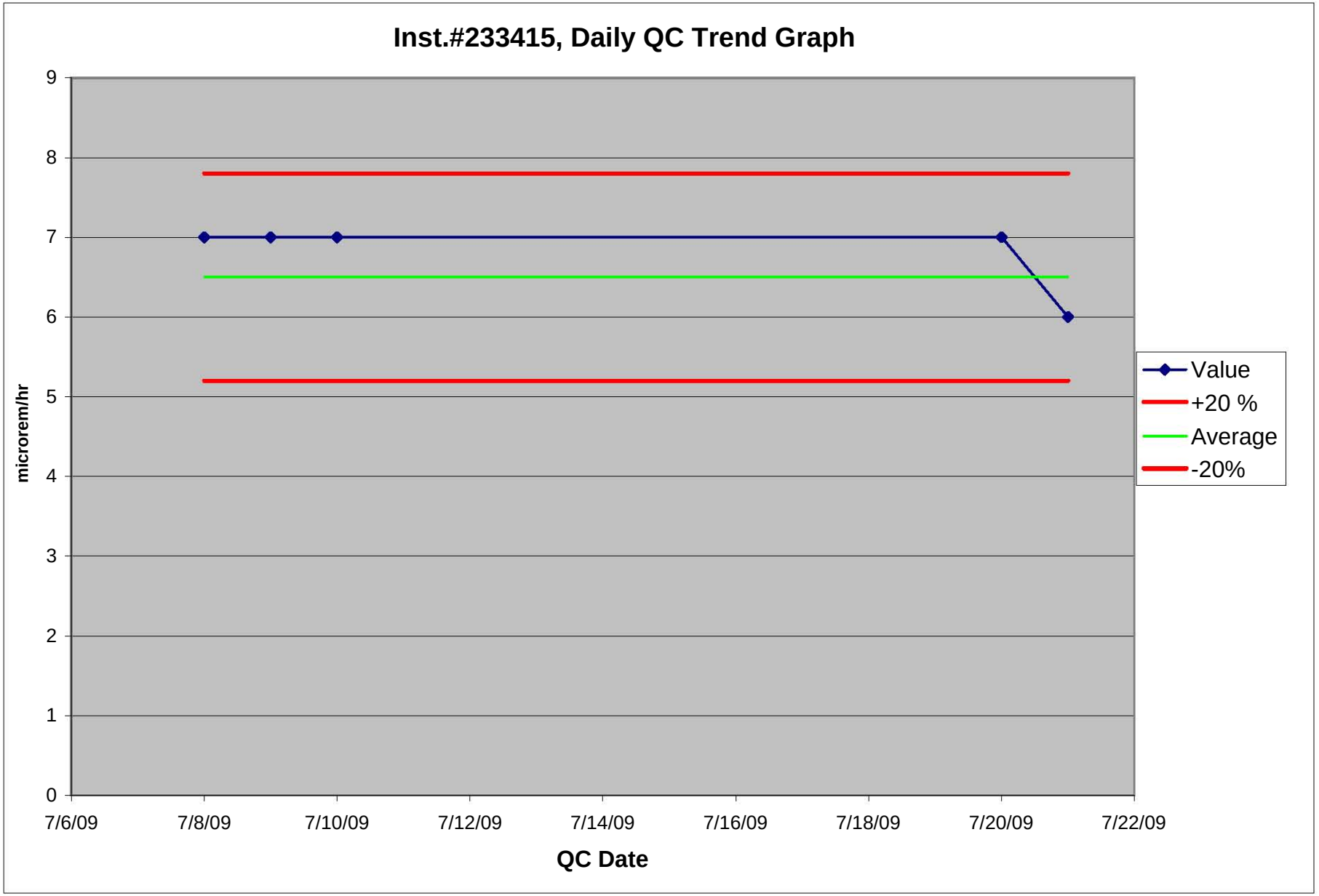
Inst.#169649		
QC Daily Source		
Date	Result (µrem/hr)	P/F
7/8/2009	38	Pass
7/9/2009	36	Pass
7/10/2009	38	Pass
7/20/2009	39	Pass
7/21/2009	36	Pass

Inst.#169649		Source Ser. #	N/A
Initial Source Readings		Nuclide	Cs-137
Date	Result (µrem/hr)		
7/7/2009	38		
7/7/2009	40		
7/7/2009	39		
7/7/2009	38		
7/7/2009	39		
7/7/2009	38		
7/7/2009	39		
7/7/2009	37		
7/7/2009	40		
7/7/2009	38		
	Average		
	39		


Inst.#169649, Daily QC Trend Graph
50
45
40
35
30
25
20
15
10
5
0
microrem/hr
7/6/09
7/8/09
7/10/09
7/12/09
7/14/09
7/16/09
7/18/09
7/20/09
7/22/09
QC Date
Value
+20 %
Average
-20%

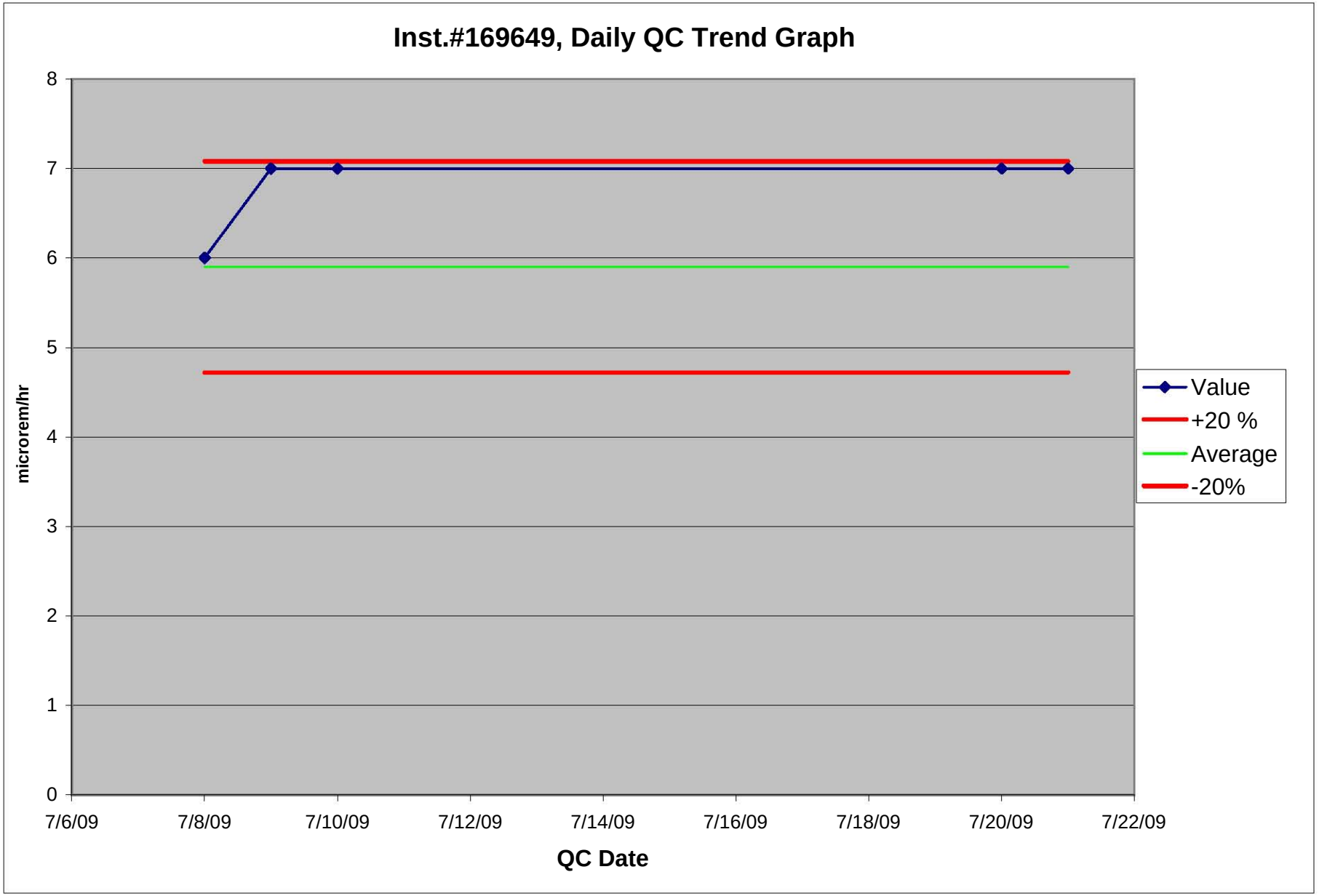
Inst.#233415		
QC Daily Source		
Date	Result (µrem/hr)	P/F
7/8/2009	7	Pass
7/9/2009	7	Pass
7/10/2009	7	Pass
7/20/2009	7	Pass
7/21/2009	6	Pass

Inst.#233415		Source Ser. #	N/A
Initial Source Readings		Nuclide	BKGD
Date	Result (µrem/hr)		
7/7/2009	6		
7/7/2009	6		
7/7/2009	7		
7/7/2009	6		
7/7/2009	7		
7/7/2009	6		
7/7/2009	7		
7/7/2009	7		
7/7/2009	6		
7/7/2009	7		
	Average		
	7		


Inst.#233415, Daily QC Trend Graph
microrem/hr
9
8
7
6
5
4
3
2
1
0
7/6/09
7/8/09
7/10/09
7/12/09
7/14/09
7/16/09
7/18/09
7/20/09
7/22/09
QC Date
Value
+20 %
Average
-20%

Inst.#169649		
QC Daily Source		
Date	Result (µrem/hr)	P/F
7/8/2009	6	Pass
7/9/2009	7	Pass
7/10/2009	7	Pass
7/20/2009	7	Pass
7/21/2009	7	Pass

Inst.#169649	Source Ser. #	N/A
Initial Source Readings	Nuclide	BKGD
Date	Result (µrem/hr)	
7/7/2009	6	
7/7/2009	6	
7/7/2009	6	
7/7/2009	6	
7/7/2009	6	
7/7/2009	6	
7/7/2009	6	
7/7/2009	6	
7/7/2009	6	
7/7/2009	5	
	Average	
	6	


Inst.#169649, Daily QC Trend Graph
microrem/hr
8
7
6
5
4
3
2
1
0
7/6/09
7/8/09
7/10/09
7/12/09
7/14/09
7/16/09
7/18/09
7/20/09
7/22/09
QC Date
Value
+20 %
Average
-20%

Equipment Calibration Reports

Radiological Equipment

GRIFFIN INSTRUMENTS

CALIBRATION CERTIFICATE FOR 2929 SERIAL# 167855

1118

Owner: SOLUTIENT TECHNOLOGIES

DATE: 09/19/08 LOCATION: Griffin Inst

TECH: Joanne Glenn DATE LAST CAL EXPIRES: 08/29/08

Reason For Calibration: (•) Due For Calibration ( ) Repair (See Remarks)

CABLE LENGTH: 39" ( ) Other (See Remarks) ( ) Due and Repair (See Remarks)

NIST TRACEABLE EQUIPMENT USED DURING CALIBRATION

MODEL: M-500 SERIAL #: 42386 CAL. DUE: 05/15/09

MODEL: SERIAL #: CAL DUE:

Condition: (•) Sat ( ) Unsat

AF Mechanical Zero: 5

AL Mechanical Zero: 0

Scaler Function Check	As Found	As Left		
Beta Channel Window (4-50 mV):	4-50	A.F.		
Alpha Channel Window (175 mV, 120 for 3030):	175	A.F.		
Alpha Counts w/Pulser @ 10,000 CPM:	9,950	A.F.	% Error:	0.5%
Beta Counts w/Pulser @ 10,000 CPM:	9,951	A.F.	% Error:	0.5%

HIGH VOLTAGE POWER SUPLY CAL (2929 only)		
1 KV Reading (R-5 on HV Board):	1	A.F.
Max HV (1500 V +):	(•) Sat	( ) Unsat

REMARKS:

Does Instrument Meet Final Acceptance Criteria?: (•) Yes ( ) No

Calibration Sticker Attached?: (•) Yes ( ) No

Date Instrument is Due For Next Calibration: 09/19/09

INSTRUMENT MARRIED WITH 43-10-1 # PR171934

Performed/Reviewed by: [redacted] Date: 9/19/2008 Entered by: [redacted] Initials

Calibrations performed to ANSI N323A-1997 standards.

GRIFFIN INSTRUMENTS

CALIBRATION CERTIFICATE FOR 43-10-1 PROBE # PR171934

Owner: SOLUTIENT TECHNOL

DATE: 09/19/08 LOCATION: Griffin Inst

TECH: Joanne Glenn DATE LAST CAL EXPIRES: 08/29/08

REASON FOR CALIBRATION:

(●) Due For Calibration ( ) Repair (See Remarks) ( ) Other (See Remarks) ( ) Due and Repair

CABLE LENGTH: 39" INPUT SENSITIVITY: dual

NIST TRACEABLE EQUIPMENT AND STANDARDS USED DURING CALIBRATION

MODEL: 2929 SERIAL #: 167855 CAL. DUE: 09/19/09

NIST TRACEABLE SOURCES USED

Source Number	Isotope	4 pi Activity	Assay Date	2 pi Activity
99TC470-1814	Tc99 SS	37,300 dpm	08/03/99	23,300 cpm
99TH470-1815	Th230	30,000 dpm	04/11/06	15,200 cpm
2696-00	Pu239	18,500 dpm	07/18/06	9,390 cpm
2697-00	Sr90	12,200 dpm	03/01/00	8,530 cpm
PX 726	C14	48,780 dpm	01/21/08	18,660 cpm

Efficiencies from last cal.:

Condition: (●) Sat ( ) Unsat

Pu: 40.50% Th: 37.27% Sr: 42.80%

Tc ss: 22.78% C14: 6.38% Tc Ni:

As Found (AF) Efficiencies:

HV / Vernier:	Tc-99 Source Response Nickel (CPM):			Pu-239 Source Response (CPM):			Background (CPM):		Tc-99 Source Response Stainless Steel (CPM):		
	A ch.	B ch.	Net Eff.	A ch.	B ch.	Net Eff.	A ch.	B ch.	A ch.	B ch.	Net Eff.
875 / 3.50											

Net A to B Xtalk: <10%	B to A Xtalk: <1%

	Pu239	Tc99 Ni	Tc99 ss	Th-230	Sr90	C-14
AF CPM:						
AF 4 pi eff:						
AF 2 pi eff:						

Is as found efficiency within 20% of the efficiency from the last cal? ( ) Yes (●) No (See Remarks)

Note: If the as found data is within 10% of the last calibration and the B-A Xtalk is <1% and the A-B Xtalk is <10%, then the technician may N/A the plateau section and go directly to remarks.

GRIFFIN INSTRUMENTS

PROBE #: PR171934
Date: 09/19/08

PLATEAU AND SET POINT DATA

HV / Vernier:	Tc-99 Source Response SS (CPM):			Pu-239 Source Response (CPM):			Background (CPM):		Net A to B Xtalk: <10%	B to A Xtalk: <1%
	A ch.	B ch.	Net Eff.	A ch.	B ch.	Net Eff.	A ch.	B ch.		
750 / 3.01	5	5365	14.3%	6769	224	36.6%	1	48	2.5%	<1%
800 / 3.23	3	6492	17.3%	7134	195	38.6%	0	46	2.0%	<1%
850 / 3.45	2	8340	22.2%	7241	221	39.1%	1	61	2.2%	<1%
875 / 3.55							0	90		

Alpha / Beta Bkg (cpm) 1 73

HV / Vernier		Pu-239	Tc-99 Ni	Tc-99 SS	Th-230	C-14	Sr-90
850 / 3.45	**CPM:**	7258		8121	10686	4958	4248
4 pi AL Efficiencies:		**39.23%**		**21.58%**	**35.62%**	**10.01%**	**41.99%**
2 pi AL Efficiencies:		***77.28%***		***34.54%***	***70.30%***	***26.18%***	***60.06%***

REMARKS: Replaced torn mylar, missing foot, broken shaft, missing knob.

Does Instrument Meet Final Acceptance Criteria?: (•) Yes ( ) No

Calibration Sticker Attached?: (•) Yes ( ) No

Date Instrument is Due For Next Calibration: **09/19/09**

INSTRUMENT MARRIED WITH **2929** **# 167855**

Performed/Reviewed by: [redacted] **Date:** 9/19/2008 **Entered by:** ____ **Initials**

2 pi efficiencies denoted in italics.

Calibrations performed to ANSI N323A-1997 standards.

GRIFFIN INSTRUMENTS

CALIBRATION CERTIFICATE FOR 44-10 PROBE # PR166281

1841

Owner: SOLUTIENT TECHNO

DATE: 02/13/09 LOCATION: Griffin Inst

TECH: E.M. Glenn DATE LAST CAL EXPIRES:

○ Due For Calibration ◉ Other (See Remarks) Cable Length: 39"

○ Repair (See Remarks) ○ Due and Repair I.S.: 35mV

NIST TRACEABLE EQUIPMENT AND STANDARDS USED DURING CALIBRATION

MODEL: 2221 SERIAL #: 176945 CAL. DUE: 02/13/10

SOURCE #: 99-1816 ISOTOPE: Cs137 ACTIVITY: 1.23 uCi ASSAY DATE: 08/12/99

GEOMETRY: Jig upside down with source underneath, activity side up.

Physical Condition: ◉ Sat ○ Unsat

Efficiency From Last Calibration: Previous HV Set Point: V

Counts (CPM) Background (CPM) Net CPM:

AF Efficiency:

Is the AF efficiency within 20% of the efficiency from the last calibration? ○ Yes ◉ No

Reproducibility: 132330 130730 132370 Average: 131810.00

Are the individual counts within 10% of the average? ◉ Yes ○ No

High Voltage:	Source Response (CPM):	Background (CPM):	Net CPM:
950	117020	7770	109250
1000	121800	9600	112200
1050	126380	9890	116490
1100	128110	10980	117130
1150	135100	11500	123600
1200	137430	10850	126580
1250	139060	11080	127980

HV	RESPONSE	BACKGROUND	NET CPM	
1100 V	130730	10982	119748	Efficiency: 5.46%

REMARKS: No previous cal data.

Does Instrument Meet Final Acceptance Criteria?: ◉ Yes ○ No

Calibration Sticker Attached?: ◉ Yes ○ No

Date Instrument is Due For Next Calibration: **02/13/10**

INSTRUMENT MARRIED WITH #

Performed/Reviewed by: E.G. [redacted] Date: 2/13/2009 Entered by: ____ Initials

Calibrations performed to ANSI N323A-1997 standards

GRIFFIN INSTRUMENTS

CALIBRATION CERTIFICATE FOR 2221 SERIAL# 202351

Owner: SOLUTIENT TECHNOLOGIES

DATE: 02/13/09 **LOCATION:** Griffin Inst

TECH: E.M. Glenn **DATE LAST CAL EXPIRES:** 12/27/08

Reason For Calibration: (•) Due For Calibration ( ) Repair (See Remarks)

( ) Other (See Remarks) ( ) Due and Repair (See Remarks)

NIST TRACEABLE EQUIPMENT USED DURING CALIBRATION

MODEL: M-500 **SERIAL #:** 42386 **CAL. DUE:** 05/15/09

MODEL: **SERIAL #:** **CAL DUE:**

☑ **Fast/Slow Switch working properly** ☑ **Audio Response** ☑ **Geotropism** **CABLE LENGTH** 39"

CONDITION: Sat **AF MECHANICAL ZERO:** 0 **AL MECHANICAL ZERO:** 0

NEW BATTERIES: (•) Yes ( ) No **BATT. CHECK >4.8V:** 6.3V

HV (+/-10%)	AS FOUND HV	AS LEFT HV
600 V:	613	604
1200 V:	1219	1201
1800 V:	1822	1800

\F INPUT SENSITIVITY (mV): 32 **AL INPUT SENSITIVITY (mV):** 35

RATE METER

SCALER

SCALE	RATE CPM	AS FOUND		% ERROR	AS LEFT	% ERROR
x.1 or x1	100	100		0.0%	A.F.	
	250	250		0.0%	A.F.	
	400	400		0.0%	A.F.	
x1 or x10	1000	1000		0.0%	A.F.	
	2500	2500		0.0%	A.F.	
	4000	4000		0.0%	A.F.	
x10 or x100	10K	10	K	0.0%	A.F.	
	25K	25	K	0.0%	A.F.	
	40K	40	K	0.0%	A.F.	
x100 or x1000	100K	100	K	0.0%	A.F.	
	250K	250	K	0.0%	A.F.	
	400K	400	K	0.0%	A.F.	

AS FOUND	% ERROR	AS LEFT	% ERROR
250	0.0%		

Is the As Found Data Within 20% of the Set Point?: (•) Yes ( ) No

LOG SCALE

SCALE	RATE CPM	AS FOUND		% ERROR	AS LEFT	% ERROR
Log	200	200		0.0%	A.F.	
	2000	2000		0.0%	A.F.	
	20K	20	K	0.0%	A.F.	
	200K	200	K	0.0%	A.F.	

Is the As Found Data Within 20% of the Set Point?: (•) Yes ( ) No

GRIFFIN INSTRUMENTS
Calibration Certificate

Serial #	169649	Model	19	Owner	Solutient
Probe #	N/A	Model	N/A	PO #	RE50081
NIST Traceable Source and Pulser					
Source Used	10250	Model	28-6A	Cert Date	8/30/07
Pulser Serial	114512	Model	500	Cal Due	9/5/09
Temperature	75 F	Pressure	30.04"	Humidity	54%

Batteries: Sat (√) Unsat ( ) Desiccant: Sat ( ) Unsat ( ) N/A (√)

Saturation: Sat (√) Unsat ( ) Geotropism: Sat (√) Unsat ( )

Mechanical Zero: As Found: 0 As Left: 0 A.F. HV = 1100V A.L. HV = 650V

Scale	Units		As Found	As Left
5000	mR/hr	4.0	*	3.9
5000	mR/hr	2.5	*	2.5
5000	mR/hr	1.0	*	1.0
500	uR/hr	400*	*	395
500	uR/hr	250*	*	250
500	uR/hr	100*	*	100
250	uR/hr	200*	*	200
250	uR/hr	125*	*	125
250	uR/hr	50*	*	50
50	uR/hr	40*	*	39.5
50	uR/hr	25*	*	25
50	uR/hr	10*	*	10
25	uR/hr	20*	*	20
25	uR/hr	12.5*	*	12.5
25	uR/hr	5*	*	5

*Pulsed
Are As Left readings w/in 10% of the Set Point? Yes No

Remarks: 181 cpm/uR/hr. *Meter sent in due to low response – replaced batteries. CPM/uR/hr was very low (135), replaced PM Tube.

Performed/Reviewed [redacted] Date: 6/15/09

Calibration Due Date: 6/15/10

GRIFFIN INSTRUMENTS
Calibration Certificate

Serial #	233415	Model	19	Owner	Solutient
Probe #	N/A	Model	N/A	PO #	RE50076
NIST Traceable Source and Pulser					
Source Used	10250	Model	28-6A	Cert Date	8/30/07
Pulser Serial	42386	Model	500	Cal Due	5/15/09
Temperature	72.3 F	Pressure	30.39"	Humidity	57%

Batteries: Sat (√) Unsat ( ) Desiccant: Sat ( ) Unsat ( ) N/A (√)

Saturation: Sat (√) Unsat ( ) Geotropism: Sat (√) Unsat ( )

Mechanical Zero: As Found: 0 As Left: 0 HV = A.F.=600V A.L.=600V

Scale	Units		As Found	As Left
5000	mR/hr	4.0	3.9	A.F.
5000	mR/hr	2.5	2.5	A.F.
5000	mR/hr	1.0	1.05	A.F.
500	uR/hr	400*	400	A.F.
500	uR/hr	250*	250	A.F.
500	uR/hr	100*	100	A.F.
250	uR/hr	200*	200	A.F.
250	uR/hr	125*	125	A.F.
250	uR/hr	50*	50	A.F.
50	uR/hr	40*	40	A.F.
50	uR/hr	25*	25	A.F.
50	uR/hr	10*	10	A.F.
25	uR/hr	20*	20	A.F.
25	uR/hr	12.5*	12.5	A.F.
25	uR/hr	5*	5	A.F.

*Pulsed
Are As Left readings w/in 10% of the Set Point? Yes No

Remarks: 172 cpm/uR/hr.

Performed/Reviewed B[redacted] Date: 10/23/08

Calibration Due Date: 10/23/09

General Dose Rate Survey

Field Notes

1,039,810 1,039,910 1,040,010 1,040,110 1,040,210 1,040,310 1,040,410 1,040,510 1,040,610 1,040,710 1,040,810 1,040,910 1,041,010

1,174,510 1,174,410 1,174,310 1,174,210 1,174,110 1,174,010 1,173,910 1,173,810 1,173,710 1,173,610 1,173,510 1,173,410 1,173,310 1,173,210 1,173,110 1,173,010 1,172,910 1,172,810

"M" Street

WM, LLC Property

NATIONAL GRID PROPERTY

WM, LLC PROPERTY

NEUTALIZING BUILDING (PARTIALLY DEMOLISHED)

COLLECTION BASIN

WESTERN DRAINAGE DITCH

MIXING TANK (REMOVED)

SLUDGE BED Partially Removed

CHLORINE

VENTURI

IMHOFF TANK

UST (Removed)

PUMPING STATION REMOVED

SLUDGE BED

BP

TOWN OF LEWISTON PROPERTY

US GOVERNMENT NFSS PROPERTY

Title:
General Area Dose Rate Survey - Pre-Brush Clearing (uR/hr)

N

Feet
1,000 0 1,000

Spruce Street

Cedar Street

M Street

Area Shown in Main Map

Vicinity Map

LEGEND

PROPOSED BIAS POINT SAMPLING LOCATIONS

BIAS TYPE
- AERIAL ANOMALY (SURFACE AND SUBSURFACE SOIL)
- TERRESTRIAL SEDIMENT (SURFACE SAMPLE ONLY)
- VOC (SURFACE AND SUBSURFACE SOIL)
- PCB (SURFACE SOIL)
- SLUDGE BED (SEE THE FSP FOR DEPTHS)
- OTHER (SURFACE AND SUBSURFACE SOIL)

TNT LINE REMEDIATION
- CLOSED IN PLACE
- REMOVED
- MANHOLES FILLED WITH CONCRETE

PIPE AND CABLE/CAMERA SURVEY LINES
- ACID SEWER LINES
- CHEMICAL SEWER LINES
- ELECTRICAL CONDUIT LINES
- FIRE, DRINKING, PROCESS AND COOLING WATER LINES
- SANITARY SEWER LINES
- STORM SEWER LINES
- UNKNOWN LINES
- WASTEWATER LINES

UTILITY LINES DIGITIZED FROM HISTORICAL DRAWINGS
- ACID SEWER LINES
- CHEMICAL SEWER LINES
- ELECTRICAL CONDUIT LINES
- FIRE, DRINKING, PROCESS AND COOLING WATER LINES
- SANITARY SEWER
- STEAM LINES
- STORM SEWER
- TNT WASTE LINE (UNDERGOING INTERM REMEDIAL ACTION)
- WASTEWATER LINES
- UNKNOWN

OTHER DETAILS
- WALLS
- DRAINAGE
- ROADS
- 30 IN. OUTFALL
- AERIAL PHOTOGRAPHIC ANOMALY

Note:
0+00 is the mixing house location
0+00 to 1+60 - closed in place
1+60 to 1+70 - removed
1+70 to 4+70 - closed in place
4+70 to 4+80 - removed
6+00 - manholes filled with concrete
4+80 to 9+20 - closed in place
Up to 5 bias and 5 PCB bias sampling locations to be placed.

N

Feet
125 0 125

NOTE: MAP PROJECTION IS NEW YORK STATE PLANE NAD83 FEET.
AERIAL ANOMALY DATA PROVIDED BY THE TOPOGRAPHIC ENGINEERING CENTER.

\\LOVETON\FEDERAL\AGENCIES\DOD\ARMY\HTRW\2005\Projects\L:\DOD\ARMY\HTRW\2005\Projects\6199023 LOOW MAP\LOOW\WTP\GIS\MXD\SAP\Figure 5-2 Biased.mxd

EA Engineering, Science, and Technology, Inc.

Earth Resources Technology

LAKE ONTARIO ORDNANCE WORKS
NIAGARA COUNTY, NEW YORK

FIGURE 5-2
PROPOSED BIASED SAMPLING LOCATIONS

LEGEND

SYSTEMATIC SAMPLING LOCATIONS
- PROPOSED SURFACE SOIL SAMPLING LOCATIONS

TNT LINE REMEDIATION
- CLOSED IN PLACE
- REMOVED
- MANHOLES FILLED WITH CONCRETE

PIPE AND CABLE/CAMERA SURVEY LINES
- ACID SEWER LINES
- CHEMICAL SEWER LINES
- ELECTRICAL CONDUIT LINES
- FIRE, DRINKING, PROCESS AND COOLING WATER LINES
- SANITARY SEWER LINES
- STORM SEWER LINES
- UNKNOWN LINES
- WASTEWATER LINES

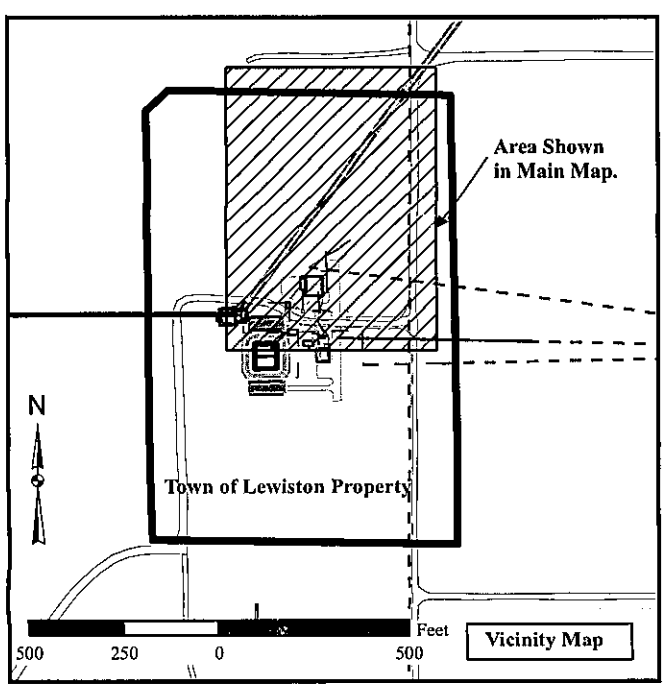
UTILITY LINES DIGITIZED FROM HISTORICAL DRAWINGS
- ACID SEWER LINES
- CHEMICAL SEWER LINES
- ELECTRICAL CONDUIT LINES
- FIRE, DRINKING, PROCESS AND COOLING WATER LINES
- SANITARY SEWER
- STEAM LINES
- STORM SEWER
- TNT WASTE LINE (UNDERGOING INTERM REMEDIAL ACTION)
- WASTEWATER LINES
- UNKNOWN

OTHER DETAILS
- WALLS
- DRAINAGE
- ROADS
- 30 IN. OUTFALL

N

Note:
0+00 is the mixing house location
0+00 to 1+60 - closed in place
1+60 to 1+70 - removed
1+70 to 4+70 - closed in place
4+70 to 4+80 - removed
6+00 - manholes filled with concrete
4+80 to 9+20 - closed in place
Up to 20 surface soil samples to be submitted for laboratory analysis.
One subsurface soil sample to be collected from up to 10 of these locations.
Up to 240 screening locations to be placed along TNT lines.
Underground utility lines were evaluated during the Phase III RI.

50 0 50 100 Feet



TOWN OF LEWISTON PROPERTY

WESTERN DRAINAGE DITCH

ACID NEUTALIZING BUILDING (PARTIALLY DEMOLISHED

Collection Tank

MIXING TANK (REMOVED)

SLUDGE BED (Partially Removed)

CHLORINE TANK

VENTURI VAULT

marked every 20 - take every 10

\\LOVET01\FEDERAL\AGENCIES\DOD\ARMY\HTRW2005\Projects\L:\DOD\ARMY\HTRW2005\Projects\6199023 LOOW MAP\LOOW\WTP\GIS\MXD\SAP\Figure 5-3 TNT.mxd

EA Engineering, Science, and Technology, Inc.

Earth Resources Technology

LAKE ONTARIO ORDNANCE WORKS

NIAGARA COUNTY, NEW YORK

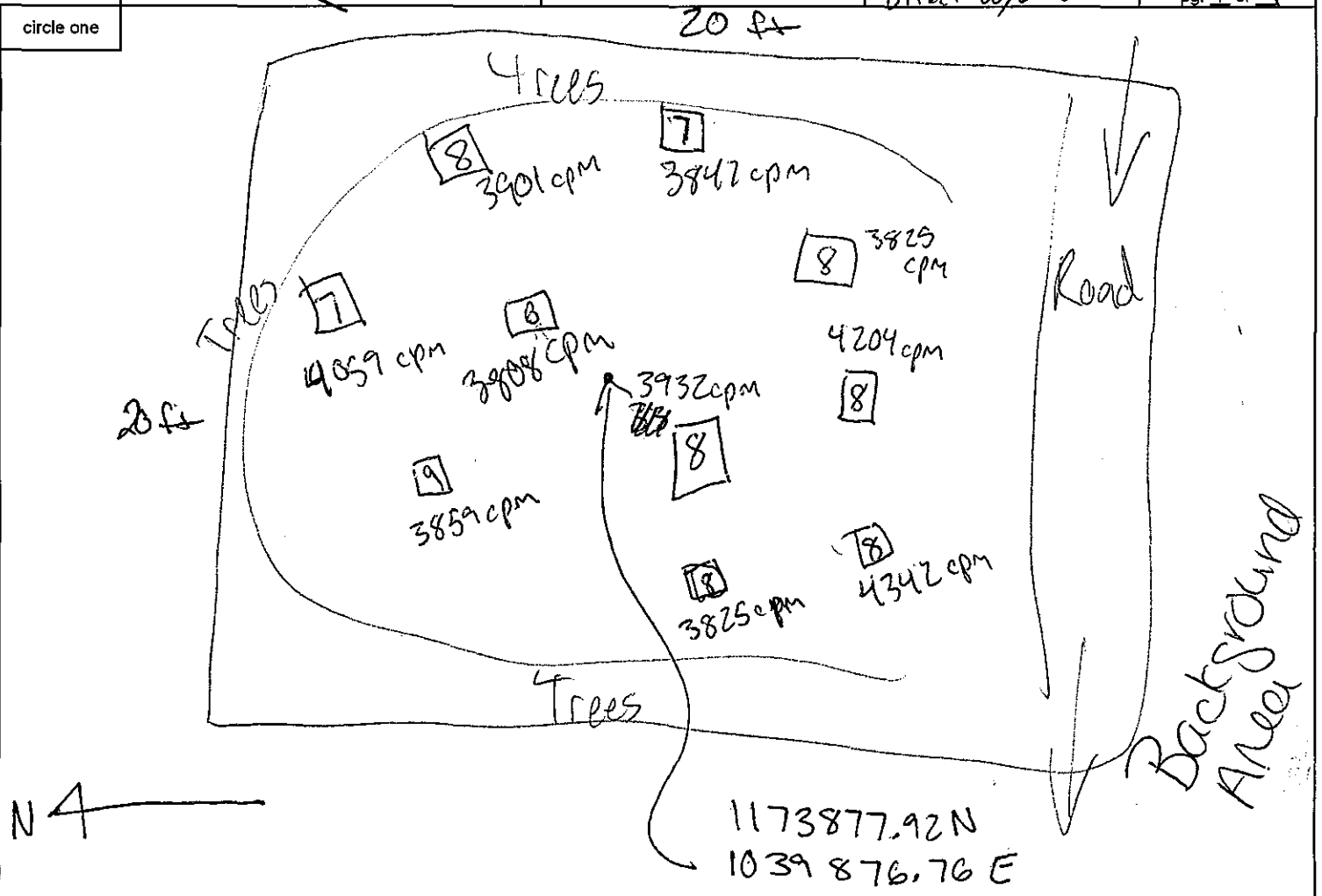
FIGURE 5-3

FIELD SCREEN TNT LOCATIONS

Location: Site: Background	RWP#	Survey #	Survey Type: Direct w/dose rate	pg. 1 of 1

Smear (DPM/100 cm²)
Direct Count (CPM)/Direct Frisk)
circle one

No.	α	β	No.	α	β
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19			44		
20			45		
21			46		
22			47		
23			48		
24			49		
25			50		



Comments	Surveyed By:	Date:	Instrument	Serial #	α Eff.	β Eff.	α Bkg.	β Bkg	γ Bkg	Cal. Due
	MWB	7/7/09	44/10		—	—	—	—	4200	2/13/10
			2221		—	—	—	—	1	
	MWB	7/7/09	19		—	—	—	—	4	6/15/10
	Reviewed By:	Date:								

Key
- ■ A/S Location
- *-* Boundary
- ○ Smear
- □ Dose Rate mR /hr
- * Direct Reading CPM/direct frisk
- △ Grab Sample

Radiological Field Screen Results

Soil Cores

Date	7/8/09
Borehole/Location ID	BP-7
Dose Rate Observed at Borehole/Location (μR/hr)	9
Direct Count Observed at Borehole/Location (cpm)	4864
Depth (ft)	0-4
Average Dose Rate Observed over Core (μR/hr)	9
Average Direct Count Observed over Core (cpm)	4876
Depth (ft)	4-8
Average Dose Rate Observed over Core (μR/hr)	10
Average Direct Count Observed over Core (cpm)	4644
Depth (ft)	8-11
Average Dose Rate Observed over Core (μR/hr)	10
Average Direct Count Observed over Core (cpm)	4547
Depth (ft)	11-11.8
Average Dose Rate Observed over Core (μR/hr)	8
Average Direct Count Observed over Core (cpm)	4849

Date	7/8/09
Borehole/Location ID	BP-8
Dose Rate Observed at Borehole/Location (μR/hr)	9
Direct Count Observed at Borehole/Location (cpm)	4844
Depth (ft)	0-4
Average Dose Rate Observed over Core (μR/hr)	10
Average Direct Count Observed over Core (cpm)	4917
Depth (ft)	4-8
Average Dose Rate Observed over Core (μR/hr)	10
Average Direct Count Observed over Core (cpm)	4961
Depth (ft)	8-11.5
Average Dose Rate Observed over Core (μR/hr)	9
Average Direct Count Observed over Core (cpm)	4818
Depth (ft)	\
Average Dose Rate Observed over Core (μR/hr)	\
Average Direct Count Observed over Core (cpm)	\

μR/hr = microRoentgen per hour; cpm = counts per minute

Date	7/8/09
Borehole/Location ID	BP-10
Dose Rate Observed at Borehole/Location (μR/hr)	9
Direct Count Observed at Borehole/Location (cpm)	5394
Depth (ft)	0-0.5
Average Dose Rate Observed over Core (μR/hr)	8
Average Direct Count Observed over Core (cpm)	5062
Depth (ft)	\
Average Dose Rate Observed over Core (μR/hr)	\
Average Direct Count Observed over Core (cpm)	\
Depth (ft)	\
Average Dose Rate Observed over Core (μR/hr)	\
Average Direct Count Observed over Core (cpm)	\
Depth (ft)	\
Average Dose Rate Observed over Core (μR/hr)	\
Average Direct Count Observed over Core (cpm)	\

Date	7/8/09
Borehole/Location ID	BP-700
Dose Rate Observed at Borehole/Location (μR/hr)	9
Direct Count Observed at Borehole/Location (cpm)	4406
Depth (ft)	0-3
Average Dose Rate Observed over Core (μR/hr)	8
Average Direct Count Observed over Core (cpm)	4884
Depth (ft)	3-7
Average Dose Rate Observed over Core (μR/hr)	9
Average Direct Count Observed over Core (cpm)	4777
Depth (ft)	7-11
Average Dose Rate Observed over Core (μR/hr)	9
Average Direct Count Observed over Core (cpm)	4720
Depth (ft)	11-14.5
Average Dose Rate Observed over Core (μR/hr)	10
Average Direct Count Observed over Core (cpm)	4692

μR/hr = microRoentgen per hour; cpm = counts per minute

Date	7/8/09
Borehole/Location ID	BC-600
Dose Rate Observed at Borehole/Location (μR/hr)	6
Direct Count Observed at Borehole/Location (cpm)	3440
Depth (ft)	0-4
Average Dose Rate Observed over Core (μR/hr)	7
Average Direct Count Observed over Core (cpm)	4739
Depth (ft)	4-8
Average Dose Rate Observed over Core (μR/hr)	9
Average Direct Count Observed over Core (cpm)	4759
Depth (ft)	8-12
Average Dose Rate Observed over Core (μR/hr)	10
Average Direct Count Observed over Core (cpm)	4710
Depth (ft)	12-15.8
Average Dose Rate Observed over Core (μR/hr)	8
Average Direct Count Observed over Core (cpm)	4576

Date	7/8/09
Borehole/Location ID	CD-600
Dose Rate Observed at Borehole/Location (μR/hr)	8
Direct Count Observed at Borehole/Location (cpm)	3618
Depth (ft)	0-4
Average Dose Rate Observed over Core (μR/hr)	9
Average Direct Count Observed over Core (cpm)	4848
Depth (ft)	4-8
Average Dose Rate Observed over Core (μR/hr)	9
Average Direct Count Observed over Core (cpm)	4707
Depth (ft)	8-12
Average Dose Rate Observed over Core (μR/hr)	9
Average Direct Count Observed over Core (cpm)	4749
Depth (ft)	12-15
Average Dose Rate Observed over Core (μR/hr)	10
Average Direct Count Observed over Core (cpm)	4748

μR/hr = microRoentgen per hour; cpm = counts per minute

Date	7/8/09
Borehole/Location ID	G-500
Dose Rate Observed at Borehole/Location (µR/hr)	8
Direct Count Observed at Borehole/Location (cpm)	3871
Depth (ft)	0-4
Average Dose Rate Observed over Core (µR/hr)	6
Average Direct Count Observed over Core (cpm)	3344
Depth (ft)	4-8
Average Dose Rate Observed over Core (µR/hr)	7
Average Direct Count Observed over Core (cpm)	3509
Depth (ft)	8-12
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	3347
Depth (ft)	12-
Average Dose Rate Observed over Core (µR/hr)	6
Average Direct Count Observed over Core (cpm)	3382

Date	7/8/09
Borehole/Location ID	G-400
Dose Rate Observed at Borehole/Location (µR/hr)	6
Direct Count Observed at Borehole/Location (cpm)	4064
Depth (ft)	0-4
Average Dose Rate Observed over Core (µR/hr)	7
Average Direct Count Observed over Core (cpm)	3414
Depth (ft)	4-8
Average Dose Rate Observed over Core (µR/hr)	7
Average Direct Count Observed over Core (cpm)	3559
Depth (ft)	8-12
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	3515
Depth (ft)	\
Average Dose Rate Observed over Core (µR/hr)	\
Average Direct Count Observed over Core (cpm)	\

µR/hr = microRoentgen per hour; cpm = counts per minute

Date	7/8/09
Borehole/Location ID	FG-500
Dose Rate Observed at Borehole/Location (μR/hr)	7
Direct Count Observed at Borehole/Location (cpm)	3758
Depth (ft)	0-4
Average Dose Rate Observed over Core (μR/hr)	8
Average Direct Count Observed over Core (cpm)	3455
Depth (ft)	4-8
Average Dose Rate Observed over Core (μR/hr)	8
Average Direct Count Observed over Core (cpm)	3634
Depth (ft)	8-12
Average Dose Rate Observed over Core (μR/hr)	7
Average Direct Count Observed over Core (cpm)	3570
Depth (ft)	\
Average Dose Rate Observed over Core (μR/hr)	\
Average Direct Count Observed over Core (cpm)	\

Date	7/9/09
Borehole/Location ID	FG-400
Dose Rate Observed at Borehole/Location (μR/hr)	8
Direct Count Observed at Borehole/Location (cpm)	4178
Depth (ft)	0-4
Average Dose Rate Observed over Core (μR/hr)	7
Average Direct Count Observed over Core (cpm)	3412
Depth (ft)	4-8
Average Dose Rate Observed over Core (μR/hr)	7
Average Direct Count Observed over Core (cpm)	3503
Depth (ft)	8-12
Average Dose Rate Observed over Core (μR/hr)	8
Average Direct Count Observed over Core (cpm)	3480
Depth (ft)	\
Average Dose Rate Observed over Core (μR/hr)	\
Average Direct Count Observed over Core (cpm)	\

μR/hr = microRoentgen per hour; cpm = counts per minute

Date	7/9/09
Borehole/Location ID	F-500
Dose Rate Observed at Borehole/Location (μR/hr)	9
Direct Count Observed at Borehole/Location (cpm)	4238
Depth (ft)	0-4
Average Dose Rate Observed over Core (μR/hr)	7
Average Direct Count Observed over Core (cpm)	3492
Depth (ft)	4-8
Average Dose Rate Observed over Core (μR/hr)	7
Average Direct Count Observed over Core (cpm)	3591
Depth (ft)	8-12
Average Dose Rate Observed over Core (μR/hr)	7
Average Direct Count Observed over Core (cpm)	3596
Depth (ft)	12-13.5
Average Dose Rate Observed over Core (μR/hr)	8
Average Direct Count Observed over Core (cpm)	3705

Date	7/9/09
Borehole/Location ID	G-700
Dose Rate Observed at Borehole/Location (μR/hr)	7
Direct Count Observed at Borehole/Location (cpm)	4533
Depth (ft)	0-4
Average Dose Rate Observed over Core (μR/hr)	8
Average Direct Count Observed over Core (cpm)	4061
Depth (ft)	4-8
Average Dose Rate Observed over Core (μR/hr)	8
Average Direct Count Observed over Core (cpm)	4028
Depth (ft)	8-12
Average Dose Rate Observed over Core (μR/hr)	9
Average Direct Count Observed over Core (cpm)	3974
Depth (ft)	\
Average Dose Rate Observed over Core (μR/hr)	\
Average Direct Count Observed over Core (cpm)	\

μR/hr = microRoentgen per hour; cpm = counts per minute

Date	7/9/09
Borehole/Location ID	F/G-600
Dose Rate Observed at Borehole/Location (μR/hr)	~~9~~ 8
Direct Count Observed at Borehole/Location (cpm)	4334
Depth (ft)	0-4
Average Dose Rate Observed over Core (μR/hr)	7
Average Direct Count Observed over Core (cpm)	3705
Depth (ft)	4-8
Average Dose Rate Observed over Core (μR/hr)	8
Average Direct Count Observed over Core (cpm)	3919
Depth (ft)	8-11.5
Average Dose Rate Observed over Core (μR/hr)	6
Average Direct Count Observed over Core (cpm)	3754
Depth (ft)	\
Average Dose Rate Observed over Core (μR/hr)	\
Average Direct Count Observed over Core (cpm)	\

Date	7/9/09
Borehole/Location ID	F-700
Dose Rate Observed at Borehole/Location (μR/hr)	9
Direct Count Observed at Borehole/Location (cpm)	4814
Depth (ft)	0-4
Average Dose Rate Observed over Core (μR/hr)	6
Average Direct Count Observed over Core (cpm)	3663
Depth (ft)	4-8
Average Dose Rate Observed over Core (μR/hr)	8
Average Direct Count Observed over Core (cpm)	3943
Depth (ft)	8-12
Average Dose Rate Observed over Core (μR/hr)	8
Average Direct Count Observed over Core (cpm)	3798
Depth (ft)	\
Average Dose Rate Observed over Core (μR/hr)	\
Average Direct Count Observed over Core (cpm)	\

μR/hr = microRoentgen per hour; cpm = counts per minute

Date	7/9/09
Borehole/Location ID	E-640
Dose Rate Observed at Borehole/Location (μR/hr)	12
Direct Count Observed at Borehole/Location (cpm)	4568
Depth (ft)	0-4
Average Dose Rate Observed over Core (μR/hr)	9
Average Direct Count Observed over Core (cpm)	3844
Depth (ft)	4-8
Average Dose Rate Observed over Core (μR/hr)	8
Average Direct Count Observed over Core (cpm)	3807
Depth (ft)	8-12
Average Dose Rate Observed over Core (μR/hr)	9
Average Direct Count Observed over Core (cpm)	3754
Depth (ft)	12-14.5
Average Dose Rate Observed over Core (μR/hr)	8
Average Direct Count Observed over Core (cpm)	3846

Date	7/9/09
Borehole/Location ID	C-640
Dose Rate Observed at Borehole/Location (μR/hr)	8
Direct Count Observed at Borehole/Location (cpm)	4675
Depth (ft)	0-4
Average Dose Rate Observed over Core (μR/hr)	9
Average Direct Count Observed over Core (cpm)	3750
Depth (ft)	4-8
Average Dose Rate Observed over Core (μR/hr)	8
Average Direct Count Observed over Core (cpm)	3870
Depth (ft)	8-12
Average Dose Rate Observed over Core (μR/hr)	8
Average Direct Count Observed over Core (cpm)	3761
Depth (ft)	12-16
Average Dose Rate Observed over Core (μR/hr)	8
Average Direct Count Observed over Core (cpm)	3744

μR/hr = microRoentgen per hour; cpm = counts per minute

Date	7/9/09
Borehole/Location ID	B-510
Dose Rate Observed at Borehole/Location (μR/hr)	10
Direct Count Observed at Borehole/Location (cpm)	4580
Depth (ft)	0-4
Average Dose Rate Observed over Core (μR/hr)	10
Average Direct Count Observed over Core (cpm)	5043
Depth (ft)	4-8
Average Dose Rate Observed over Core (μR/hr)	10
Average Direct Count Observed over Core (cpm)	4948
Depth (ft)	8-12
Average Dose Rate Observed over Core (μR/hr)	10
Average Direct Count Observed over Core (cpm)	5113
Depth (ft)	12-15
Average Dose Rate Observed over Core (μR/hr)	10
Average Direct Count Observed over Core (cpm)	5336

Date	7/9/09
Borehole/Location ID	D-510
Dose Rate Observed at Borehole/Location (μR/hr)	10
Direct Count Observed at Borehole/Location (cpm)	4920
Depth (ft)	0-4
Average Dose Rate Observed over Core (μR/hr)	10
Average Direct Count Observed over Core (cpm)	5119
Depth (ft)	4-8
Average Dose Rate Observed over Core (μR/hr)	11
Average Direct Count Observed over Core (cpm)	5121
Depth (ft)	8-12
Average Dose Rate Observed over Core (μR/hr)	10
Average Direct Count Observed over Core (cpm)	5051
Depth (ft)	12-14
Average Dose Rate Observed over Core (μR/hr)	10
Average Direct Count Observed over Core (cpm)	5193

μR/hr = microRoentgen per hour; cpm = counts per minute

Date	7/6/09
Borehole/Location ID	E-500
Dose Rate Observed at Borehole/Location (µR/hr)	8
Direct Count Observed at Borehole/Location (cpm)	3818
Depth (ft)	0-4
Average Dose Rate Observed over Core (µR/hr)	7
Average Direct Count Observed over Core (cpm)	4149
Depth (ft)	4-8
Average Dose Rate Observed over Core (µR/hr)	7
Average Direct Count Observed over Core (cpm)	4017
Depth (ft)	8-12
Average Dose Rate Observed over Core (µR/hr)	7
Average Direct Count Observed over Core (cpm)	4076
Depth (ft)	12-16
Average Dose Rate Observed over Core (µR/hr)	9
Average Direct Count Observed over Core (cpm)	4061

Date	7/9/09
Borehole/Location ID	E-400
Dose Rate Observed at Borehole/Location (µR/hr)	5
Direct Count Observed at Borehole/Location (cpm)	2602
Depth (ft)	0-4
Average Dose Rate Observed over Core (µR/hr)	9
Average Direct Count Observed over Core (cpm)	4476
Depth (ft)	4-8
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	4248
Depth (ft)	8-11
Average Dose Rate Observed over Core (µR/hr)	9
Average Direct Count Observed over Core (cpm)	4218
Depth (ft)	\
Average Dose Rate Observed over Core (µR/hr)	\
Average Direct Count Observed over Core (cpm)	\

µR/hr = microRoentgen per hour; cpm = counts per minute

Date	7/9/08
Borehole/Location ID	C-400
Dose Rate Observed at Borehole/Location (μR/hr)	4
Direct Count Observed at Borehole/Location (cpm)	5084
Depth (ft)	0-4
Average Dose Rate Observed over Core (μR/hr)	3
Average Direct Count Observed over Core (cpm)	2405
Depth (ft)	4-8
Average Dose Rate Observed over Core (μR/hr)	2
Average Direct Count Observed over Core (cpm)	2391
Depth (ft)	8-12
Average Dose Rate Observed over Core (μR/hr)	3
Average Direct Count Observed over Core (cpm)	2557
Depth (ft)	\
Average Dose Rate Observed over Core (μR/hr)	\
Average Direct Count Observed over Core (cpm)	\

Date	7/10/08
Borehole/Location ID	BP-5
Dose Rate Observed at Borehole/Location (μR/hr)	~~0-1.8~~ 3
Direct Count Observed at Borehole/Location (cpm)	3315
Depth (ft)	0 - 1.2
Average Dose Rate Observed over Core (μR/hr)	2
Average Direct Count Observed over Core (cpm)	2276
Depth (ft)	\
Average Dose Rate Observed over Core (μR/hr)	\
Average Direct Count Observed over Core (cpm)	\
Depth (ft)	\
Average Dose Rate Observed over Core (μR/hr)	\
Average Direct Count Observed over Core (cpm)	\
Depth (ft)	\
Average Dose Rate Observed over Core (μR/hr)	\
Average Direct Count Observed over Core (cpm)	\

μR/hr = microRoentgen per hour; cpm = counts per minute

Date	7/10/09
Borehole/Location ID	BP-4
Dose Rate Observed at Borehole/Location (µR/hr)	3
Direct Count Observed at Borehole/Location (cpm)	2254
Depth (ft)	0-4
Average Dose Rate Observed over Core (µR/hr)	3
Average Direct Count Observed over Core (cpm)	2466
Depth (ft)	4-8
Average Dose Rate Observed over Core (µR/hr)	3
Average Direct Count Observed over Core (cpm)	2466
Depth (ft)	8-11
Average Dose Rate Observed over Core (µR/hr)	3
Average Direct Count Observed over Core (cpm)	2540
Depth (ft)	\
Average Dose Rate Observed over Core (µR/hr)	\
Average Direct Count Observed over Core (cpm)	\

Date	7/10/09
Borehole/Location ID	D-400
Dose Rate Observed at Borehole/Location (µR/hr)	4
Direct Count Observed at Borehole/Location (cpm)	4983
Depth (ft)	0-4
Average Dose Rate Observed over Core (µR/hr)	3
Average Direct Count Observed over Core (cpm)	2469
Depth (ft)	4-8
Average Dose Rate Observed over Core (µR/hr)	2
Average Direct Count Observed over Core (cpm)	2571
Depth (ft)	8-11.8
Average Dose Rate Observed over Core (µR/hr)	5
Average Direct Count Observed over Core (cpm)	2384
Depth (ft)	\
Average Dose Rate Observed over Core (µR/hr)	\
Average Direct Count Observed over Core (cpm)	\

µR/hr = microRoentgen per hour; cpm = counts per minute

Date	7/10/09
Borehole/Location ID	CD-300
Dose Rate Observed at Borehole/Location (μR/hr)	7
Direct Count Observed at Borehole/Location (cpm)	4247
Depth (ft)	0-4
Average Dose Rate Observed over Core (μR/hr)	7
Average Direct Count Observed over Core (cpm)	3586
Depth (ft)	4-8
Average Dose Rate Observed over Core (μR/hr)	7
Average Direct Count Observed over Core (cpm)	3656
Depth (ft)	8-11.5
Average Dose Rate Observed over Core (μR/hr)	6
Average Direct Count Observed over Core (cpm)	3695
Depth (ft)	\
Average Dose Rate Observed over Core (μR/hr)	\
Average Direct Count Observed over Core (cpm)	\

Date	7/10/09
Borehole/Location ID	DE-300
Dose Rate Observed at Borehole/Location (μR/hr)	6
Direct Count Observed at Borehole/Location (cpm)	3848
Depth (ft)	0-4
Average Dose Rate Observed over Core (μR/hr)	8
Average Direct Count Observed over Core (cpm)	3599
Depth (ft)	4-8
Average Dose Rate Observed over Core (μR/hr)	8
Average Direct Count Observed over Core (cpm)	3596
Depth (ft)	8-11.5
Average Dose Rate Observed over Core (μR/hr)	7
Average Direct Count Observed over Core (cpm)	3671
Depth (ft)	\
Average Dose Rate Observed over Core (μR/hr)	\
Average Direct Count Observed over Core (cpm)	\

μR/hr = microRoentgen per hour; cpm = counts per minute

Date	7/10/09
Borehole/Location ID	BC-500
Dose Rate Observed at Borehole/Location (μR/hr)	9
Direct Count Observed at Borehole/Location (cpm)	4954
Depth (ft)	0-4
Average Dose Rate Observed over Core (μR/hr)	9
Average Direct Count Observed over Core (cpm)	4442
Depth (ft)	4-8
Average Dose Rate Observed over Core (μR/hr)	9
Average Direct Count Observed over Core (cpm)	4585
Depth (ft)	8-10.5
Average Dose Rate Observed over Core (μR/hr)	9
Average Direct Count Observed over Core (cpm)	4638
Depth (ft)	\
Average Dose Rate Observed over Core (μR/hr)	\
Average Direct Count Observed over Core (cpm)	\

Date	7/10/09
Borehole/Location ID	BP-WDD E/F-800
Dose Rate Observed at Borehole/Location (μR/hr)	7
Direct Count Observed at Borehole/Location (cpm)	3789
Depth (ft)	\
Average Dose Rate Observed over Core (μR/hr)	\
Average Direct Count Observed over Core (cpm)	\
Depth (ft)	\
Average Dose Rate Observed over Core (μR/hr)	\
Average Direct Count Observed over Core (cpm)	\
Depth (ft)	\
Average Dose Rate Observed over Core (μR/hr)	\
Average Direct Count Observed over Core (cpm)	\
Depth (ft)	\
Average Dose Rate Observed over Core (μR/hr)	\
Average Direct Count Observed over Core (cpm)	\

} over sediment sample

μR/hr = microRoentgen per hour; cpm = counts per minute

Date	7/10/09
Borehole/Location ID	WOD E/F-800
Dose Rate Observed at Borehole/Location (μR/hr)	7
Direct Count Observed at Borehole/Location (cpm)	4265
Depth (ft)	Sediment-Surface
Average Dose Rate Observed over Core (μR/hr)	6
Average Direct Count Observed over Core (cpm)	3141
Depth (ft)	0-4
Average Dose Rate Observed over Core (μR/hr)	7
Average Direct Count Observed over Core (cpm)	3309
Depth (ft)	4-7
Average Dose Rate Observed over Core (μR/hr)	7
Average Direct Count Observed over Core (cpm)	3229
Depth (ft)	\
Average Dose Rate Observed over Core (μR/hr)	\
Average Direct Count Observed over Core (cpm)	\

Date	7/10/09
Borehole/Location ID	BP WOD E/F-800
Dose Rate Observed at Borehole/Location (μR/hr)	10
Direct Count Observed at Borehole/Location (cpm)	4780
Depth (ft)	Sediment-Surface
Average Dose Rate Observed over Core (μR/hr)	7
Average Direct Count Observed over Core (cpm)	3212
Depth (ft)	0-3.5
Average Dose Rate Observed over Core (μR/hr)	7
Average Direct Count Observed over Core (cpm)	3153
Depth (ft)	\
Average Dose Rate Observed over Core (μR/hr)	\
Average Direct Count Observed over Core (cpm)	\
Depth (ft)	\
Average Dose Rate Observed over Core (μR/hr)	\
Average Direct Count Observed over Core (cpm)	\

μR/hr = microRoentgen per hour; cpm = counts per minute

Date	7/10/09
Borehole/Location ID	BPTWDD EF-0
Dose Rate Observed at Borehole/Location (μR/hr)	9
Direct Count Observed at Borehole/Location (cpm)	4209
Depth (ft)	Sediment - Surface
Average Dose Rate Observed over Core (μR/hr)	6
Average Direct Count Observed over Core (cpm)	3203
Depth (ft)	\
Average Dose Rate Observed over Core (μR/hr)	\
Average Direct Count Observed over Core (cpm)	\
Depth (ft)	\
Average Dose Rate Observed over Core (μR/hr)	\
Average Direct Count Observed over Core (cpm)	\
Depth (ft)	\
Average Dose Rate Observed over Core (μR/hr)	\
Average Direct Count Observed over Core (cpm)	\

Date	
Borehole/Location ID	
Dose Rate Observed at Borehole/Location (μR/hr)	
Direct Count Observed at Borehole/Location (cpm)	
Depth (ft)	
Average Dose Rate Observed over Core (μR/hr)	
Average Direct Count Observed over Core (cpm)	
Depth (ft)	
Average Dose Rate Observed over Core (μR/hr)	
Average Direct Count Observed over Core (cpm)	
Depth (ft)	
Average Dose Rate Observed over Core (μR/hr)	
Average Direct Count Observed over Core (cpm)	
Depth (ft)	
Average Dose Rate Observed over Core (μR/hr)	
Average Direct Count Observed over Core (cpm)	

μR/hr = microRoentgen per hour; cpm = counts per minute

Date	7/20/09
Borehole/Location ID	TNT-B0
Dose Rate Observed at Borehole/Location (µR/hr)	8
Direct Count Observed at Borehole/Location (cpm)	5152
Depth (ft)	0-4
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	3941
Depth (ft)	4-7
Average Dose Rate Observed over Core (µR/hr)	7
Average Direct Count Observed over Core (cpm)	3762
Depth (ft)	7-12
Average Dose Rate Observed over Core (µR/hr)	6
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	12-16
Average Dose Rate Observed over Core (µR/hr)	6
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	\
Average Dose Rate Observed over Core (µR/hr)	\
Average Direct Count Observed over Core (cpm)	\

By the time holes were re-drilled with different auger, 44-10 probe had malfunctioned, and different probe was used
*New probe info
44-10 probe
S/N 132858
2221 Ratemeter
S/N 132858

Date	7/20/09
Borehole/Location ID	TNT-D0
Dose Rate Observed at Borehole/Location (µR/hr)	8
Direct Count Observed at Borehole/Location (cpm)	5381
Depth (ft)	0-4
Average Dose Rate Observed over Core (µR/hr)	7
Average Direct Count Observed over Core (cpm)	3887
Depth (ft)	4-6
Average Dose Rate Observed over Core (µR/hr)	7
Average Direct Count Observed over Core (cpm)	3971
Depth (ft)	4-8
Average Dose Rate Observed over Core (µR/hr)	7
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	8-12
Average Dose Rate Observed over Core (µR/hr)	7
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	12-16
Average Dose Rate Observed over Core (µR/hr)	7
Average Direct Count Observed over Core (cpm)	BKGD

Re-drilled with different auger

MWB
7/20/09
* Because of different calibration, new probe showed different BKGD readings (~6000 cpm), thus all direct counts were recorded in comparison to BKGD from this point on (which is appropriate for this type of qualitative survey given specific field conditions)

µR/hr = microRoentgen per hour; cpm = counts per minute

Date	7/20/09
Borehole/Location ID	TUK D208
Dose Rate Observed at Borehole/Location (µR/hr)	8
Direct Count Observed at Borehole/Location (cpm)	BKGD
Depth (ft)	0-4
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	4-8
Average Dose Rate Observed over Core (µR/hr)	7
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	8-12
Average Dose Rate Observed over Core (µR/hr)	7
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	12-16
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	16-18
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	BKGD

~~Date~~	
~~Borehole/Location ID~~	
~~Dose Rate Observed at Borehole/Location (µR/hr)~~	
~~Direct Count Observed at Borehole/Location (cpm)~~	
Depth (ft)	18-20
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	\
Average Dose Rate Observed over Core (µR/hr)	\
Average Direct Count Observed over Core (cpm)	\
Depth (ft)	\
Average Dose Rate Observed over Core (µR/hr)	\
Average Direct Count Observed over Core (cpm)	\
Depth (ft)	\
Average Dose Rate Observed over Core (µR/hr)	\
Average Direct Count Observed over Core (cpm)	\
Depth (ft)	\
Average Dose Rate Observed over Core (µR/hr)	\
Average Direct Count Observed over Core (cpm)	\

µR/hr = microRoentgen per hour; cpm = counts per minute

Date	7/20/09
Borehole/Location ID	B-520
Dose Rate Observed at Borehole/Location (µR/hr)	8
Direct Count Observed at Borehole/Location (cpm)	BKGD
Depth (ft)	0-4
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	4-8
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	8-12
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	12-16
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	16-20
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	BKGD

Date	7/20/09
Borehole/Location ID	B-510
Dose Rate Observed at Borehole/Location (µR/hr)	10
Direct Count Observed at Borehole/Location (cpm)	BKGD
Depth (ft)	0-4
Average Dose Rate Observed over Core (µR/hr)	9
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	4-8
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	8-12
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	12-15
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	-
Average Dose Rate Observed over Core (µR/hr)	-
Average Direct Count Observed over Core (cpm)	-

µR/hr = microRoentgen per hour; cpm = counts per minute

Date	7/20/09
Borehole/Location ID	B/C 500 — continuation
Dose Rate Observed at Borehole/Location (µR/hr)	\
Direct Count Observed at Borehole/Location (cpm)	\
Depth (ft)	8-12
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	12-16
Average Dose Rate Observed over Core (µR/hr)	7
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	\
Average Dose Rate Observed over Core (µR/hr)	\
Average Direct Count Observed over Core (cpm)	\
Depth (ft)	\
Average Dose Rate Observed over Core (µR/hr)	\
Average Direct Count Observed over Core (cpm)	\
Depth (ft)	\
Average Dose Rate Observed over Core (µR/hr)	\
Average Direct Count Observed over Core (cpm)	\

Date	7/20/09
Borehole/Location ID	C-400 A
Dose Rate Observed at Borehole/Location (µR/hr)	
Direct Count Observed at Borehole/Location (cpm)	
Depth (ft)	0-4
Average Dose Rate Observed over Core (µR/hr)	7
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	4-8
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	8-12
Average Dose Rate Observed over Core (µR/hr)	7
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	12-16
Average Dose Rate Observed over Core (µR/hr)	7
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	\
Average Dose Rate Observed over Core (µR/hr)	\
Average Direct Count Observed over Core (cpm)	\

µR/hr = microRoentgen per hour; cpm = counts per minute

Date	7/20/09
Borehole/Location ID	BP-06
Dose Rate Observed at Borehole/Location (µR/hr)	9
Direct Count Observed at Borehole/Location (cpm)	BKGD
Depth (ft)	surface
Average Dose Rate Observed over Core (µR/hr)	\
Average Direct Count Observed over Core (cpm)	\
Depth (ft)	\
Average Dose Rate Observed over Core (µR/hr)	\
Average Direct Count Observed over Core (cpm)	\
Depth (ft)	\
Average Dose Rate Observed over Core (µR/hr)	\
Average Direct Count Observed over Core (cpm)	\
Depth (ft)	\
Average Dose Rate Observed over Core (µR/hr)	\
Average Direct Count Observed over Core (cpm)	\
Depth (ft)	\
Average Dose Rate Observed over Core (µR/hr)	\
Average Direct Count Observed over Core (cpm)	\

Date	7/20/09
Borehole/Location ID	D-500
Dose Rate Observed at Borehole/Location (µR/hr)	7
Direct Count Observed at Borehole/Location (cpm)	BKGD
Depth (ft)	0-4
Average Dose Rate Observed over Core (µR/hr)	6
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	4-8
Average Dose Rate Observed over Core (µR/hr)	6
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	8-12
Average Dose Rate Observed over Core (µR/hr)	5
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	\
Average Dose Rate Observed over Core (µR/hr)	\
Average Direct Count Observed over Core (cpm)	\
Depth (ft)	\
Average Dose Rate Observed over Core (µR/hr)	\
Average Direct Count Observed over Core (cpm)	\

µR/hr = microRoentgen per hour; cpm = counts per minute

Date	7/20/09
Borehole/Location ID	BD-12
Dose Rate Observed at Borehole/Location (µR/hr)	7
Direct Count Observed at Borehole/Location (cpm)	BKGD
Depth (ft)	0-4
Average Dose Rate Observed over Core (µR/hr)	6
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	4-8
Average Dose Rate Observed over Core (µR/hr)	6
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	8-12
Average Dose Rate Observed over Core (µR/hr)	5
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	12-16
Average Dose Rate Observed over Core (µR/hr)	5
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	\
Average Dose Rate Observed over Core (µR/hr)	\
Average Direct Count Observed over Core (cpm)	\

Date	7/21/09
Borehole/Location ID	C-640 ← continuation
Dose Rate Observed at Borehole/Location (µR/hr)	\
Direct Count Observed at Borehole/Location (cpm)	\
Depth (ft)	12-16
Average Dose Rate Observed over Core (µR/hr)	7
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	16-20
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	\
Average Dose Rate Observed over Core (µR/hr)	\
Average Direct Count Observed over Core (cpm)	\
Depth (ft)	\
Average Dose Rate Observed over Core (µR/hr)	\
Average Direct Count Observed over Core (cpm)	\
Depth (ft)	\
Average Dose Rate Observed over Core (µR/hr)	\
Average Direct Count Observed over Core (cpm)	\

µR/hr = microRoentgen per hour; cpm = counts per minute

Date	7/21/09
Borehole/Location ID	E 700
Dose Rate Observed at Borehole/Location (µR/hr)	9
Direct Count Observed at Borehole/Location (cpm)	BKGD
Depth (ft)	0-4
Average Dose Rate Observed over Core (µR/hr)	7
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	4-8
Average Dose Rate Observed over Core (µR/hr)	7
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	8-12
Average Dose Rate Observed over Core (µR/hr)	7
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	12-16
Average Dose Rate Observed over Core (µR/hr)	7
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	16-20
Average Dose Rate Observed over Core (µR/hr)	6
Average Direct Count Observed over Core (cpm)	BKGD

Date	7/21/09
Borehole/Location ID	D E 600
Dose Rate Observed at Borehole/Location (µR/hr)	8
Direct Count Observed at Borehole/Location (cpm)	BKGD
Depth (ft)	0-4
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	4-8
Average Dose Rate Observed over Core (µR/hr)	9
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	8-12
Average Dose Rate Observed over Core (µR/hr)	9
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	12-16
Average Dose Rate Observed over Core (µR/hr)	9
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	\
Average Dose Rate Observed over Core (µR/hr)	\
Average Direct Count Observed over Core (cpm)	\

µR/hr = microRoentgen per hour; cpm = counts per minute

Date	7/21/09
Borehole/Location ID	D-700
Dose Rate Observed at Borehole/Location (µR/hr)	8
Direct Count Observed at Borehole/Location (cpm)	BKGD
Depth (ft)	0-4
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	4-8
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	8-12
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	12-16
Average Dose Rate Observed over Core (µR/hr)	9
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	16-20
Average Dose Rate Observed over Core (µR/hr)	9
Average Direct Count Observed over Core (cpm)	BKGD

Date	7/21/09
Borehole/Location ID	BP 09
Dose Rate Observed at Borehole/Location (µR/hr)	9
Direct Count Observed at Borehole/Location (cpm)	BKGD
Depth (ft)	0-4
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	4-8
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	8-12
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	12-16
Average Dose Rate Observed over Core (µR/hr)	8
Average Direct Count Observed over Core (cpm)	BKGD
Depth (ft)	16-20
Average Dose Rate Observed over Core (µR/hr)	7
Average Direct Count Observed over Core (cpm)	BKGD

µR/hr = microRoentgen per hour; cpm = counts per minute

Radiological Field Screen Results

Post-Brush Clearance of TNT Line

Post-brush clearing Dose Rate Survey of TNT Field Test Sample Locations

DATE 7/7/2009

Location	Dose Rate (μR/hr)
1	9
2	9
3	9
4	9
5	9
6	9
7	9
8	9
9	9
10	9
11	9
12	9
13	9
14	9
15	8
16	8
17	9
18	8
19	7
20	7
21	7
22	8
23	7
24	7
25	8
26	7
27	8
28	7
29	7
30	7
31	8
32	8
33	8
34	10
35	10
36	9
37	9
38	10
39	9
40	10
41	10
42	10
43	10
44	10
45	9
46	9
47	9
48	9
49	9
50	9

Location	Dose Rate (μR/hr)
51	9
52	10
53	10
54	9
55	10
56	9
57	9
58	9
59	9
60	9
61	9
62	10
63	10
64	9
65	9
66	9
67	9
68	9
69	10
70	9
71	10
72	9
73	9
74	9
75	9
76	9
77	9
78	9
79	9
80	10
81	10
82	10
83	9
84	9
85	10
86	10
87	9
88	10
89	10
90	10
91	9
92	9
93	9
94	9
95	10
96	10
97	10
98	10
99	9
100	8

Location	Dose Rate (μR/hr)
101	9
102	9
103	10
104	10
105	10
106	10
107	9
108	10
109	9
110	10
111	10
112	10
113	10
114	10
115	10
116	10
117	10
118	9
119	9
120	9
121	9
122	9
123	10
124	10
125	9
126	10
127	10
128	10
129	10
130	12
131	11
132	10
133	10
134	10
135	11
136	10
137	10
138	10
139	10
140	10
141	10
142	12
143	15
144	14
145	12
146	10
147	10
148	10
149	9
150	10

Location	Dose Rate (μR/hr)
151	10
152	10
153	10
154	10
155	10
156	10
157	9
158	9
159	10
160	-
161	-
162	-
163	-
164	-
165	-
166	-
167	9
168	-
169	-
170	-
171	10
172	10
173	9
174	-
175	-
176	-
177	10
178	10
179	10
180	10
181	9
182	10
183	10
184	9
185	10
186	10
187	9
188	10
189	9
190	10
191	10
192	9
193	9
194	10
195	10
196	9
197	9
198	9
199	10
200	12

Location	Dose Rate (μR/hr)
201	10
202	10
203	10
204	11
205	12
206	12
207	12
208	10
209	11
210	12
211	10
212	10
213	10
214	10
215	10
216	8
217	9
218	9
219	8
220	8
221	9
222	8
223	10
224	9
225	8
226	9
227	8
228	8
229	9
230	10
231	9
232	7
233	8
234	9
235	9
236	8
237	9
238	8
239	8
240	8

Radiological Field Screen Results

MW Installation Surveys

RADIOLOGICAL SURVEY REPORT FORM

RADIOLOGICAL SURVEY REPORT FORM

Pg. 1 of 1

Survey performed by: (print/signat [redacted]				Date: 6/22/09
				Time: 930
Location: L.O.O.W				Survey No: 1
INSTRUMENTS Model / Type	Serial Number	Calibration Date	Background	Correction Factor
2241-2	1105	10-5-09		

SURVEY RESULTS all readings reported in dpm/100cm^2

	Description of Item	Transferable α	Transferable	Direct α	Direct	Dose Rate (µR/hr)
	Augers					6.5
	Drill Rig					Co
	Support Truck					Co

Comments:

Reviewed By: (print/signature)	Date:

Instrument Source Check Log

DATE:

Instrument Type/Model	Instr. S/N	Probe Type/Model	Probe S/N	Cal. Date	Range (cpm)	Source used	Actual (cpm)	Bkgd. (cpm)	Eff.	Batt OK	Audio Ok	F/S Switch OK	HPT Init.
~~44-10~~ 2221	202351	44-10	1841	2-13-09	13 0730 - 132370	Co-60	6967	~~184~~			✓	✓	
19	1107	—	—	3-23-09		Co-60	407	~~38~~ 7			✓	✓	
~~449~~ 2241-2	1105	449	1834	10-5-09		Co-60	13	4			✓	✓	
											✓		
2221	202351	44-10	1841	2-13-09		Co-60	7109				✓	✓	
19	1107	-	-	3-23-09		Co-60	396				✓	✓	
2241-2	1105	449	1834	10-5-09		Co-60	12				✓	✓	

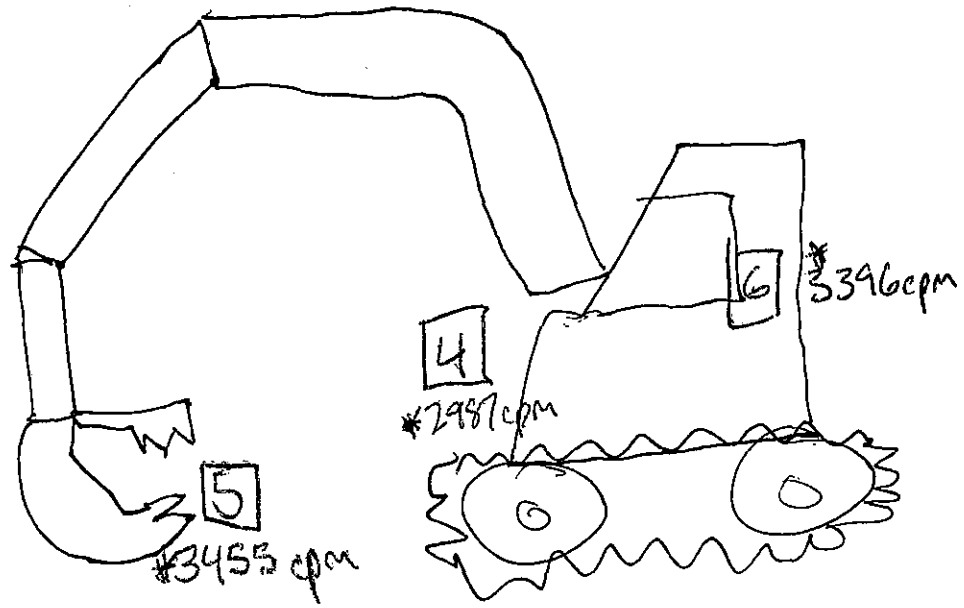
Radiological Field Screen Results

Equipment Release Surveys

Location: Thumb Loop	RWP#	Survey #	Survey Type: Direct Count - Release	pg. 1 of 1

Smear (DPM/100 cm²) / Direct Count (CPM) Direct Frisk) — circle one

No.	α	β	No.	α	β
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19			44		
20			45		
21			46		
22			47		
23			48		
24			49		
25			50		



Comments	Surveyed By:	Date:	Instrument	Serial #	α Eff.	β Eff.	α Bkg.	β Bkg	γ Bkg	Cal. Due
	MWB	7/9/09	44-10	PR-166281	\	\	\	\	4200	2/13/09
			2221	202351						
	MWB	7/9/09	19	169649	\	\	\	\	7	6/15/10
	Reviewed By:	Date:								

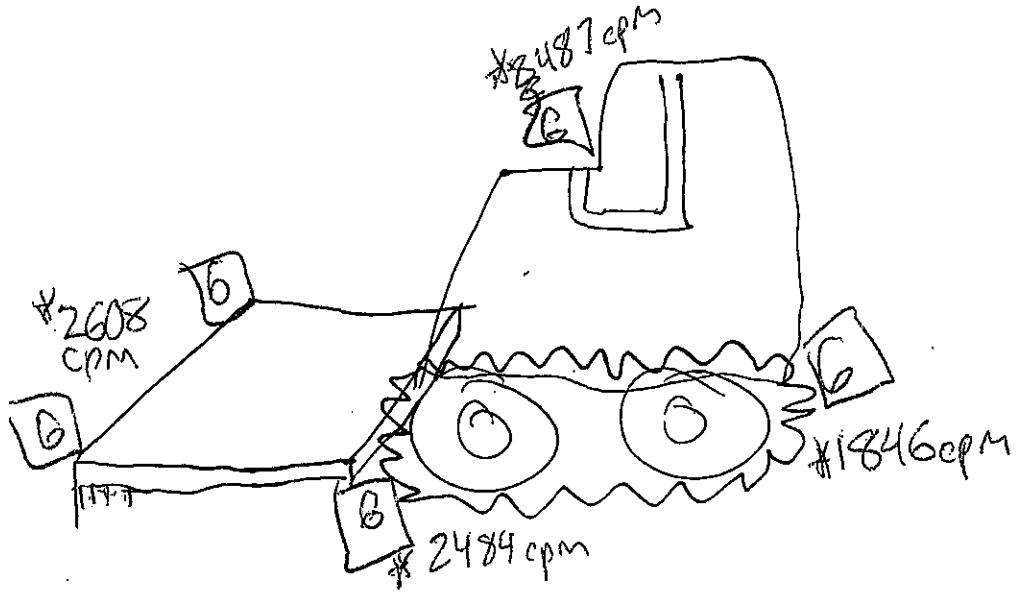
Key

- ■ A/S Location
- *-* Boundary
- ○ Smear
- □ Dose Rate μR /hr
- * Direct Reading CPM/direct frisk
- △ Grab Sample

Location: Brush Cutter	RWP#	Survey #	Survey Type: Direct Count / Release	pg. 1 of 1
Site: CCOW				

Smear (DPM/100 cm²) / Direct Count (CPM) Direct Frisk) — circle one

No.	α	β	No.	α	β
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19			44		
20			45		
21			46		
22			47		
23			48		
24			49		
25			50		



Comments	Surveyed By:	Date:	Instrument	Serial #	α Eff.	β Eff.	α Bkg.	β Bkg	γ Bkg	Cal. Due	Key
	MWB	7/9/09	44-10	PR-166281					4200	2/13/09	
			2221	202351							■ A/S Location
	MWB	7/9/09	19	189649					7	6/15/10	·-· Boundary
											○ Smear
											□ Dose Rate μR/hr
	Reviewed By:	Date:									* Direct Reading CPM/direct frisk
											△ Grab Sample

Revision 2

OP-001-02 Radiological Survey Sheet

Location: Truck (Dump) Loow
Site:

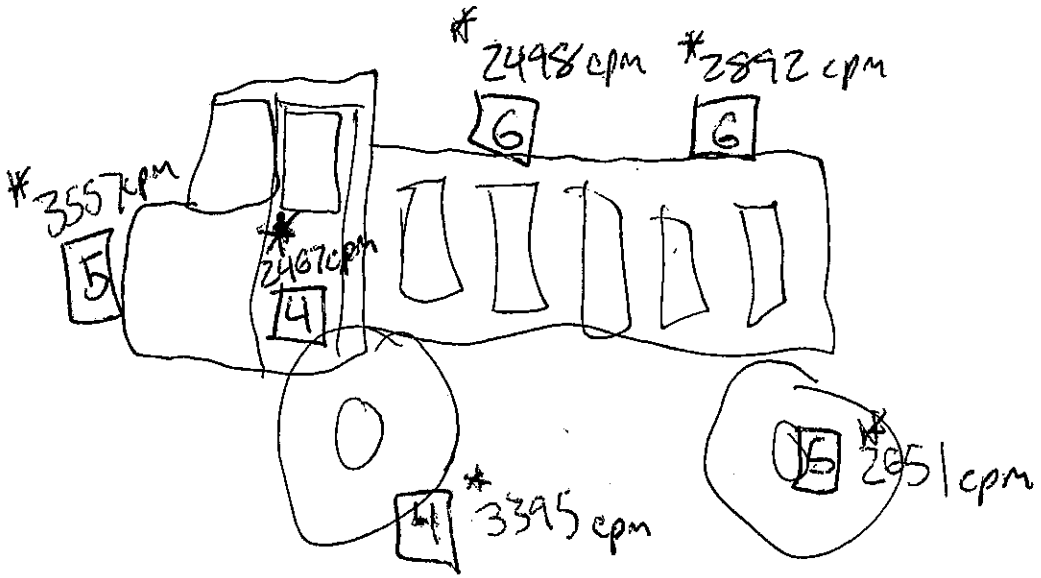
RWP#

Survey #

Survey Type: Release - Direct Count

pg. 1 of 1

Smear (DPM/100 cm²) / Direct Count (CPM/Direct Frisk)						circle one
No.	α	β	No.	α	β	
1			26			
2			27			
3			28			
4			29			
5			30			
6			31			
7			32			
8			33			
9			34			
10			35			
11			36			
12			37			
13			38			
14			39			
15			40			
16			41			
17			42			
18			43			
19			44			
20			45			
21			46			
22			47			
23			48			
24			49			
25			50			



Comments	Surveyed By:	Date:	Instrument	Serial #	α Eff.	β Eff.	α Bkg.	β Bkg	γ Bkg	Cal. Due
	MWB	07/9/09	44-10	PR-166281					4200	2/13/09
			2221	207351						
	MWB	7/9/09	19	169819					7	6/15/10
	Reviewed By:	Date:								

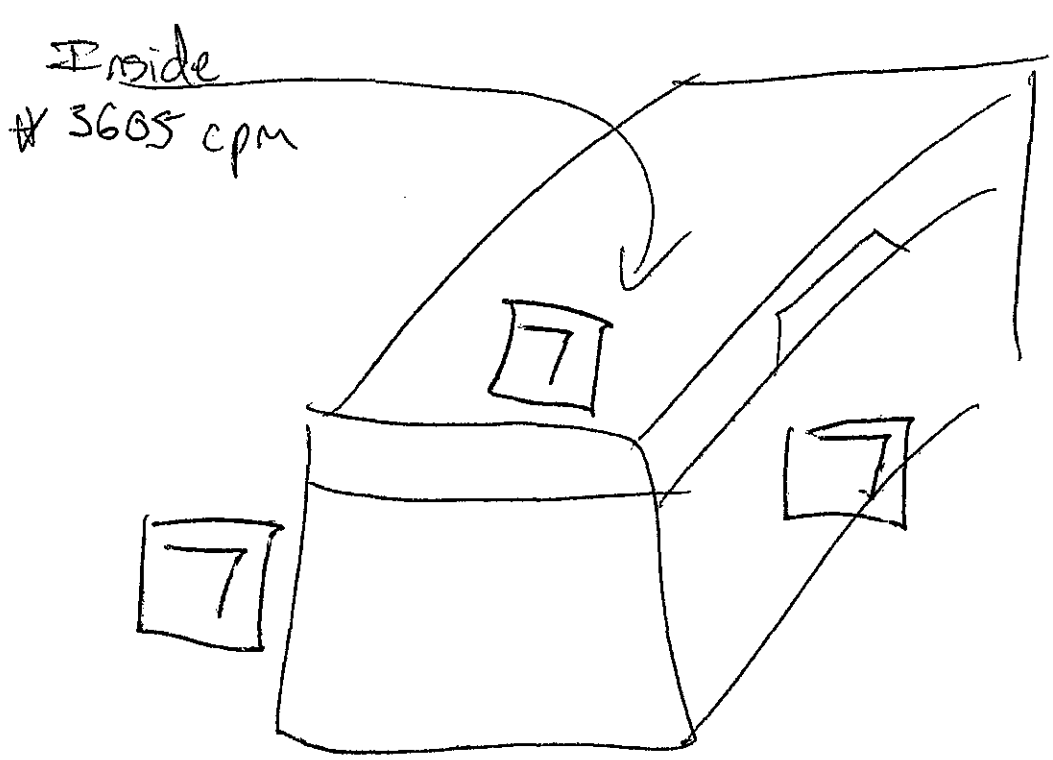
Key

- ■ A/S Location
- *-* Boundary
- ○ Smear
- □ Dose Rate uR /hr
- * Direct Reading CPM/direct frisk
- △ Grab Sample

Location: Cooler 1 of 5	RWP#	Survey #	Survey Type: Release - Direct Count	pg. 1 of 1
Site: Lodi				

Smear (DPM/100 cm²) / Direct Count (CPM/Direct Frisk) — circle one

No.	α	β	No.	α	β
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19			44		
20			45		
21			46		
22			47		
23			48		
24			49		
25			50		



Comments	Surveyed By:	Date:	Instrument	Serial #	α Eff.	β Eff.	α Bkg.	β Bkg	γ Bkg	Cal. Due
	MWB	7/9/09	44-10	PR-166781	\	\	\	\	4200	2/13/10
			2221	202351						
	MWB	7/9/09	19	169649	\	\	\	\	7	6/15/10
	Reviewed By:	Date:								

Key

- ■ A/S Location
- *-* Boundary
- ○ Smear
- □ Dose Rate μR /hr
- * Direct Reading CPM/direct frisk
- △ Grab Sample

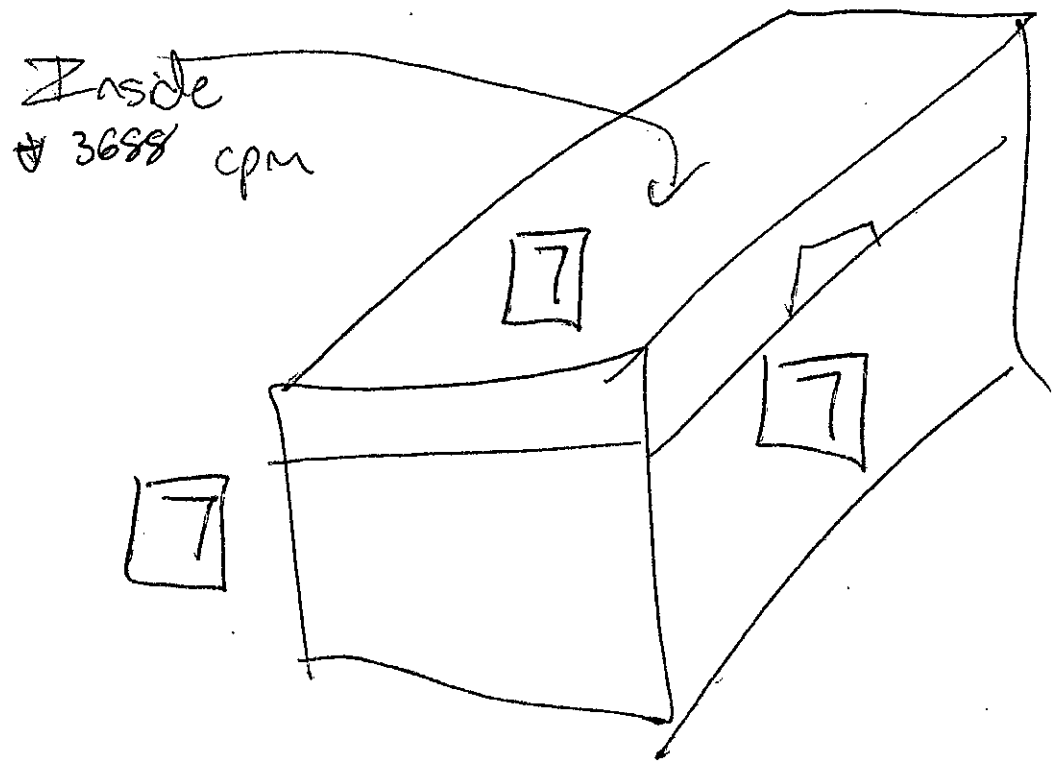
Location: Cooler 2 of 5
Site: LDOW

RWP# \ | Survey # \ | Survey Type: Release \ Direct | pg. 1 of 1

Smear (DPM/100 cm²)
Direct Count (CPM/Direct Frisk) — circle one

No.	α	β	No.	α	β
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19			44		
20			45		
21			46		
22			47		
23			48		
24			49		
25			50		

Direct Count



Comments

Surveyed By:	Date:	Instrument	Serial #	α Eff.	β Eff.	α Bkg.	β Bkg	γ Bkg	Cal. Due
MWB	7/9/09	44-10	PR-162281	\	\	\	\	4200	2/13/10
		2221	202351						
MWB	7/9/09	19	164649	\	\	\	\	7	6/15/10
Reviewed By:	Date:								

Key

- ■ A/S Location
- *-* Boundary
- ○ Smear
- □ Dose Rate 4R /hr
- * Direct Reading CPM/direct frisk
- △ Grab Sample

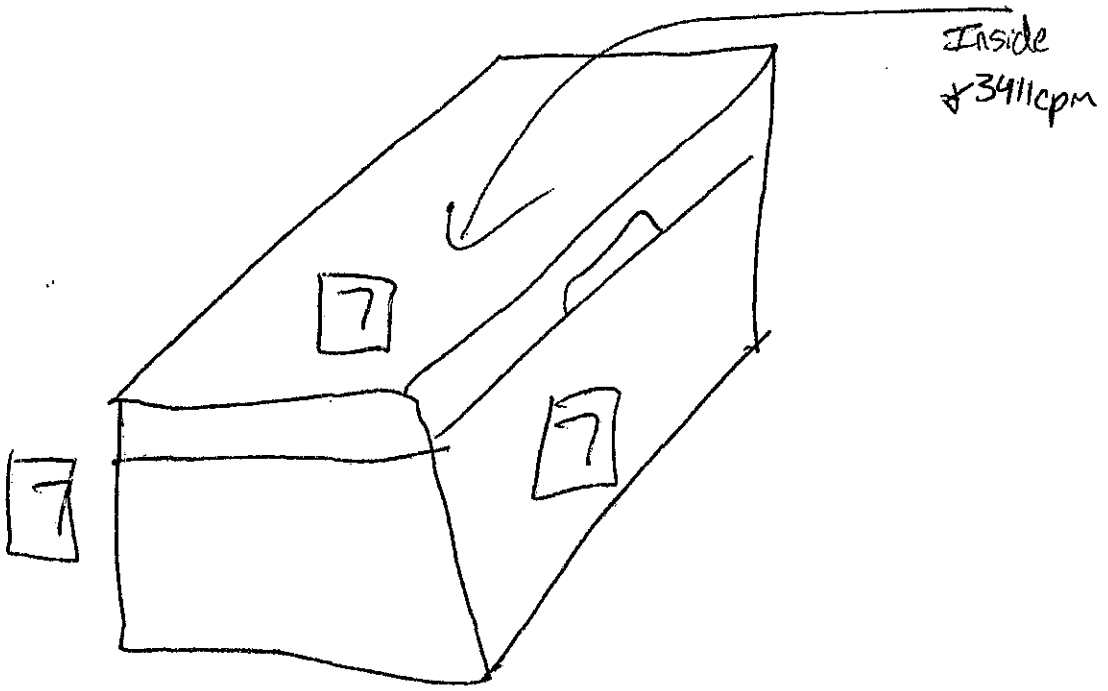
Location: Cooler 3 of 5
Site: Coow

RWP# 1 | Survey # 1 | Survey Type: Release/Direct Count | pg. 1 of 1

circle one

Smear (DPM/100 cm²)
Direct Count (CPM/Direct Frisk)

No.	α	β	No.	α	β
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19			44		
20			45		
21			46		
22			47		
23			48		
24			49		
25			50		



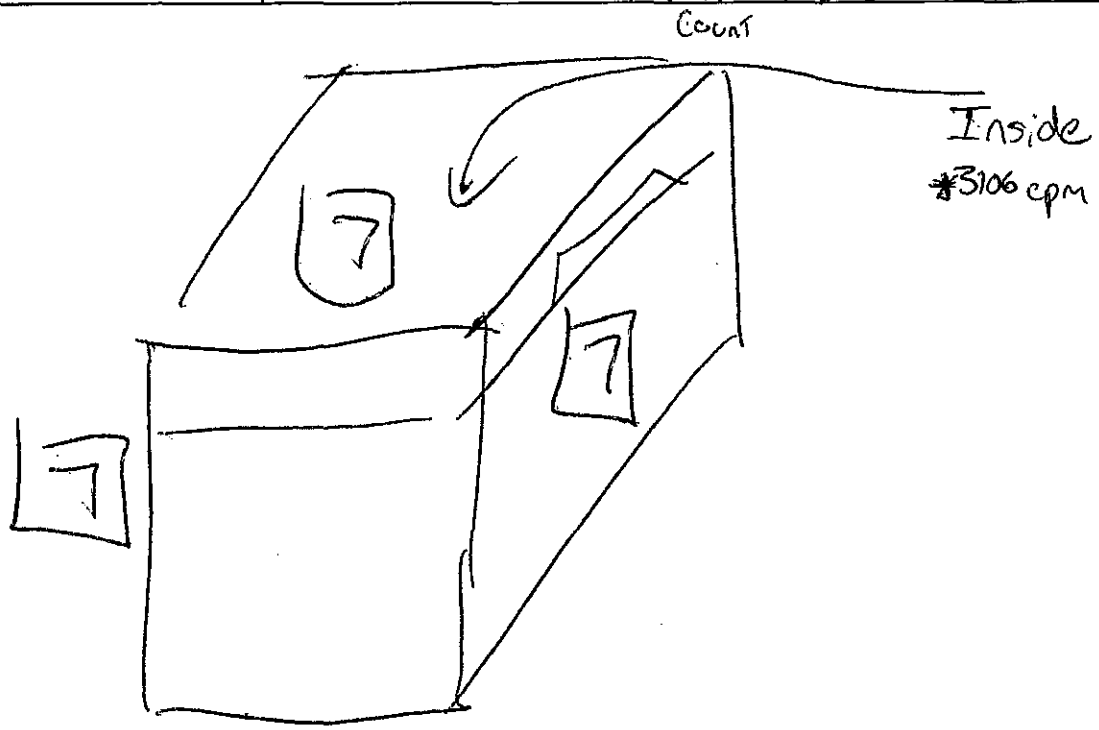
Comments	Surveyed By:	Date:	Instrument	Serial #	α Eff.	β Eff.	α Bkg.	β Bkg	γ Bkg	Cal. Due
	MWB	7/9/09	44-10	PR-166281	\	\	\	\	4200	2/13/10
			2221	202351						
	MWB	7/9/09	19	169649	\	\	\	\	7	6/15/10
	Reviewed By:	Date:								

Key
- ■ A/S Location
- -·- Boundary
- ○ Smear
- □ Dose Rate mR /hr
- * Direct Reading CPM/direct frisk
- △ Grab Sample

Location: Cooler 4 of 5	RWP# \	Survey # \	Survey Type: Direct - Release	pg. 1 of 1
Site: Logan				

Smear (DPM/100 cm²) / Direct Count (CPM/Direct Frisk) — circle one

No.	α	β	No.	α	β
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19			44		
20			45		
21			46		
22			47		
23			48		
24			49		
25			50		



Comments	Surveyed By:	Date:	Instrument	Serial #	α Eff.	β Eff.	α Bkg.	β Bkg	γ Bkg	Cal. Due
	MWB	7/9/09	4410	PR-166781	\	\	\	\	4700	6/13/10
			1221	202351						
	MWB	7/9/09	19	169649	\	\	\	\	7	6/17/10
	Reviewed By:	Date:								

Key

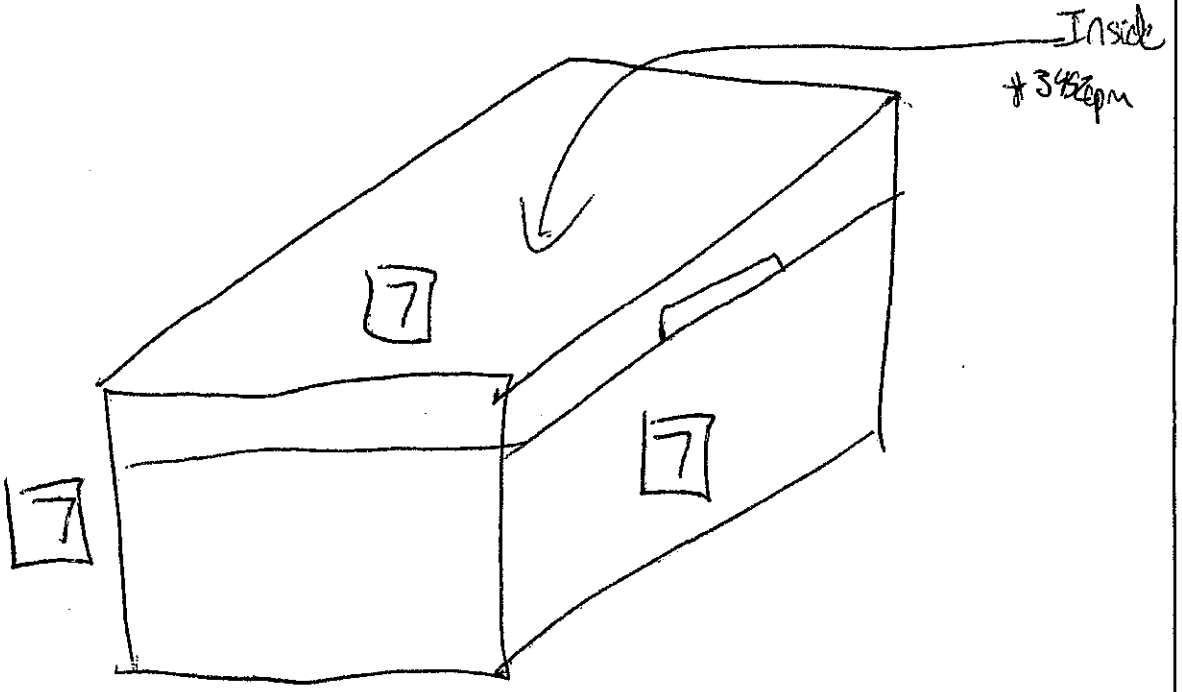
- ■ A/S Location
- *-* Boundary
- ○ Smear
- □ Dose Rate μR /hr
- * Direct Reading CPM/direct frisk
- △ Grab Sample

Location: Cooler 5 of 5 Lower | RWP# | Survey # | Survey Type: Release/Direct count | pg. 1 of 1

Site:

Smear (DPM/100 cm²)
Direct Count (CPM/Direct Frisk) — circle one

No.	α	β	No.	α	β
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19			44		
20			45		
21			46		
22			47		
23			48		
24			49		
25			50		



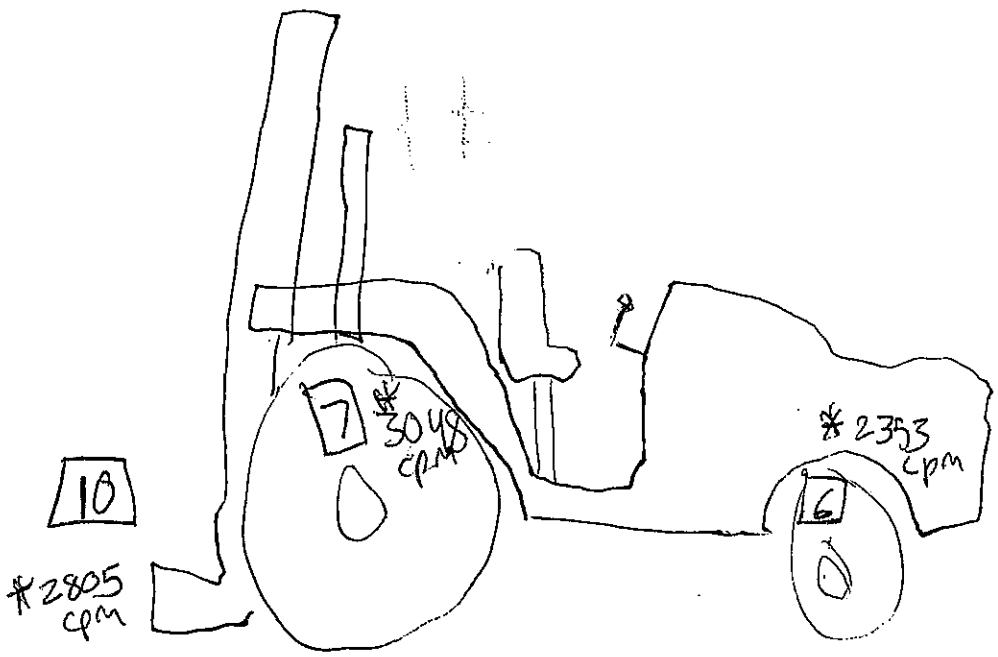
Comments	Surveyed By:	Date:	Instrument	Serial #	α Eff.	β Eff.	α Bkg.	β Bkg	γ Bkg	Cal. Due
	MWB	7/9/09	44-10	PR-166281	~	~	~	~	4200	2/13/10
			2221	202351						
	MWB	7/9/09	19	169649	~	~	~	~	7	6/15/10
	Reviewed By:	Date:								

Key
- ■ A/S Location
- -·- Boundary
- ○ Smear
- □ Dose Rate ~~μR~~ /hr
- * Direct Reading CPM/dirrect frisk
- △ Grab Sample

Location: Geoprobe tractor	RWP#	Survey #	Survey Type: Direct Count / Release	pg. 1 of 1
Site: LORW				

Smear (DPM/100 cm²)
Direct Count (CPM/Direct Frisk) — circle one

No.	α	β	No.	α	β
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19			44		
20			45		
21			46		
22			47		
23			48		
24			49		
25			50		



Comments	Surveyed By:	Date:	Instrument	Serial #	α Eff.	β Eff.	α Bkg.	β Bkg	γ Bkg	Cal. Due
	MWB	7/10/09	44-10	PR-166281	\	\	\	\	4200	2/13/10
			2221	202351	\					
	MWB	7/10/09	19	169649	\	\	\	\	7	6/15/10
	Reviewed By:	Date:								

Key
- ■ A/S Location
- *-* Boundary
- ○ Smear
- □ Dose Rate ~~mR~~ /hr
- * Direct Reading CPM/direct frisk
- △ Grab Sample

Location: Cooler 1 of 4
Site: Loow

RWP#

Survey #

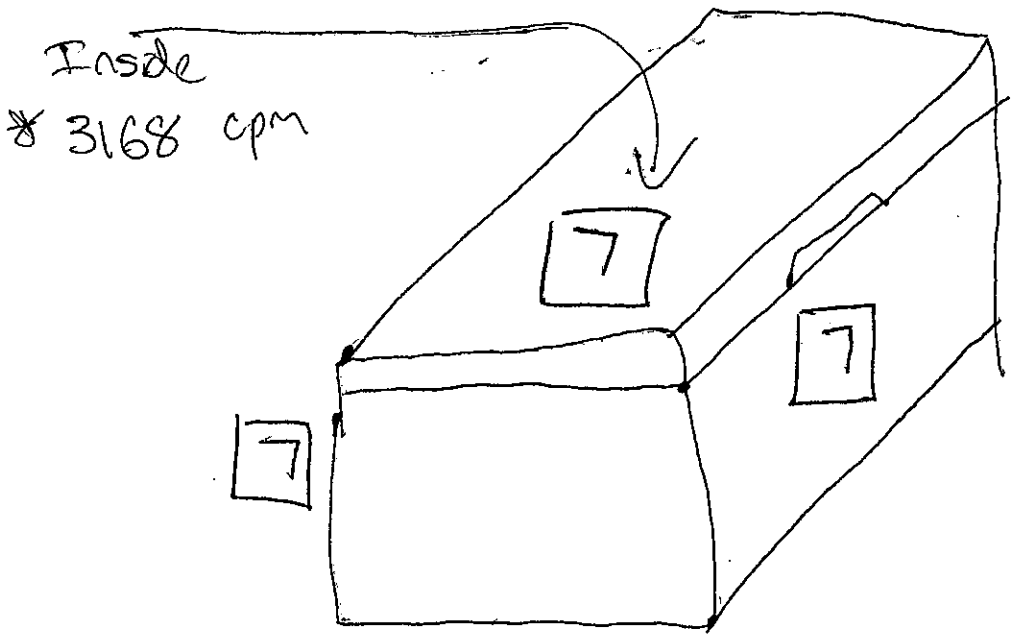
Survey Type: Direct Count - Release

pg. 1 of 1

Smear (DPM/100 cm²)
Direct Count (CPM/Direct Frisk)

circle one

No.	α	β	No.	α	β
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19			44		
20			45		
21			46		
22			47		
23			48		
24			49		
25			50		



Comments

Surveyed By:	Date:	Instrument	Serial #	α Eff.	β Eff.	α Bkg.	β Bkg	γ Bkg	Cal. Due
MWB	7/10/09	44-10	PR-166281	\	\	\	\	4200	2/13/10
		2221	202351						
MWB	7/10/09	19	169649	\	\	\	\	7	6/15/10
Reviewed By:	Date:								

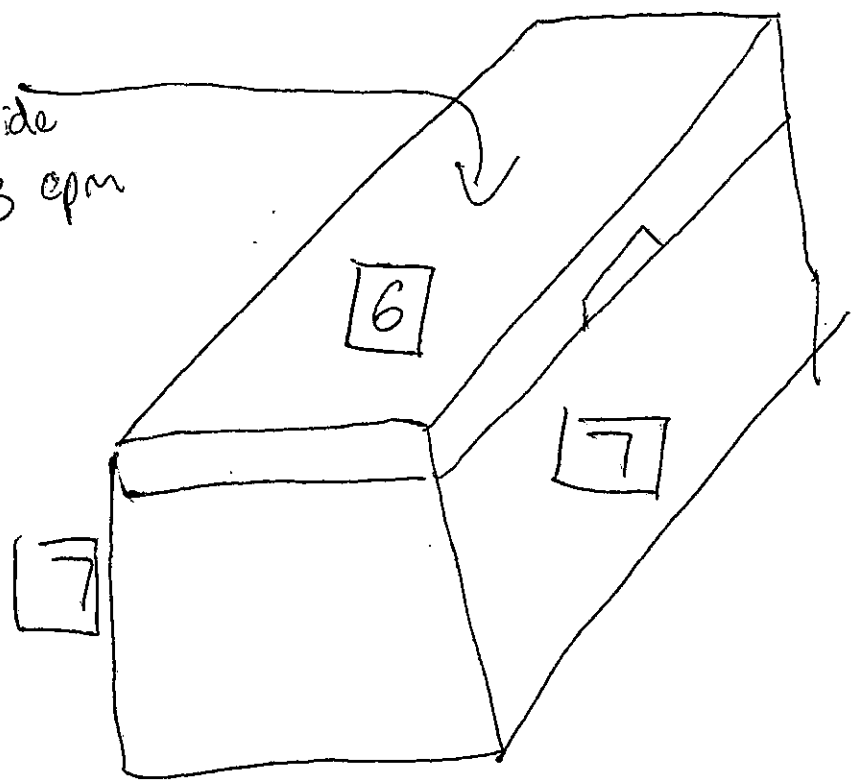
Key

- ■ A/S Location
- *-* Boundary
- ○ Smear
- □ Dose Rate μR /hr
- * Direct Reading CPM/direct frisk
- △ Grab Sample

Location: Site: Cooler 1000 2 of 4	RWP#	Survey #	Survey Type: Release - Direct Count	pg. 1 of 1

Smear (DPM/100 cm²) / Direct Count (CPM/Direct Frisk) — circle one

No.	α	β	No.	α	β
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19			44		
20			45		
21			46		
22			47		
23			48		
24			49		
25			50		



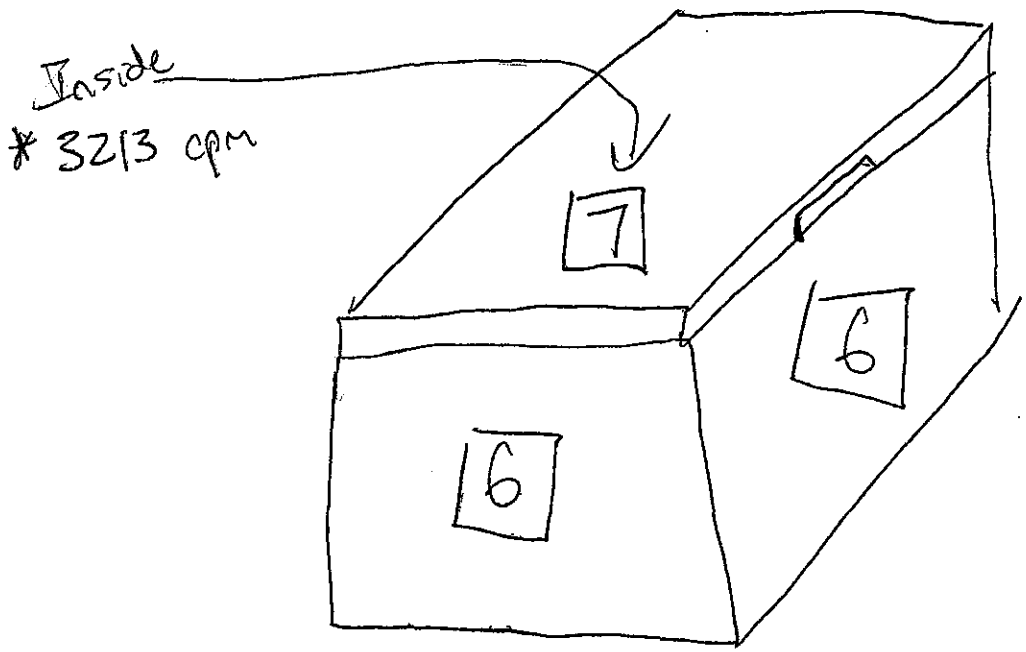
Comments	Surveyed By:	Date:	Instrument	Serial #	α Eff.	β Eff.	α Bkg.	β Bkg	γ Bkg	Cal. Due
	MWB	7/10/09	44-10	PR-166781	\	\	\	\	4200	8/13/10
			2221	202351						
	MWB	7/10/09	19	169649	\	\	\	\	7	6/15/10
	Reviewed By:	Date:								

Key: ■ A/S Location; *-* Boundary; ○ Smear; □ Dose Rate ___ μR /hr; * Direct Reading CPM/direct frisk; △ Grab Sample

Location: Cooler Room 3 of 4	RWP#	Survey #	Survey Type: Release – Direct Count	pg. 1 of 1
Site:				

Smear (DPM/100 cm²)
Direct Count (CPM) Direct Frisk) — circle one

No.	α	β	No.	α	β
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19			44		
20			45		
21			46		
22			47		
23			48		
24			49		
25			50		



Comments	Surveyed By:	Date:	Instrument	Serial #	α Eff.	β Eff.	α Bkg.	β Bkg	γ Bkg	Cal. Due
	MWB	7/10/09	44-10	PR-16628	\	\	\	\	4200	2/13/10
			2221	202351						
	MWB	7/10/09	19	169649	\	\	\	<	7	6/15/10
	Reviewed By:	Date:								

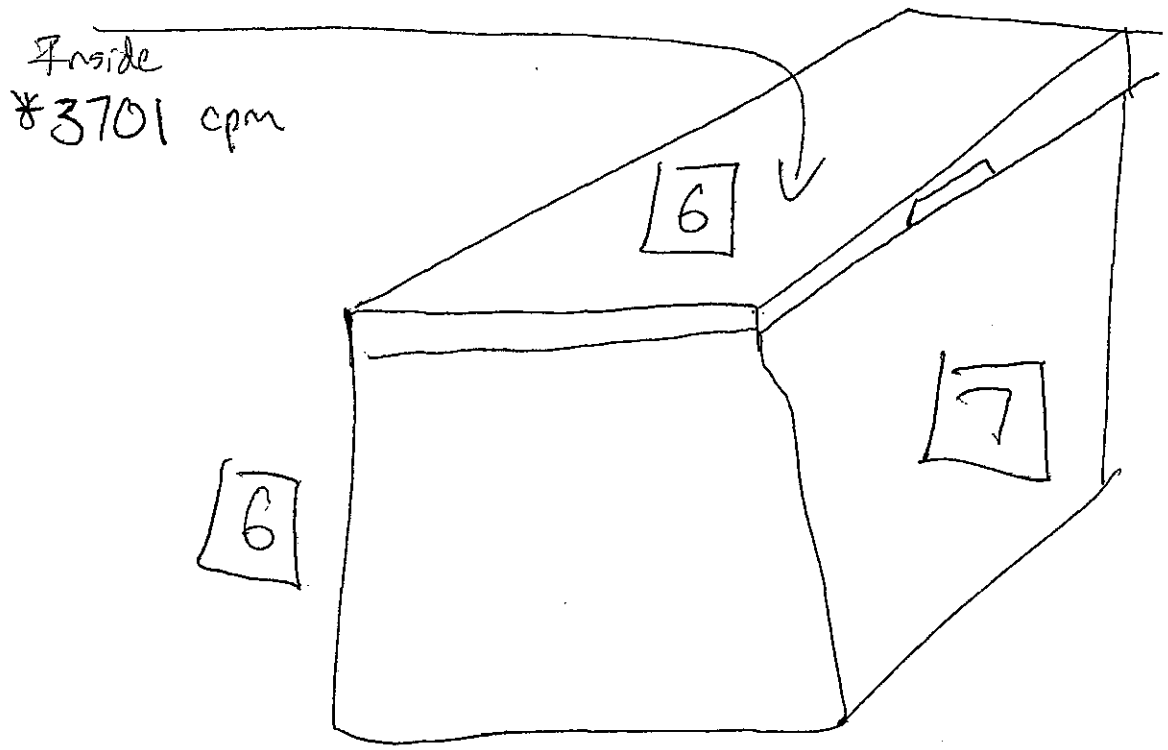
Key

- ■ A/S Location
- *-* Boundary
- ○ Smear
- □ Dose Rate μR /hr
- * Direct Reading CPM/direct frisk
- △ Grab Sample

Location: Cooler 4 of 4 Site: Room	RWP# —	Survey # —	Survey Type: Release - Direct Count	pg. 1 of 1

Smear (DPM/100 cm²) / Direct Count (CPM/Direct Frisk) — circle one

No.	α	β	No.	α	β
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19			44		
20			45		
21			46		
22			47		
23			48		
24			49		
25			50		



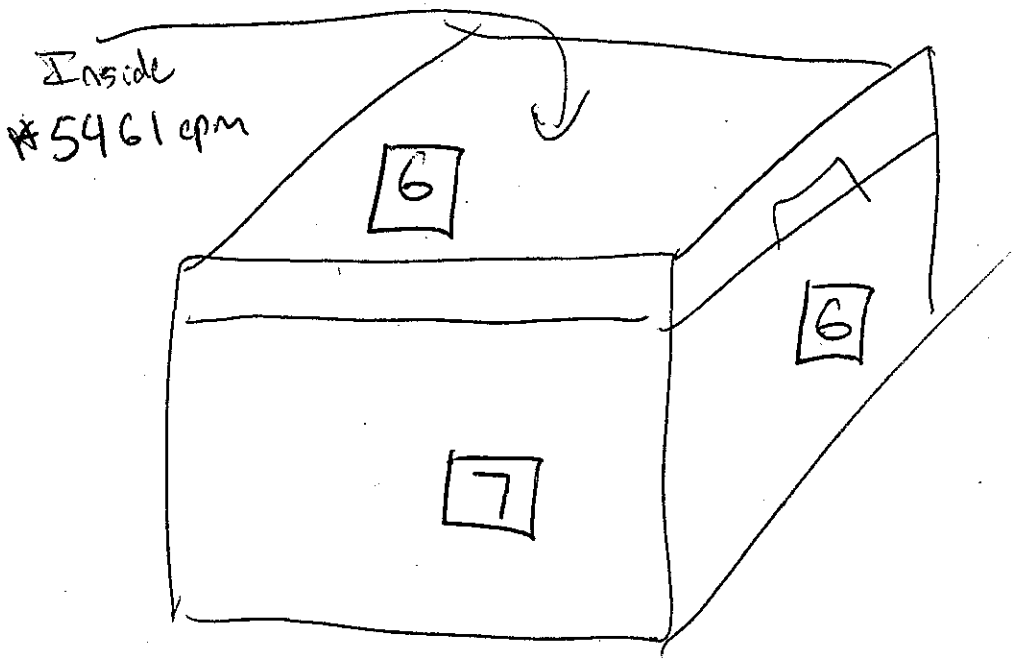
Comments	Surveyed By:	Date:	Instrument	Serial #	α Eff.	β Eff.	α Bkg.	β Bkg	γ Bkg	Cal. Due
	MWB	7/10/09	44-10	PR-166285	7	\	\	\	4200	2/13/10
			2221	202351						
	MWB	7/10/09	19	169649	\	\	\	\	7	6/15/10
	Reviewed By:	Date:								

Key
- ■ A/S Location
- *-* Boundary
- ○ Smear
- □ Dose Rate MR /hr
- * Direct Reading CPM/direct frisk
- △ Grab Sample

Location: Cooler 1 of 5 Site: Lobby	RWP# —	Survey # —	Survey Type: Direct w/Dose Rate - Release	pg. 1 of 1

Smear (DPM/100 cm²) / Direct Count (CPM/Direct Frisk) — circle one

No.	α	β	No.	α	β
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19			44		
20			45		
21			46		
22			47		
23			48		
24			49		
25			50		



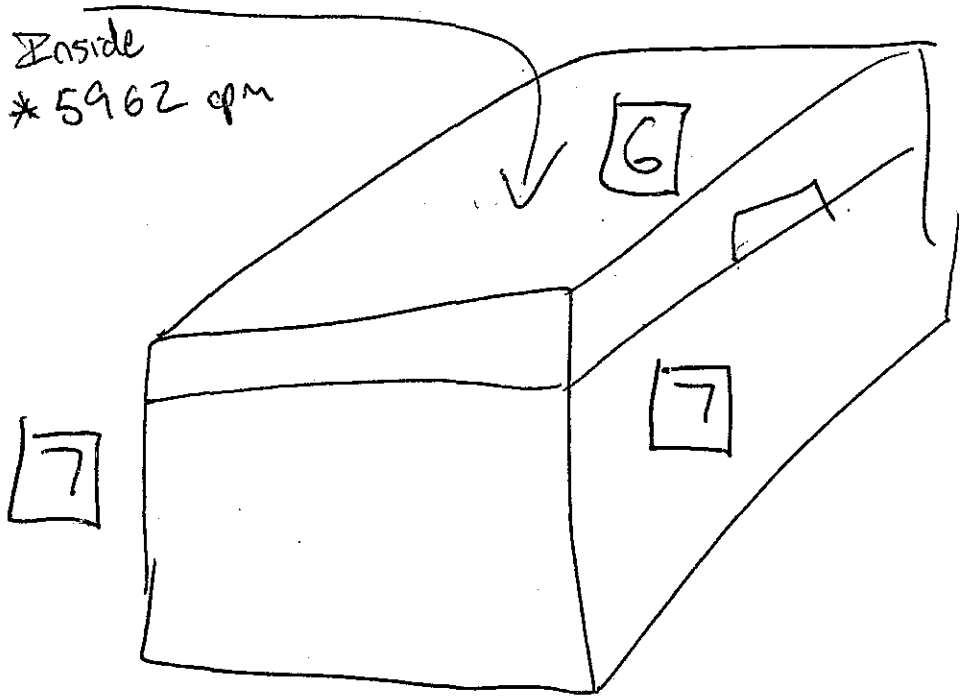
Comments	Surveyed By:	Date:	Instrument	Serial #	α Eff.	β Eff.	α Bkg.	β Bkg	γ Bkg	Cal. Due
	MWB	7/20/09	44-10	132858	—	—	—	—	4500	1/20/10
			2221	132858	—	—	—	—	—	1/20/10
	MWB	7/20/09	19	169649	—	—	—	—	7	6/15/10
	MWB	7/20/09	44-9	125448	—	—	250		—	1/20/10
			2221	125448	—	—	—	—	—	1/20/10
	Reviewed By:	Date:								

Key: ■ A/S Location; -·- Boundary; ○ Smear; □ Dose Rate MR /hr; * Direct Reading CPM/dIrect frisk; △ Grab Sample

Revision 2	OP-001-02 Radiological Survey Sheet			Radiological Surveys
Location: Cooler 2 of 5 Site: Loow	RWP# \	Survey # \	Survey Type: Direct Count w/ Dose Rate Release	pg. 1 of 1

Smear (DPM/100 cm²)
Direct Count (CPM/Direct Frisk) — circle one

No.	α	β	No.	α	β
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19			44		
20			45		
21			46		
22			47		
23			48		
24			49		
25			50		



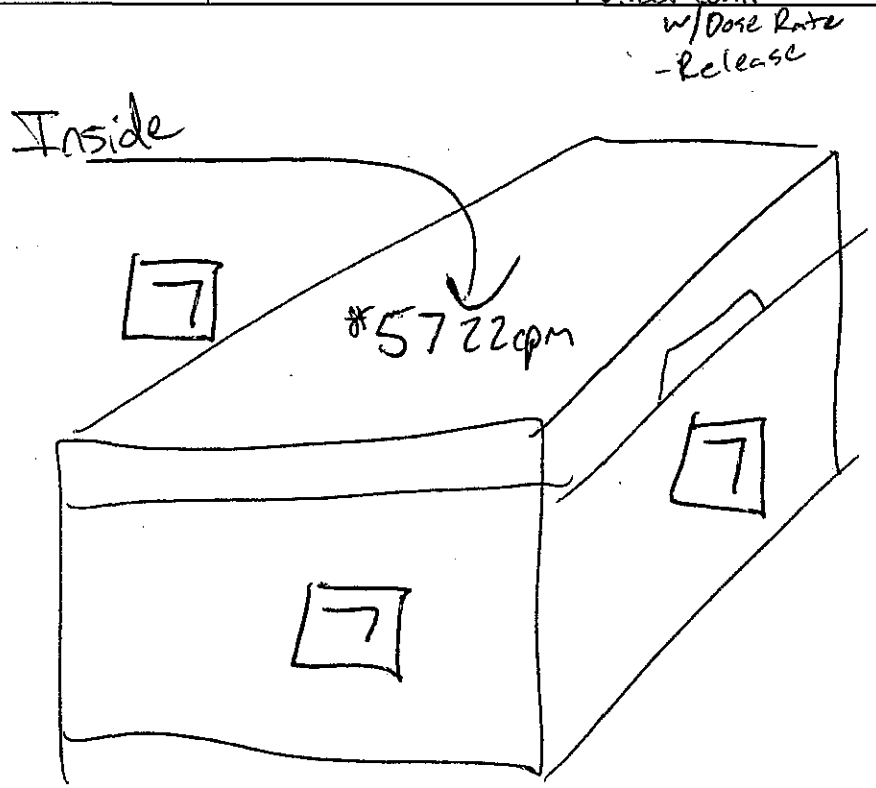
Comments	Surveyed By:	Date:	Instrument	Serial #	α Eff.	β Eff.	α Bkg.	β Bkg	γ Bkg	Cal. Due
	MWB	7/20/09	44-10	132858	\	\	—	\	4500	1/20/10
			2221	132858	\	\	—	\	\	1/20/10
	MWB	7/20/09	19	169649	\	\	\	\	7	6/15/10
	MWB	7/20/09	44-9	125448	\	\	250	\	\	1/20/10
			2221	125448	\	\	—	\	\	1/20/10
	Reviewed By:	Date:								

Key
- ■ A/S Location
- -·- Boundary
- ○ Smear
- □ Dose Rate μR /hr
- * Direct Reading CPM/direct frisk
- △ Grab Sample

Location: Cooler 3 of 5 Site: LOOW	RWP#	Survey #	Survey Type: Direct Count w/ Dose Rate - Release	pg. 1 of 1

Smear (DPM/100 cm²) / Direct Count (CPM/Direct Frisk) — circle one

No.	α	β	No.	α	β
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19			44		
20			45		
21			46		
22			47		
23			48		
24			49		
25			50		



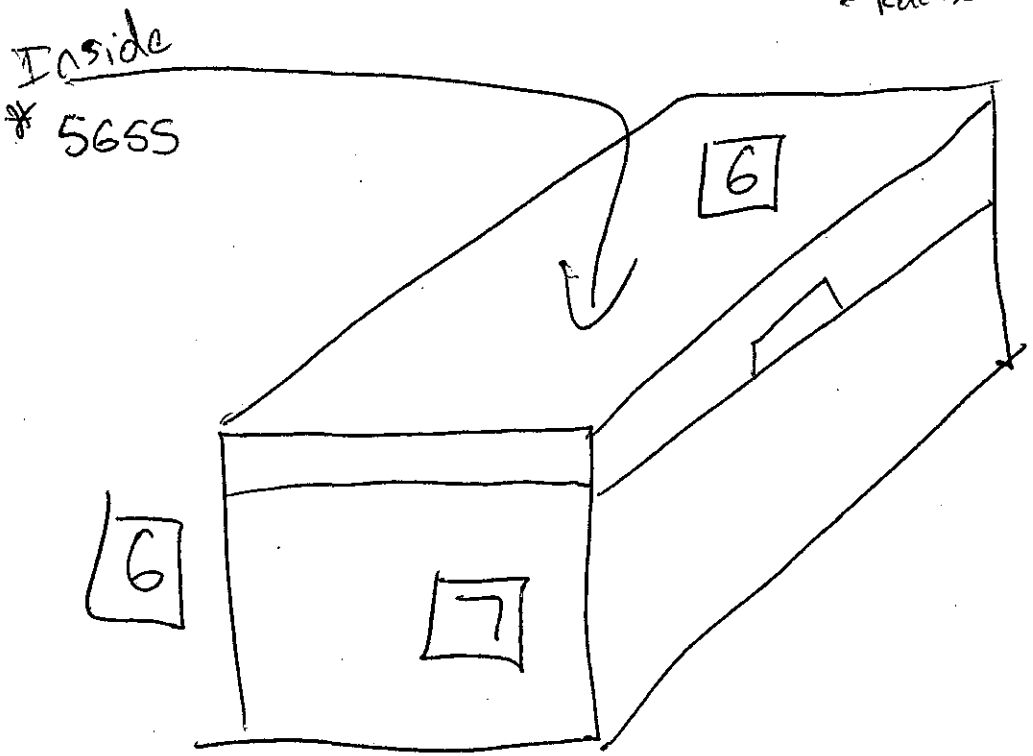
Comments	Surveyed By:	Date:	Instrument	Serial #	α Eff.	β Eff.	α Bkg.	β Bkg	γ Bkg	Cal. Due
	MWB	7/20/09	44-10	132858	\	\	\	\	4500	1/20/10
			2221	"	\	\	\	\	\	1/20/10
	MWB	7/20/09	19	169649	\	\	\	\	7	6/15/10
	MWB	7/20/09	44-9	125148	\	\	250		\	1/20/10
			2221	\	\	\	\	\	\	1/20/10
	Reviewed By:	Date:								

Key: ■ A/S Location; ·-· Boundary; ○ Smear; □ Dose Rate mR /hr; * Direct Reading CPM/direct frisk; △ Grab Sample

Revision 2	OP-001-02 Radiological Survey Sheet			Radiological Surveys
Location: Cooler Room 4 of 5 Site:	RWP# \	Survey # \	Survey Type: Direct Count cpm/Dose Rate - Release	pg. 1 of 1

Smear (DPM/100 cm²) / Direct Count (CPM/Direct Frisk) — circle one

No.	α	β	No.	α	β
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19			44		
20			45		
21			46		
22			47		
23			48		
24			49		
25			50		



Comments	Surveyed By:	Date:	Instrument	Serial #	α Eff.	β Eff.	α Bkg.	β Bkg	γ Bkg	Cal. Due
	MWB	7/20/09	44-10	132558	\	\	\	\	4500	1/20/10
			2221	"	\	\	\	\	\	1/20/10
	MWB	7/20/09	19	169649	\	\	\	\	7	6/15/10
	MWB	7/20/09	44-9	125148	\	\	250	\	\	1/20/10
			2221	"	\	\	\	\	\	1/20/10
	Reviewed By:	Date:								

Key

- ■ A/S Location
- *-* Boundary
- ○ Smear
- □ Dose Rate MR /hr
- * Direct Reading CPM/direct frisk
- △ Grab Sample

Location: Cooler 5 of 5 (COOL)
Site:

RWP# —

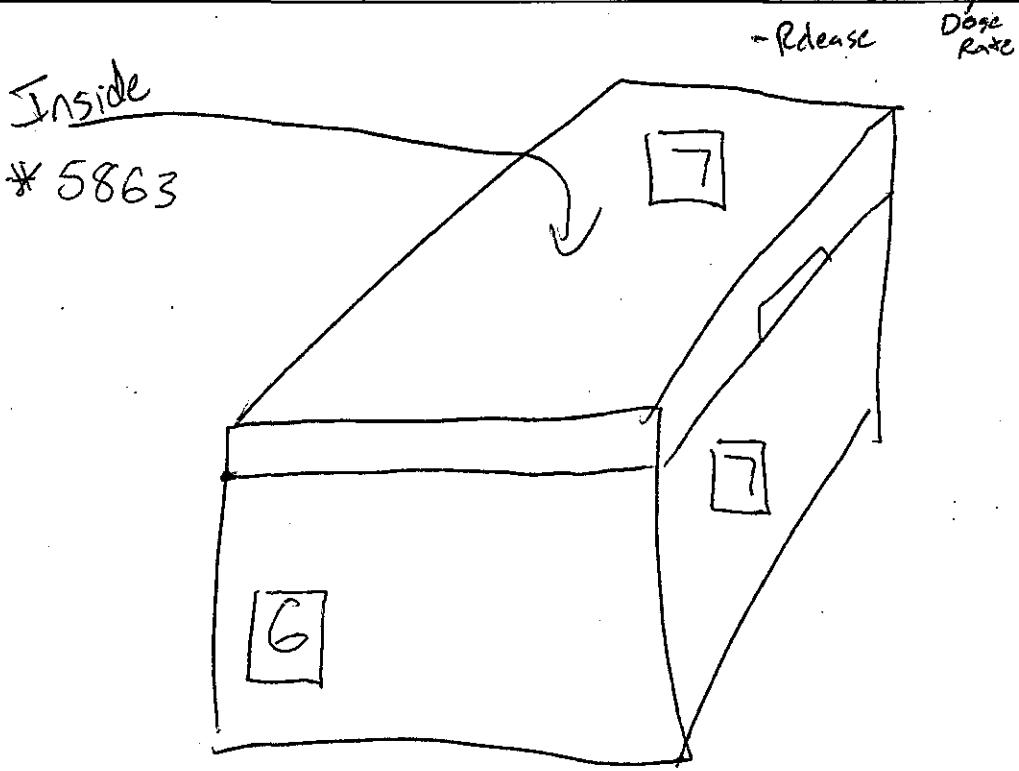
Survey # —

Survey Type: Direct Count w/ Dose Rate - Release

pg. 1 of 1

Smear (DPM/100 cm²)
Direct Count (CPM/Direct Frisk) — circle one

No.	α	β	No.	α	β
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19			44		
20			45		
21			46		
22			47		
23			48		
24			49		
25			50		



Comments	Surveyed By:	Date:	Instrument	Serial #	α Eff.	β Eff.	α Bkg.	β Bkg	γ Bkg	Cal. Due
	MWB	7/20/09	44-10	132858	—	—	—	—	4500	1/20/10
			2221	"	—	—	—	—	—	1/20/10
	MWB	7/20/09	19	169649	—	—	—	—	7	6/15/10
	MWB	7/20/09	44-9	125448	—	—	250		—	1/20/10
			2221	"	—	—	—	—	—	1/20/10
	Reviewed By:	Date:								

Key
- ■ A/S Location
- ·-· Boundary
- ○ Smear
- □ Dose Rate μR /hr
- * Direct Reading CPM/direct frisk
- △ Grab Sample

Location: Cooler 1 of 3
Site: LOOW

RWP# —

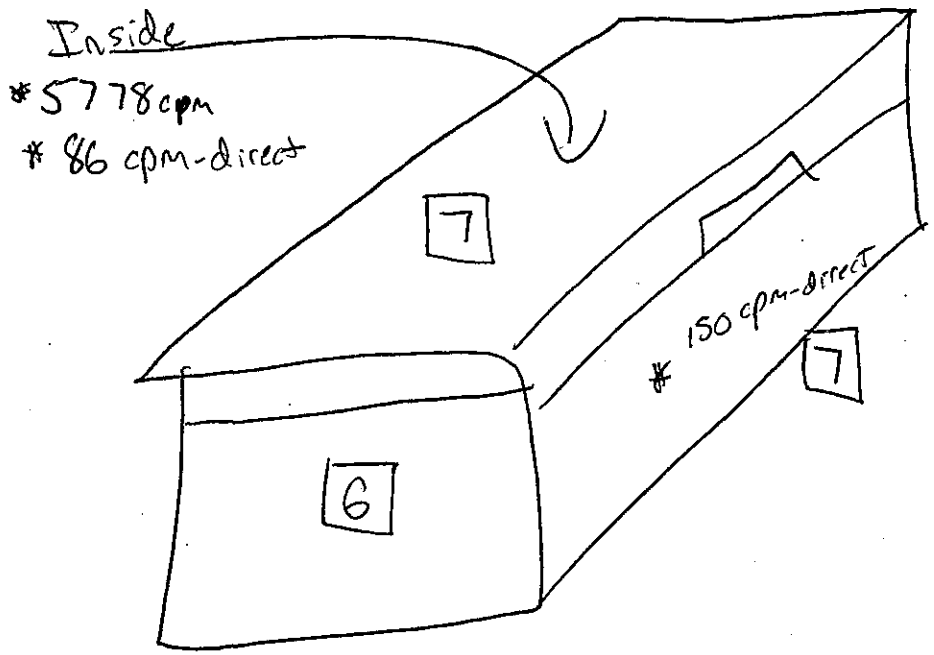
Survey #: —

Survey Type: Direct Count w/dose rate

pg. 1 of 1

Smear (DPM/100 cm²)
Direct Count (CPM/Direct Frisk) — circle one

No.	α	β	No.	α	β
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19			44		
20			45		
21			46		
22			47		
23			48		
24			49		
25			50		



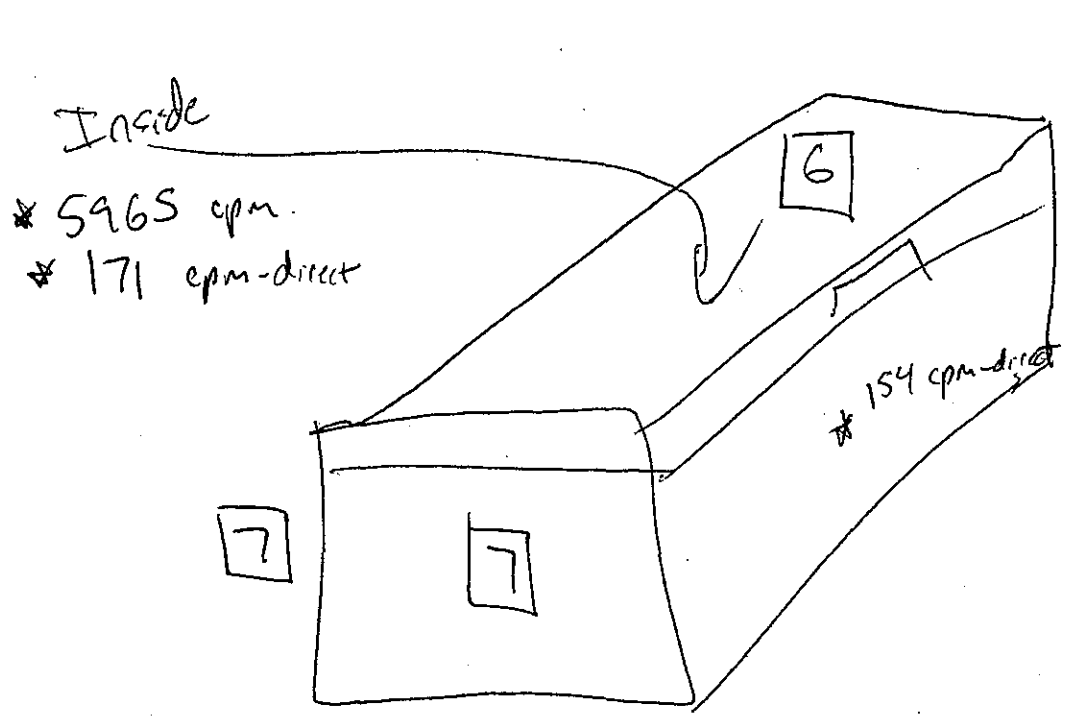
Comments	Surveyed By:	Date:	Instrument	Serial #	α Eff.	β Eff.	α Bkg.	β Bkg	γ Bkg	Cal. Due
	MWB	7/21/09	44-90		\	\	\	\	4500	1/20/10
			2221		\	\	\	\	\	1/20/10
	MWB	7/21/09	19		\	\	\	\	7	6/15/10
	MWB	7/21/09	44-9		\	\	250		\	1/20/10
			2221		\	\	\	\	\	1/20/10
	Reviewed By:	Date:								

Key
- ■ A/S Location
- -·- Boundary
- ○ Smear
- □ Dose Rate μR /hr
- * Direct Reading CPM/direct frisk
- △ Grab Sample

Location: Cooler 2 of 3	RWP#	Survey #	Survey Type: Direct count w/Dose rate	pg. 1 of 1
Site: Loow				

Smear (DPM/100 cm²) / Direct Count (CPM/Direct Frisk) — circle one

No.	α	β	No.	α	β
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19			44		
20			45		
21			46		
22			47		
23			48		
24			49		
25			50		



Comments

Surveyed By:	Date:	Instrument	Serial #	α Eff.	β Eff.	α Bkg.	β Bkg	γ Bkg	Cal. Due
MWB	7/21/09	44-10	132858	\	\	\	\	4500	1/20/10
	~~7/21/09~~	2221	"	\	\	\	\	\	1/20/10
MWB	7/21/09	19	169649	\	\	\	\	7	6/15/10
MWB	7/21/09	44-9	125448	\	\	250		\	1/20/10
		2221	\	\	\	\	\	\	1/20/10
Reviewed By:	Date:								

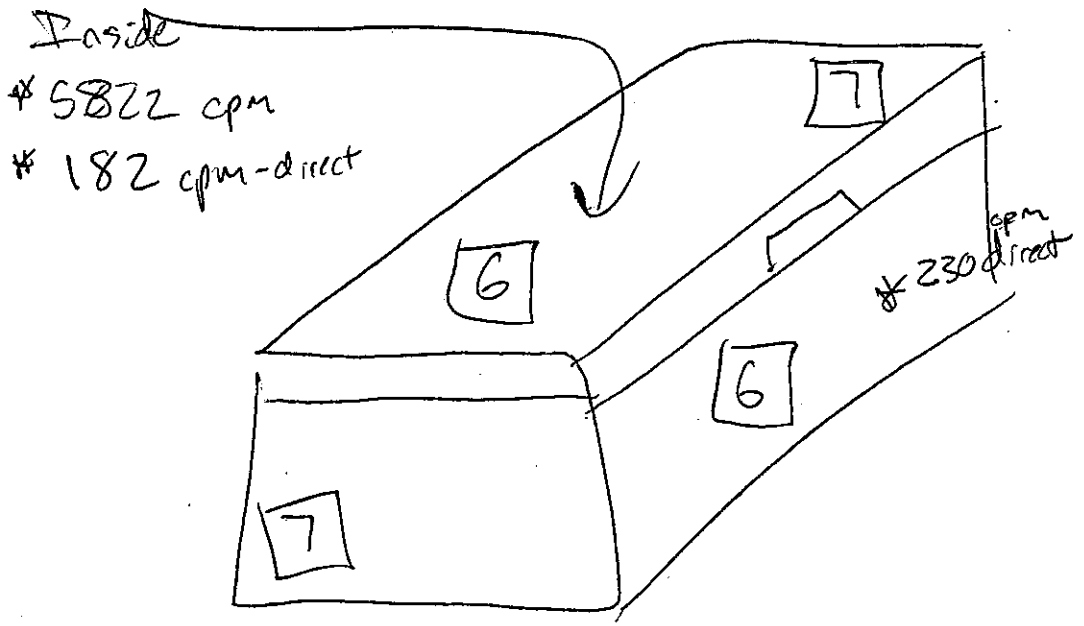
Key

- ■ A/S Location
- ·-· Boundary
- ○ Smear
- □ Dose Rate uR /hr
- * Direct Reading CPM/direct frisk
- △ Grab Sample

Location: Cooler 3 of 3 Site:	RWP#	Survey #	Survey Type: Direct Count w/ -Release Dose Rate	pg. 1 of 1

Smear (DPM/100 cm²) / Direct Count (CPM/Direct Frisk) — circle one

No.	α	β	No.	α	β
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19			44		
20			45		
21			46		
22			47		
23			48		
24			49		
25			50		



Comments	Surveyed By:	Date:	Instrument	Serial #	α Eff.	β Eff.	α Bkg.	β Bkg	γ Bkg	Cal. Due
	MWB	7/21/09	44-10	132858	~	~	~	~	4500	1/20/10
			2221	"	~	~	~	~	~	1/20/10
	MWB	7/21/09	19	169649	~	~	~	~	7	6/15/10
	MWB	7/21/09	44-9	125448	~	~	250		~	1/20/10
			2221	~	~	~	~	~	~	1/20/10
	Reviewed By:	Date:								

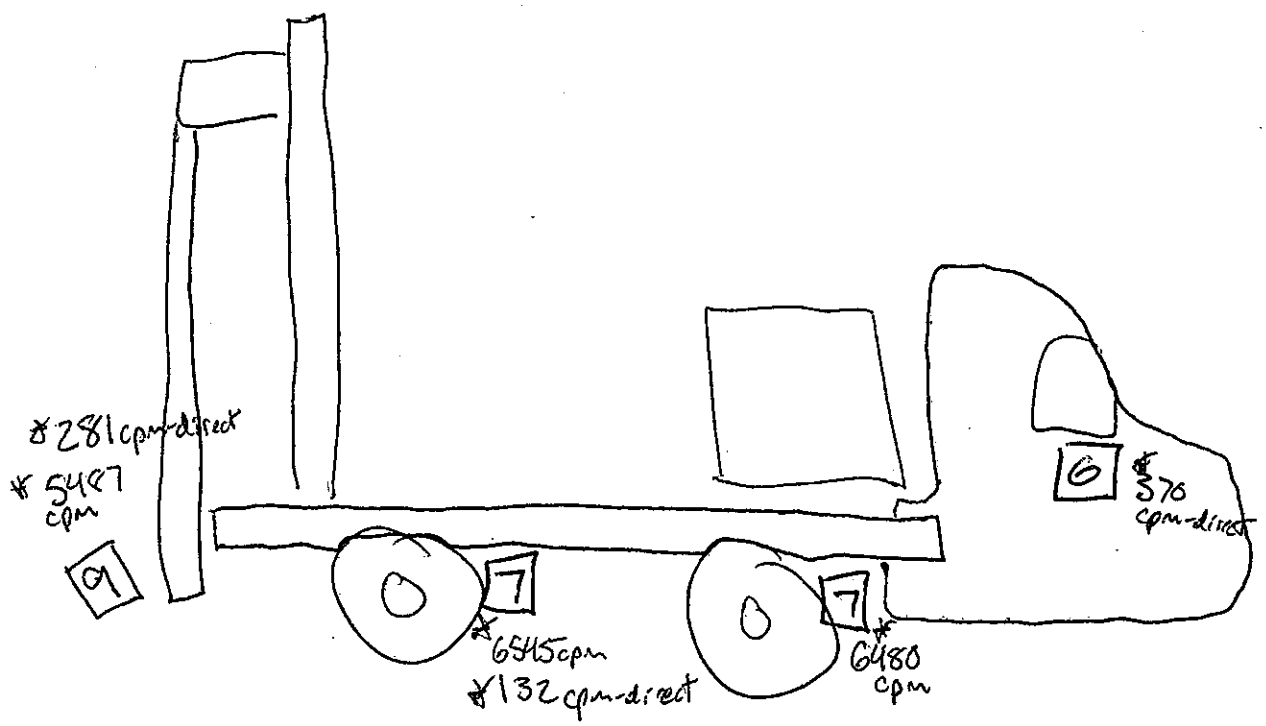
Key

- ■ A/S Location
- *-* Boundary
- ○ Smear
- □ Dose Rate mR /hr
- * Direct Reading CPM/direct frisk
- △ Grab Sample

Location: Drill Rig Site: LOOW	RWP#	Survey #	Survey Type: Release - Direct w/Dose Rate	pg. 1 of 1

Smear (DPM/100 cm²)
Direct Count (CPM) Direct Frisk) — circle one

No.	α	β	No.	α	β
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19			44		
20			45		
21			46		
22			47		
23			48		
24			49		
25			50		



Comments	Surveyed By:	Date:	Instrument	Serial #	α Eff.	β Eff.	α Bkg.	β Bkg	γ Bkg	Cal. Due
	MWB	7/21/09	44-10	132858	\	\	\	\	4500	1/20/10
			2221	132858	\	\	\	\	\	1/20/10
	MWB	7/21/09	19	169649	\	\	\	\	7	6/15/10
	MWB	7/21/09	44-9	125448	\	\	250		\	1/20/10
			2221	125448	\	\	~~8~~ 7		\	1/20/10
	Reviewed By:	Date:								

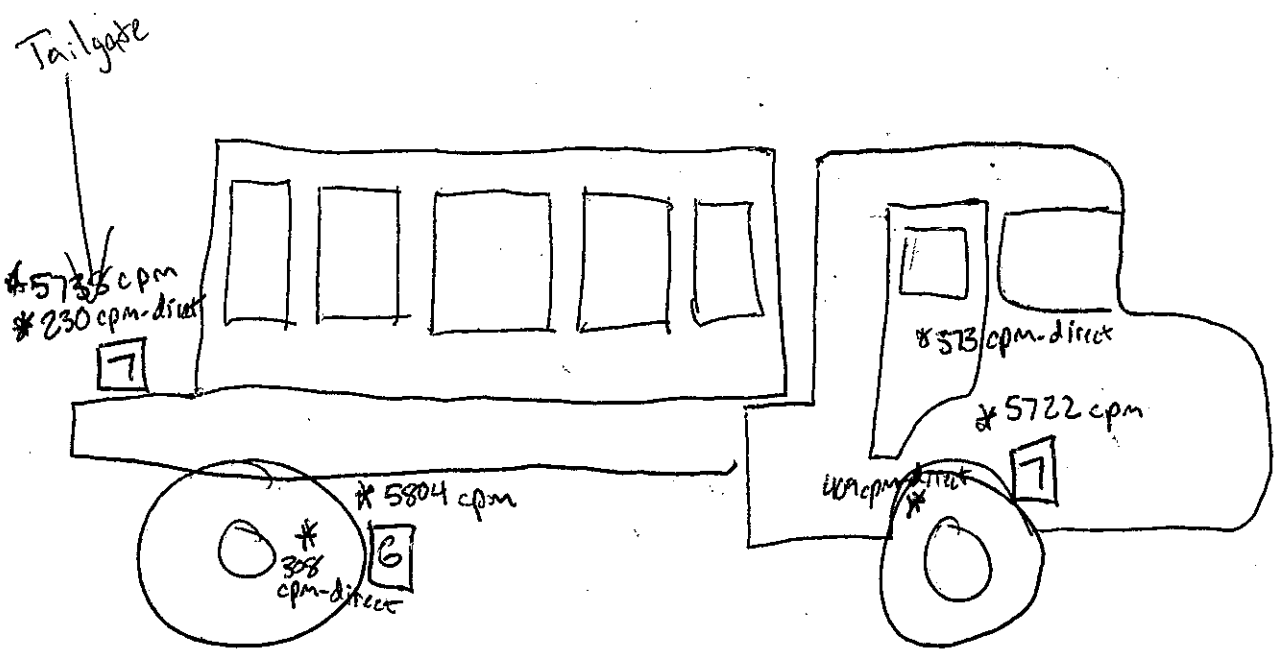
Key
- ■ A/S Location
- -·- Boundary
- ○ Smear
- □ Dose Rate ___ µR /hr
- * Direct Reading CPM/direct frisk
- △ Grab Sample

Location: Truck Looow	RWP# —	Survey # —	Survey Type: Release - Direct w/ Dose Rate	pg. 1 of 1

Site:

Smear (DPM/100 cm²) / Direct Count (CPM) / Direct Frisk — circle one

No.	α	β	No.	α	β
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19			44		
20			45		
21			46		
22			47		
23			48		
24			49		
25			50		



Comments	Surveyed By:	Date:	Instrument	Serial #	α Eff.	β Eff.	α Bkg.	β Bkg	γ Bkg	Cal. Due
	MWB	7/21/09	44-10	132858	~	~	~	~	4500	1/20/10
			2221	132858	~	~	~	~	~	1/20/10
	MWB	7/21/09	19	169649	~	~	~	~	7	6/15/10
	MWB	7/21/09	44-9	125448	~	~	250		~	1/20/10
			2221	125448	~	~	~	~	~	1/20/10
	Reviewed By:	Date:								

Key

- ■ A/S Location
- *-* Boundary
- ○ Smear
- □ Dose Rate uR /hr
- * Direct Reading CPM/direct frisk
- △ Grab Sample

Radiological Deficiency Reports

8 August 2009 and 20 August 2009

RADIOLOGICAL DEFICIENCY REPORT FORM LOG SHEET

RDR Incident No.	Date of Incident	Brief Description of Incident	Date of Closure of Incident
1	7/8/09	Discovery of small elevated source zone	7/8/09
2	7/20/09	Malfunctioning 44-10 Probe	7/20/09

RADIOLOGICAL DEFICIENCY REPORT

RDR Incident Number: 1
Initiator of RDR: [redacted]

Date: 7/8/09

Observer(s) of Incident:

Name	Signature	Job Title
Michael Barsa	[redacted]	Project Scientist / Site Radiation Safety Lead

Time of Incident: _____ Weather Conditions: _____

Radiological Conditions (i.e. G.A. Dose Rate(s)): CPM observed @ 13000 (~2.5× BKGD)
Dose Rate @ 16 uR/hr (~2× BKGD)

Description of Incident (detailed, use reverse if necessary):
Discovery of small rad source zone on northwest corner of building where debris being cleared
Northing – 1173983.25 N
Easting – 1040333.79 E

Deficiency Identified: None

Corrective Action(s) Taken: 5'×5' area sectioned off with tape – readings drop to BKGD 5' away from center of source area

Reviewed By RSO: [redacted] Date: 7/9/09

Reviewed By SES Project Manager: _____
Date: _____

RADIOLOGICAL DEFICIENCY REPORT

RDR Incident Number: 2 Date: 7/20/09
Initiator of RDR: M. Bassa

Observer(s) of Incident:

Name	[redacted]	Job Title
Michael Bassa		Project Scientist / Site Radiation Safety Lead

Time of Incident: 0930 Weather Conditions: Sunny, warm

Radiological Conditions (i.e. G.A. Dose Rate(s)): N/A

Description of Incident (detailed, use reverse if necessary):
44-10 probe malfunctioned - Troubleshooting calls were made determining either problem with probe itself or connecting cables

Deficiency Identified: None identified - probe required return to rental company

Corrective Action(s) Taken: New probe ordered from rental company to be delivered next day - meantime, probe provided by USACE HP tech will be used to compare readings against background (calibrated differently)

Reviewed By RSO: [redacted] Date: 7/20/09

Reviewed By SES Project Manager: _____

Date: _____

Instrument Malfunction Report

On Monday morning, 20 July 2009, at approximately 0930, the 44-10 probe (S/N PR166281), which was coupled with a 2221 meter, malfunctioned. The ERT Project Manger (PM) was notified immediately. Initially the cords were replaced, which allowed for temporary functionality, but the instrument soon began malfunctioning again. I then made several inquiries with Cabrera personnel in order to troubleshoot the issue, but nothing alleviated the problem. The instrument rental company was then contacted, and step-by-step hard calibration methods were provided. None of these methods worked, and it was therefore determined that an internal problem existed or the cord connection to the probe may have had a fault.

After discussing the situation with the ERT PM and USACE on-site health physicist (HP) representative, it was determined that field activities would continue with the use of USACE instrumentation in order to complete the necessary radiological screens.

Since this particular instrument had been calibrated to different standards and had gone through a different quality control check procedure as the malfunctioning instrument, I was only able to make comparisons from the expressed reading on the USACE instrument to the background as determined on the USACE instrument, as opposed to making comparisons to the background as determined by the malfunctioning instrument (no readings were exhibited above background in any case). Due to the conditions observed at the site, it was determined that based on values recorded by the USACE HP for QC purposes prior to the malfunction, site work could continue as long as similar values were observed.

A new probe was requested form the rental company and was delivered the following day.

Nam[redacted]

Title: Project Scientist/Site Rad Safety Lead