PROJECT COMPLETION REPORT
AND
REQUEST FOR APPROVAL OF UNRESTRICTED USE DESIGNATION

AAR CORPORATION
12633 INKSTER ROAD, LIVONIA, MI 48150

WESTERN PARCEL
STRATEGIC WASTE EXCAVATION
AND SITE RESTORATION PROJECT

May 18, 2015 Revision 1

AAR CORPORATION PROJECT COMPLETION REPORT

1.0 SUMMARY

On 7 August 2013 AAR Corporation submitted "Remedial Work Plan, Revision 1" to the United States Nuclear Regulatory Commission (USNRC), seeking approval for the excavation and disposal of radiologically-contaminated soil and subsequent site restoration activities at 12633 Inkster Road, Livonia, MI 48150. On 30 October 2013 AAR Corporation submitted an "Amendment to the Remedial Work Plan" that addressed issues attendant to the original submittal.

Having completed its review on 30 December 2013 the USNRC issued its letter of approval of the Remedial Work Plan as amended. Included therewith was the USNRC's Safety Evaluation Report, concluding that the AAR Work Plan was consistent with applicable NRC criteria and guidance, that the EQ Wayne Disposal facility in Belleville, MI was considered acceptable for disposal of the radiologically-contaminated soil and accumulated surface debris, and that the mixing of homogeneous waste streams was within the guidance provided in NUREG-1757 and, therefore, acceptable as well. While the NRC approved disposal of mulched brush and trees at Sauk Trail Hills solid waste landfill, Republic Services attempted to impose unworkable restrictions on its acceptance; thus, it was decided that this material would be disposed of at the EQ Wayne Disposal facility as well.

Anticipating approval of its Remedial Work Plan, on 1 November 2013 AAR Corp enlisted the services of Solutient Technologies, LLC, North Canton, OH, an Ohio Radioactive Materials licensee, to perform the site work in conformity with the Work Plan once approved.

Solutient submitted separate waste profiles to EQ for (1) TENORM Contaminated Soils and (2) Site Debris. Having completed its review of waste profile forms, the Radioactive Waste Generator Certification Form, the Remedial Work Plan, and the NRC's Safety Evaluation Report, the State of Michigan, on 10 March 2014, notified EQ of its determination that the material could be disposed of at the Wayne Disposal facility, Belleville, MI. On 8 April 2014 Solutient received EQ waste approvals for both the TENORM contaminated soils and Site Debris.

On 4 November 2013 Solutient requested that the State of Michigan reactivate the MDEQ Site Identification Number, MID980792212, for use on all manifest documents and related paperwork. MDEQ reinstated the site ID Number on that same date.

On 31 March 2014 Solutient submitted a Soil Erosion and Sediment Control Application to the City of Livonia. The SESC permit was issued on 14 April 2014.

On 21 Apri1 2014 Solutient applied to the NRC Region III for reciprocity inclusive of the dates 5 May 2014 to 1 August 2014. Approval of same was received on 22 April 2014. On 4 August 2014 Solutient informed the NRC Region III that the project had been completed effective 1 August 2014.

Solutient initiated mobilization and site preparation on 29 April 2014. Site clearing and chipping of trees and scrub brush began on 5 May 2014. Consolidation of site debris led to the initial shipment of same on 12 May 2014. Shipment of site soils began on 2 June 2014 and ended on 25 July 2014.

Sampling in the 12 meter layer began in Grid 94 on 4 June 2014 and ended in Grid 98 on 28 July 2014.

In all, Solutient shipped to EQ's Wayne Disposal facility a total of 7,349.19 tons of TENORM Contaminated Soil and 236 cubic yards of site debris, with a Thorium 232 average activity of 8.21 pCi/g.

2.0 BACKGROUND

A. Operational

In documents issued by the NRC relative to historical operations conducted at the former Brooks & Perkins facility at 12633 Inkster Road, Livonia, MI, it is noted that in 1957 the ABC issued license number D-547, which was, in August 1961, superseded by license number STB-0362. Said license authorized the possession of up to 15,000 pounds of thorium as contained in 40% thorium master alloy and thorium-magnesium alloy containing not more than 3% thorium. Licensed activities included the rolling, melting, casting, forming, cutting, sanding and welding of manufactured products containing licensed source material.

In 1965 Brooks & Perkins was cited for incineration of approximately 60 pounds of thorium waste per month, consisting primarily of floor sweepings. At the time of discovery, said licensee could produce no definitive records indicating the disposition of the incinerated waste. Apparently Brooks & Perkins was able to add the process of controlled incineration of thorium-bearing waste to their license, with a 1967 letter referencing the burning/burial of ash residue on plant property. Said practice is thought to have continued until license termination in 1981. AAR Corp subsequently acquired the assets of the former Brooks & Perkins, including the property located at 12633 Inkster Road, Livonia, MI.

The NRC conducted a review of terminated license files utilizing ORNL to conduct said evaluations. As a result, the former Brooks & Perkins site was, based on deficiencies discovered in the retired license file, subjected to closer scrutiny. Said site was added to the Site Decommissioning Management Plan (SDMP) in 1994 following an NRC inspection that concluded that thorium was improperly disposed of at the site and that certain areas of the building and grounds were in excess of the NRC release criteria for release of the facility for unrestricted use.

While operations have ceased at this location, AAR Corp continues to take a proactive approach to remediation of the site.

B. Decommissioning

The 12633 Inkster Road, Livonia, MI property, which is the subject of this Remedial Work Plan (RWP), was formerly owned by Brooks and Perkins, Inc., who conducted licensed activities involving radioactive thorium materials under Atomic Energy Commission (AEC) source materials license No. STB-0362. Brooks and Perkins terminated their license on 17 May 1981.AAR Corporation subsequently purchased the assets of the former Brooks and Perkins, including the property located at 12633 Inkster Road.

Since 1996, AAR Corporation has maintained a proactive approach in negotiations with the NRC regarding remediation of the site. In November 2002, AAR submitted to the USNRC a plan calling for the unrestricted release and use of the eastern portion of the property and for restricted use of the western portion to include a restrictive covenant. Subsequently, the property was legally divided into the Eastern Parcel and the Western Parcel, 12633 Inkster Road, Livonia, MI.

In 2006 AAR Corporation enlisted Partners Environmental Consulting to prepare and submit to the USNRC a Revised Dose Assessment and Work Plan. Said document was dated 7 August 2006. A Remedial Work Plan, authored by Energy Solutions, was submitted for review on 14 November 2006.

In a letter dated 27 October 2006 the NRC determined that the revised probabilistic dose analysis for the site demonstrated that, contingent upon implementation of the Remedial Work Plan of August 2006, the Eastern Parcel of the site would meet the dose criteria for unrestricted use, per the License Termination Rule (LTR) (10 CFR Part 20, Subpart E). The Western Parcel was deemed to meet the dose criteria for restricted release.

Site remediation activities began in November 2006. A total of six (6) $100m^2$ grids of soil in an open land area were excavated to a depth of one (1) meter, loaded out, transported and disposed. Two (2) of the $100m^2$ grids were within the Eastern Parcel and four (4) of the $100m^2$ grids were within the area designated as the Western Parcel. Excavation cavities were backfilled with clean imported soils. This remedial action was successfully carried out, as evidenced in the Final Site Remediation Report authored by Partners Environmental in April 2007.

In September 2010, the NRC and its consultant performed a radiological survey of the CSXT parcel that runs parallel and contiguous to the southern boundary of the AAR Corporation property. In June 2011 the NRC released its Technical Evaluation Report regarding the radiological status of the contiguous CSXT right-of-way. NRC staff concluded that the CSXT property meets the criteria for unrestricted use and that this parcel requires no additional soil remediation or cleanup.

In August of 2013, AAR submitted the Remedial Work Plan, Revision 1, calling for the excavation of twenty-nine (29) l0m X 10m x 1m grids and three (3) 10m X 5m X 1m grids in a portion of the property referred to and delineated as the Western Parcel. The purpose of this strategic waste excavation, soils management and site restoration plan was to obtain from the NRC an "unrestricted use" designation for said parcel. It is anticipated that use of the site will remain consistent with its current use and that of the neighboring properties (i.e. commercial, light industrial, warehousing, trucking).

On 30 December 2013 the NRC issued its remedial Work Plan letter of approval and Safety Evaluation Report in which the NRC stated that "the NRC staff concludes that the AAR Work Plan is consistent with applicable NRC criteria and guidance. The staff has no objection to AAR proceeding with the remediation as described in the work Plan".

3.0 WORK PLAN IMPLEMENTATION

A. Objectives

1. Primary Objective

The primary objective for the AAR Western Parcel Strategic Waste Excavation and Site Restoration project is to obtain from the NRC an "unrestricted use" designation for the Western Parcel of the property located at 12633 Inkster Road, Livonia, MI 48150.

2. Secondary Objectives

(a) Strategic Waste Excavation

Excavating soils in conformity with those pre-established grids identified in Section 3.1 of the Work Plan

(b) Sampling and Gamma Spectroscopy in the 1-2 Meter Layer

Evidencing that the soils in the 1-2 meter zone within the pre-established grids meet the proposed $DCLG_W$ for the 1-2 meter layer

(c) Soils Management

Managing soils, including blending of high-activity with low-activity materials, in order to meet the disposal facility Waste Acceptance Criteria (WAC)

(d) Site Restoration

Maintaining existing ecology to as great an extent as possible, while incorporating clean fill material to bring grid excavations to pre-existing grade.

B. Release Criteria

Regulatory Guidelines and Release Criteria were identified in Section 3 of the Remedial Work Plan, a copy of which is attached hereto.

C. Chronological Summary of Work Performed

1. Summary of Site Preparation Activities

In July of 2013 Solutient employed the services of AMBIT Land Surveyors (formerly Milletics and Associates, Plymouth, MI), who, in 2006 had performed the grid layout that established the Eastern and Western Parcels at 12633 Inkster Road, Livonia, MI. AMBIT delineated the outer boundaries of the Western Parcel in preparation for clearing and grubbing and for purposes of establishing the exclusion zone, transition zone, haul road locations, equipment staging area and backfill material stockpile area.

In December of 2013 AMBIT performed the initial site surveying work and engineering necessary to submit the Soil Erosion and Sediment Control Plan to the City of Livonia. In March of 2014 AMBIT completed the SESCP documentation that caused the City of Livonia to issue said permit on 14 April 2014.

During the week of 27 April 2014 Solutient (1) set up the instrumentation room and the laboratory, and the multi-channel analyzer (MCA), (2) installed perimeter "Radioactive Materials" signage along the southern, western and northern property boundaries, as well as rad rope and signage to designate the control zone and the transition zone, (3) installed silt fence per SESCP engineering design, (4) performed radiological surveys of incoming heavy equipment, (5) constructed the out-bound truck "mud pad", and (6) laid out the north and south haul roads.

During the week of 4 May 2014 Solutient (1) consolidated surface debris, (2) cleared the control zone of immature trees and scrub brush, (3) performed radiological surveys of incoming roll-off boxes to be used for load out of surface debris, (4) supervised AMBIT as they performed GPS delineation and pinning of the 10m X 10m grids within the Western Parcel, and (5) installed perched water observation wells to a depth of 1 meter in grids 73, 159, 186 and 282.

During the week of 11 May 2014 Solutient experienced rain events that precluded our initiating grid excavations. We did, however, (1) dispose of roll-off boxes of surface debris, (2)placed 1X3 limestone on designated haul roads, (3) installed excavated trenches to a depth of 1 meter on a line extending from (a) the southwestern boundary of grid 98 to the northwestern boundary of grid 247, (b) the southeastern boundary of grid 285 to the northeastern boundary of grid 315, (c) the northeastern boundary of grid 187 to the northeastern boundary of grid 190, (d) the northeastern boundary of grid 123 to the northeastern boundary of grid 126, and (4) built distinct stockpiles of 1X3 and 21AA stone for later use as backfill material.

During the week of 18 May 2014 the job was shut down due to extensive and severe rain events. During the week of 25 May 2014 Solutient (1) began the process of site dewatering, including establishing a holding pond in grid 189 and ordering a 21,000 gallon holding tank, pump and hoses as a precautionary measure, (2) installed sumps in trenches, (3) continued stockpiling backfill material, and (4) disposed of surface debris.

2. Summary of Work

A daily accounting of the progression of remediation work is as follows:

6-2-14
Trenched western boundary of grids 266 and 284
Concurrently dewatered and excavated grid 94
Loaded, transported, disposed of grid 94 soils
6-3-14
Dewatered grid 94 and trench contiguous to grid 122
Loaded, transported, disposed of grid 122 soils
Region III NRC and ORISE imposed new soils sampling and manifesting procedures
Encountered buried drums, bollards, refractory brick, concrete foundations, pallet wood

6-4-14
Dewatered grid 94
Obtained 1-2 meter samples in grid 94
Dewatered grid 122 and main north/south trench
Loaded, transported disposed of grid 122 soils
Prepared to excavate grid 156
6-5-14
Dewatered grids 122, 156 and main north/south trench
Loaded one truck prior to EQ imposing hold on further shipments
Dumped contents of truck back into grid 156
Stopped job until further notice
6-6-14
Dewatered grids 122 and 156
Obtained 1-2 meter samples in grid 122
Sent e-mail to State of Michigan, EQ, AAR requesting they attend a meeting at the Livonia site on 6-10-14 to review progress to date and impact of EQ imposed directives
(a) 24-hour notice prior to shipping Class 7 material
(b) No acceptance of trailer-loads of material exhibiting > 19.5 pCi/g
(c) No blending of site soils permitted
Demobilized
6-9-14
Performed analytical on 1-2 meter samples from grids 94 and 122
Dumped previously loaded truck that exhibited 30 pCi/g on surface of grid 216
Finalized arrangements for 6-10-14 meeting
6-10-11
Meeting with State of Michigan, EQ, and AAR the results of which were:
(a) No 24-hour notice of Class 7 shipments; call prior to truck leaving site
(b) Accept truckloads of soils exhibiting < 55 pCi/g Th-232, but average over all Shipments cannot exceed 19.5 pCi/g Th-232
(c) Permit blending, per NRC authorization in Safety Evaluation Report
6-11-14 thru 6-13-14
Stand down
. **6-16-14**
Trenched from northeastern boundary of grid 126 to southeast boundary of grid 76, from southeast boundary of grid 126 to southwest boundary of grid 375, and from southeast boundary of grid 76 to southwest boundary of grid 370
Backfilled grids 94 and 122
Developed procedures for soils blending
6-17-14
Dewatered grid 156
Loaded, transported, disposed of ~ 200 T of soil from grid 156
Loaded out dumped material originating in grid 156
Completed backfill of grid 94
6-18-14
Stand down due to high winds and storms
Dewatered grid 156

Obtained 1-2 meter samples in grid 156 between storms

6-19-14

Dewatered grid 156 and north/south trenches
Backfilled grid 156
Loaded, transported, disposed of soils in grid 216
Encountered concrete foundation, vehicle parts, 55-gallon drums, bollards, steel I-beams in grid 216

6-20-14

Completed load out, transport, disposal of soils in grid 216
Dewatered grid 157
Dewatered grid 216
Obtained 1-2 meter samples in grid 216

6-23-14

Dewatered grid 157
Dewatered grid 216
Loaded, transported, disposed of soils in grid 157
Removed soils in quadrants 3&4 of grid 216
Obtained samples from bottom of 1-2 meter excavation in grid 216
Obtained 1-2 meter samples in grid 157

6-24-14

Dewatered grid 157
Dewatered north/south trench
Backfilled grid 216
Rained out at 1115

6-25-14

Loaded, transported, disposed of soils from grid 217
Significant rubber debris, 55-gallon drums, I-beams in excavation
Heavy traffic at landfill
Prepared mix pit to blend soils from 247,217, 187

6-26-14

Dewatered grids 217 and 158
Completed backfill of grid 157
Blended soils from grids 247, 217, 187
Obtained composite sample of blended soils to ensure landfill acceptance
Loaded, transported, disposed of soils from mix pit in grid 217
Prepared mix pit for soils in grids 123 & 124

6-27-14

Dewatered grids 189 and 158
Blended soils from grids 127, 247, 187 and from grids 123, 124, 187
Obtained composite samples of blended soils from mix pit in grids 217 and 123
Prepared remaining grid 187 soils for load out

6-30-14

Obtained 1-2 meter samples in grids 247, 217 and 187(1&2)
Prepared mix pit for soils in grids 124, 125, 158, 189
Dewatered trenches in southwest comer
Blended soils from grids 124, 125, 158, 189
Obtained composite samples of blended soils from mix pit in grid 158

Loaded, transported, disposed of soils from mix pit in grid 158
7-1-14
Dewatered grids 123, 125 and open trenches
Obtained 1-2 meter samples in grids 123, 187(3&4), 124 (1&2), 125 (1&2)
Extended north haul road
Backfilled in grids 217,247, 187
Loaded, transported and disposed of soils from grids 124 and 125
7-2-14
Dewatered remaining trenches
Obtained 1-2 meter samples in grid 125 (3&4) and 189
Loaded, transported, disposed of soils from grid 126
Prepared mix pit for five northern grids 265, 266, 283, 284, 315
7-3-14
Dewatered grid 125
Obtained 1-2 meter samples in grid 158
Demolished dog pen and concrete foundation in grid 315
Backfilled grids 123, 124 (1&2), 125
7-4-14
Holiday
7-7-14
Removed 1-2 meter soils in quadrant 1 of grid 158
Obtained sample from bottom of 1-2 meter excavation in quadrant 1 of grid 158
Backfilled grids 125 and 158(2, 3, & 4)
Loaded roll-off boxes with debris from grid 315 dog pen and foundation
Excavated remainder of grid 124 and placed atop grid 99
Obtained 1-2 meter samples in grid 124(3&4)
Size-reduced and loaded out buried concrete and rock
7-8-14
Backfilled grid 189
Loaded, transported, disposed of soils from north mix pit and grid 126
Experienced stand down due to rain event
SESCP Inspection by City of Livonia
7-9-14
Dewatered grid 126 and remaining trenches
Removed 1-2 meter soils in quadrant 3 of grid 157
Obtained sample from bottom of 1-2 meter excavation in quadrant 3 of grid 157
Obtained composite sample from mix pit in 265, 266, 283, 284
Loaded, transported, disposed of soils from mix pit in 265, 266, 283, 284
Loaded, transported, disposed of soils from grid 126
Created southern boundary haul road
Uncovered pockets of high-activity non-conforming waste in grid 126
Backfilled grid 158(1)
7-10-14
Dewatered grid 126 and remaining trenches
Moved material from north mix pit to grid 126 for blending
Blended material from grid 158 with soils from grid 188

Completed backfill of grid 158

7-11-14

Dewatered grid 126
Loaded, transported, disposed of blended soils from grid 126
Loaded, transported, disposed of soils from atop grid 99
Blended soils from grids 101, 368, 369

7-14-14

Loaded, transported, disposed of soils from grid 126
Obtained 1-2 meter samples in grids 265 (1&2), 283, 284
Loaded, transported, disposed of soils from mix pit in grid 101
Obtained 1-2 meter samples in grid 126
Dewatered grid 368

7-15-14

Loaded, transported, disposed of soils from grids 98 and 99
Obtained 1-2 meter samples from grid 99
Backfilled grid 99
Loaded, transported, disposed of soils from mix pit in grid 101
Loaded, transported, disposed of soils from grid 370
Backfilled grid 126
Backfilled grids 283,284

7-16-14

Obtained 1-2 meter samples in grids 101 and 368(2&4)
Backfilled grids 101, 368(2&4) and 99
Loaded, transported and disposed of soils from grids 265, 266, 370
Discovered asbestos in grid 370

7-17-14

Loaded, transported, disposed of soils from grids 370, 266, 188

7-18-14

Obtained 1-2 meter samples in grids 265(3&4), 266
Backfilled grids 265, 266, 283, 284
Loaded, transported, disposed of soils from grids 370, 188 and 76

7-21-14

Loaded, transported, disposed of soils from grids 188, 76, 368, 375, 75 and 37
Size-reduced and shipped two loads of concrete and stone originating in excavations

7-22-14

Obtained 1-2 meter samples in grids 370, 76, 188
Backfilled grids 370, 76, 188
Loaded, transported and disposed of soils from grids 368, 369
Loaded, transported, disposed of soils from grids 37 and 75
Trammed soils from grid 315 to blend with soils in grid 75
Moved material from grid 369 to blend with soils in grid 75

7-23-14

Obtained 1-2 meter samples in grids 37, 75, 369
Loaded, transported, disposed of soils from grids 368 and mix pit grid 74

7-24-14

Loaded, transported, disposed of soils from grids 74, 36, 98, 368 and 375

Obtained 1-2 meter samples in grids 74, 36, 368 and 375
Backfilled in grids 74, 36, 368 and 375
7-25-14
Loaded, transported, disposed of soils from grids 98 and 315
Size-reduced, loaded disposed of concrete and stone from excavations
Obtained 1-2 meter samples in grids 98 and 315
7-28-14
Backfilled grids 98 and 315
Supervised GPS survey by Ambit
Loaded roll-off box of site debris
7-29-14
Completed backfilling and grading operations
Shipped final cooler of 1-2 meter samples to ORISE
7-30-14
ORISE discovered elevated levels in grid 72
Solutient obtained 5-gallon bucket sample of material in grid 72 and obtained GS analysis to ensure the 5-gallon bucket of waste met the EQ WAC

(ii)(1) Certain Work Issues Addressed

- Dewatering

During site reconnaissance prior to inception of the project, the presence of vegetation associated with a shallow water table indicated to Solutient the probability that we would encounter high-moisture soils and/or perched water during site excavation work, potentially creating the need to stockpile soils for natural decanting.

Due to a series of weather events, it was decided to install four (4) perched water observation wells to a depth of 1 meter. This was done to: (1) gauge the depth to water in specific areas of the Western Parcel, (2) determine the optimal location for a series of 18"W X 39"D trenches to allow soils to shed perched water and (3) assist in redesigning the sequence of grid excavations should such weather events persist.

As noted in the above chronology, on or about 10 June 2014 it was decided to bring on board a 21,000 gallon portable storage tank, pump and hoses as a contingency if trenching proved inadequate. We were able to control dewatering as noted in the chronology, without the need for using the portable storage tank.

- Blending of High-activity and Lower-activity Soils to Achieve EQ's Waste Acceptance Criteria

The potential need to blend soils on-site was identified in Section 2.2(B)(2) of the Remedial Work Plan. Potential became reality following our 10 June 2014 meeting at the AAR Livonia site with The State of Michigan and EQ. The establishment of a limit of < 55 pCi/g per shipment for soils shipped to EQ and the establishment of a maximum average of 19.5 pCi/g over the total project drove the decision to initiate soils blending.

Thus, a written procedure was established that addressed (1) identification of materials suitable for blending, (2) blending parameters, (3) sampling procedures, and (4) dealing with exceedances. The above chronology describes the location of mix pits and the origin of soils blended in those mix pits.

- Sub-surface Debris

Historical documents suggested the probability of encountering decaying drums of ash within the excavations.

As early on as trenching parallel to the eastern border of the Western Parcel and excavating in grid 94, it became readily apparent that the Western Parcel was the site of indiscriminant dumping/burial of voluminous debris, including pallets, rubber hose, steel cable, steel I-beams, bollards, concrete-encased mixer shafts and blades, large steel-encased concrete anchors, concrete foundation block, refractory brick, vehicle parts, sheets of crumpled aluminum, culvert pipe, asbestos, magnesium alloy dross and the like.

Then, on 9 July 2014 we encountered numerous high-activity agglomerated "rocks" of a deep blue color and a volume of loosely consolidated white powder, primarily of low activity. This caused us to contact the USNRC for guidance on the handling of same. It was concluded that the rocks were probably furnace slag and that the white material was probably a calcium-containing raw material. Attempting to avoid the creation of a waste stream that would necessitate disposal at a licensed radioactivity landfill, Solutient instructed the equipment operators to crush the material in the excavation and mix the resultant material with contiguous soils, after which additional blending would take place, along with sampling as appropriate.

(ii)(2) Changes to or Deviations From the Remedial Work Plan

During a site inspection conducted by USNRC, Region III NRC and ORISE on 3 and 4 June 2014, it was determined that the following procedures would be implemented:

a. Michigan Gravel Trains, consisting of a tractor, a lead trailer and a tag trailer could not be considered as one conveyance and that the contents of each trailer must be sampled and manifested independently.
b. Sampling procedures, as identified in Attachment 1, would be implemented
c. Full-depth sampling in the 1-2 meter zone would be done with an auger capable of generating sufficient sample material that could be split between Solutient and ORISE. ORISE assisted Solutient technicians in developing a program which would identify a random sample location within each of the four quadrants in each excavated grid.

Attachment 2 provides the sample results for each trailer load of soils transported to EQ and provides a running average concentration for same.

(ii)(3) Grids/Quadrants Excavated to a Depth of Two Meters

During grid excavations early on, such as grid 216, historical site data specific to the 1-2 meter zone verses actual sample results from the 1-2 meter zone reduced our confidence level in being able to achieve a final average concentration limit of < 20 pCi/g.

Therefore, when we encountered what we considered to be an elevated sample result in the 1-2 meter zone, we took a proactive approach and removed soils within the affected quadrant. This resulted in excavation to a depth of two meters in the following:

Grid 158, quadrant 1

Grid 216, quadrants 3 and 4

Attachment 7 provides the results of sampling in the 1-2 meter zone and incorporates the results of samples taken at 2 meters following excavation to that depth in grids 158 and 216.

4.0 CONCLUSIONS

The following conclusions apply to this project:

A. Solutient deviated from the Remedial Work Plan only as directed by USNRC and/or Region III NRC and/or ORISE, acting on behalf of the USNRC with two exceptions, which were: (l) the implementation of observation wells, trenching and dewatering procedures designed to allow the project to proceed, and (2) the excavation to a depth of two (2) meters in certain quadrants of Grids 158 and 216.

B. Sampling procedures were conducted with strict conformity to those procedures introduced or approved by the USNRC and/or Region III NRC and/or ORISE, acting on behalf of the USNRC.

C. Truck load out and manifesting procedures were performed in strict conformity with MDOT regulations and EQ Waste Acceptance Criteria.

D. Soil sample results support having achieved per load concentrations of < 55 pCi/g Th-232.

E. Soil sample results support having achieved a disposal project average concentration of < 19.5 pCi/g Th-232.

F. Sample results in the 1-2 meter zone support having achieved an average concentration of < 20 pCi/g total thorium.

The goals of the project having been met, AAR is positioned to receive from the USNRC an "unrestricted use" designation for the Western Parcel of the property located at 12633 Inkster Road, Livonia, MI.

Attachment 1	Remedial Work Plan Section 3.0 “Regulatory Guidelines/Release Criteria”
Attachment 2	Gamma Spectrometry Daily Operating Procedure
Attachment 3	Soils Blending to Achieve Waste Acceptance Criteria
Attachment 4	Summary of Waste Manifests Evidencing Having Achieved WAC
Attachment 5	Procedures for Drying Samples Preparatory to Gamma Spectrometric Analysis
Attachment 6	Data Entry Procedure and Calculation Formulas for Table 7-1
Attachment 7	Results for 1-2 Meter Per Sample and Overall Average Concentration
Attachment 8	Random Locations of the 1-2 Meter Soil Samples for Each Grid/Quadrant
Attachment 9	Gamma Spectroscopy Results for 1-2 Meter Grid Samples
Attachment 10	Site Photos

ATTACHMENT #1

Remedial Work Plan Section 3.0
"Regulatory Guidelines/Release Criteria"

3.0 REGULATORY GUIDELINES/RELEASE CRITERIA

3.1 REVISED PROBABALISTIC DOSE ANALYSIS/ BASIS FOR UNRESTRICTED RELEASE

The License Termination Rule (LTR), 10 CFR 20, Subpart E, states that a site will be considered acceptable for unrestricted use if the residual radioactivity that is distinguishable from background radiation results in a TEDE to an average member of the critical group that does not exceed 25 mrem (0.25 mSv) per year, including that from groundwater sources of drinking water, and the residual radioactivity has been reduced to levels that are as low as reasonably achievable (ALARA). ...

In a letter dated, October 27, 2006, the NRC stated that that the radiological analysis submitted by AAR demonstrates that it fulfilled the dose requirement of the LTR for unrestricted release of the eastern parcel of the site, contingent on the completion of the remedial action. Remedial activities were completed in January, 2007 and a final report submitted to the NRC in April, 2007.

The radiological analysis previously submitted and approved by the NRC was used to evaluate what further soil removal from the western and eastern parcels would be required to reduce the radiation dose consistent with the LTR for unrestricted release of the entire site. The probabilistic dose assessment yielded a dose source ratio (DSR) for the resident farmer scenario of 2.4 mrem/year per pCi/g, assuming a 10,000 m2 "area of contaminated zone" and a 2 m "depth of contaminated zone." A 10,000 m2 contaminated zone was used because it is the value recommended by the NRC for the AAR dose assessment. Based on the calculated DSR, the average thorium concentration in the site soils must be ≤ 10 pCi/g to meet the limit established in LTR for unrestricted release.

Excavating the soil and replacing it with uncontaminated material from the 32 grids listed below, results in an average concentration, in the top one meter of soil within the western most 10,000 m2 area of the site (155W to 60W) of 6 pCi/g. The specific grids recommended for removal are as follows (see Figure 3a, Site Characterization Report, Phase II of B. Koh 1999 for grid locations): 36, 37, 74, 75, 76, 94, 98, 99, 101, 122, 123, 124, 125, 126, 156, 157, 158, 187, 188, 189, 216, 217, 247, 265, 266, 283, 284, 315, 368, 369, 370, 375.

Table 3.1, shows the grids to be removed and the resulting average thorium concentration after grid removal.

3.2 EXCAVATION DEPTH

No excavation is required below a depth of one meter provided the average thorium concentration in the 1-2 meter layer does not cause the resulting dose to exceed the LTR limit for unrestricted release. At the time of maximum dose for the 0 to 1 meter layer the Dose Source Ratios are as follows: DSR (0-1 m) = 2.4 mrem/year per pCi/g and DSR (1-2 m) = 0.13 mrem/year per pCi/g. Therefore, at this time, the average concentration in the 0 to 1 meter layer of 6 pCi/g would equate to a dose rate of 14.4 mrem/year, and the average concentration in the 1 to 2 meter layer would have to be at or below 82 pCi/g for the total dose rate not to exceed the 25 mrem/year criteria.

However, at the time of the maximum dose for the 1 to 2 meter layer which occurs several hundred years later, the Dose Source Ratios are as follows: DSR (0-1 m) = 1.2 mrem/year per pCi/g and DSR (1-2 m) = 0.65 mrem/year per pCi/g. Therefore, at the time in question, the average concentration in the 0 to 1 meter layer of 6 pCi/g would equate to a dose rate of 7.2 mrem/year, and the average concentration in the 1 to 2 meter layer would have to be at or below 27 pCi/g for the total dose rate not to exceed the 25 mrem/year criteria.

3.3 REAL-TIME CONFIRMATORY SAMPLING

After excavating soil to a depth of one meter, the average concentration in the 1-2 meter level will be verified by removing and analyzing soil samples. Four samples will be removed from each 100 square meter grid as described in Site Characterization Report, Phase II, Former Brooks and Perkins, Site, Inc., Revision 0, August 1999, prepared by B.Koh and Associates. The concentration of the four grid samples will be added to the existing data for the 1-2 meter layer and a new layer average calculated. The existing data for the 1-2 meter layer is presented in the attached spreadsheet, Table 3.4.

If the average thorium concentration of an exposed grid in the 1-2 meter layer causes the average concentration in the entire 1-2 meter layer to exceed 20 pCi/g, AAR will remove the exposed grid to an appropriate depth and replace it with clean fill.

ATTACHMENT #2

Gamma Spectrometry Daily Operating Procedure

SOLUTIENT TECHNOLOGIES LLC.

GAMMA SPEC DAILY OPERATING PROCEDURE

****BEFORE USE***
LIQUID NITROGEN MUST COOL SYSTEM FOR A MINIMUM OF 24 HOURS

1.) Open gamma acquisition & analysis. (If High Voltage is already on skip step 2 & 3.)

2.) FILE > OPEN DATASOURCE
- Source: >Detector > RE1A > Open

3.) MCA > ADJUST > HVPS > ON (Let the high voltage ramp up and read ready.)

4.) Perform Daily background count and compare to the QC Chart.

5.) EDIT > SAMPLE INFO
- Sample Title : (Daily Source Check)
- Sample I.D.: (Monazite Standard)
- Collector Name: (N/A)
- Type: (Th-232 73 pCi/g)
- Sample Description: (Source Reference Material)
- Quantity: (200.3g)
- Units : (Grams)
- Sample Date: (?)
- Sample Time: (?)
- Sample Geometry: (8oz. Can)

6.) Place the "Source Reference Standard" on detector and close lid.

7.) ANALYZE > EXECUTE SEQUENCE >
- "H" DAILY QC

8.) Once the count is complete and the report prints,
- FILE > SAVE AS >: Save in proper folder designated for the project "DAILY QC".

9.) Review the report print out page "PEAK ANALYSIS REPORT". Check the lower end of the spectrum at 93.35 keV to ensure it is between 93.0 – 93.6 keV, then check the upper end of the spectrum at 911.6 keV to ensure it is between 911.2 – 911.8. Once this is verified to be correct refer to the "INTERFERENCE CORRECTED REPORT". Verify that the Ac-228 activity falls within 2 pCi/g -/+ of the known activity of 73.0 pCi/g Th-232 Source Reference Standard.

10.) Once the system is determined to be in proper operating parameters the samples then can be analyzed. Return the "Source Reference Standard" to its storage area.

11.) Samples will be collected per the AAR Livonia Sampling Protocols submittal. The amount of material placed in the sample container will be as close to 200.3 grams as possible. The samples shall be representative of the material being analyzed. Large stones, sticks or other debris which can affect a homogenous sample will be removed. Once the desired weight is obtained, a lid will be secured on the sample can and it will be labeled using the site labeling protocol.

The analysis sequence is described below.

12.) EDIT > SAMPLE INFO
- Sample Title : (PROJECT)
- Sample I.D.: (NOMENCLATURE)
- Sample Description: (GRID I.D. & DEPTH)
- Collector Name: (?)
- Type: (SOIL)
- Quantity: (200.3g)
- Units : (Grams)
- Sample Date: (?)
- Sample Time: (?)
- Sample Geometry: (8oz. Can)

13.) Place the next sample for analysis on the detector and close lid.

14.) ANALYZE > EXECUTE SEQUENCE > (Count times may vary based on activities.)
- "I" Soil W MDA 1 Hour
- "J" Soil W MDA 30 Min.

15.) Once the count is complete and the report prints,
- FILE > SAVE AS >: Save in proper folder designated for the project analytical data

16.) Refer to the report print out "INTERFERENCE CORRECTED REPORT"
- Review and determine if the activity pCi/g concentration in the sample is over the DCGL set for the site remediation.
- The data should then be transferred to an Excel spreadsheet archiving the activity levels of each isotope of concern in the sample.

17.) Return to step # (10.) for the next sample analysis count.

ATTACHMENT #3

Soils Blending to Achieve Waste Acceptance Criteria

SOILS BLENDING TO ACHIEVE WASTE ACCEPTANCE CRITERIA

The following procedures were developed to ensure, to as great an extent as practicable, that on-site blending of Thorium-contaminated soils produces material that, when sampled via Gamma Spectroscopy, meets DOT criteria of <27.5 pCi/g and WAC criteria of <54 pCi/g.

IDENTIFICATION OF MATERIALS SUITABLE FOR BLENDING

Solutient utilized the 1999 site characterization data contained in a schematic entitled "AAR Project Site, 0-1 Meter Increment Soil Sample Results Total Thorium (pCi/g" to identify those grids/quadrants of highest activity and those grids/quadrants exhibiting relatively low levels of activity that suggest their candidacy for blending to achieve the criteria identified above.

Additionally, Solutient utilized simplistic arithmetic calculations of activities and soil volumes to determine what combination of same will provide the desired results. An example of same is as follows:

> Soils in Grid 158 will be manipulated, excavated and loaded out, thereby creating a "mix pit". Soils from Grids 189 and 125 will be blended as follows:
>
> 189 (3+4) + 125 (1x.5+2) = 41.98 pCi/g
> 189 (1+2) + 125 (1X.5+3+4) = 43.39 pCi/g

BLENDING PARAMETERS

All blending operations will be conducted within a "mix pit" that results from the excavation to a depth of 1 (one) meter and the load-out of these soils originating in those grids/quadrants previously identified for removal. Mix pits will be located in or contiguous to those grids exhibiting the highest levels of activity. The attached schematic provides an example of same.

There will be no tramming of highest-activity soils. When required, a specific volume of low-activity soils may be trammed to a mix pit to affect blending to achieve the acceptance criteria. This, however, represents an exception to the proposed methodology that calls for blending of materials that exist within contiguous grids.

One or more excavators will load the mix pit with previously-identified soils. Mixing buckets with teeth will be utilized to mix the soils within the confines of the mix pit. The volume of material and the extent of mixing that takes place will be determined by the current site manager.

Once sufficient mixing has been completed, the blended material will be available for sampling.

SAMPLING

Solutient is currently utilizing sampling procedures that call for the following:

- When loading Michigan Gravel Trains with soil, each trailer is sampled and the resultant sample analyzed independent of the other
- Every fifth excavator bucket of soil is dumped in the excavation for purposes of improved mixing. This bucket load of material is once again retrieved and positioned so that the sampler can access the material for sampling purposes.
- A beaker of soil will be extracted from every fifth bucket of soil and placed in a five-gallon bucket
- A beaker of soil will also be extracted from the last bucket of material to be loaded into the conveyance and said material placed in the five-gallon bucket
- On average the lead trailer will accommodate 20-23 buckets of soil and the tag trailer will accommodate 15-17 buckets of soil
- Soils in the five-gallon bucket will be reasonably homogenized
- A sample will be loaded into a Zip-Lock plastic bag, properly identified, and transported to the on-site laboratory for preparation and analysis via Gamma Spectroscopy
- Resultant analytical data determines DOT shipping status and achievement of the WAC

Sampling of blended soils calls for the following:

- A series of grab samples will be extracted from the pile of blended soils corresponding to the number of samples that would have resulted from loading a conveyance.
- Grab samples will be placed in a five-gallon bucket and composited
- A sample will be loaded into a Zip-Lock plastic bag, properly identified, and transported to the on-site laboratory for preparation and analysis via Gamma Spectroscopy.

NOTE: This procedure does not replace the load-out sampling procedures currently in place, but will be used to corroborate achievement of the DOT and WAC criteria and reduce the probability for the need to dump loaded exceedence soils for re-blending.

DEALING WITH EXCEEDENCES

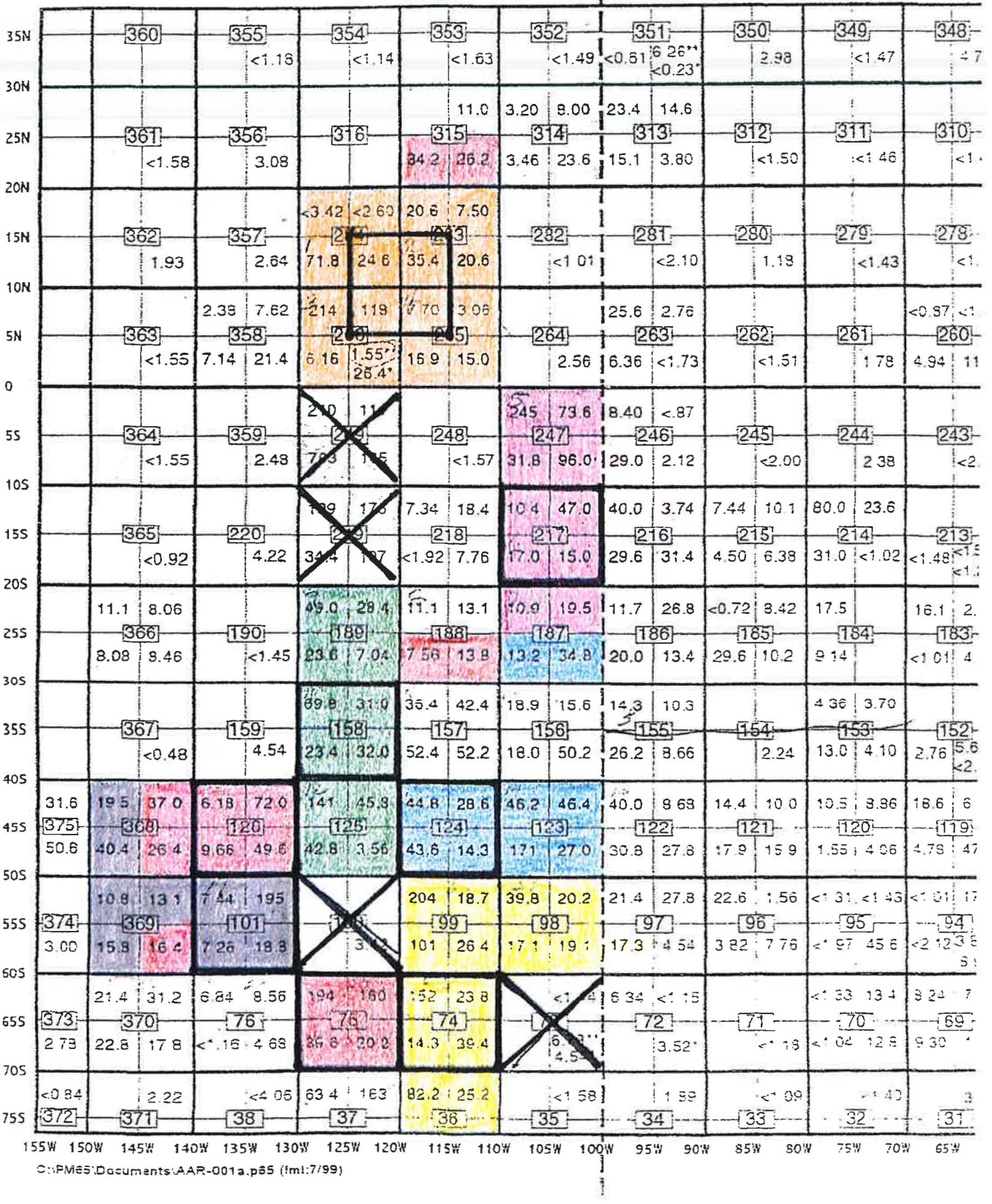
Should sampling of in-place blended soils identify an exceedence, additional in-place blending will be performed utilizing pre-qualified low-activity soils, followed by additional sampling as appropriate.

Should sampling of soils during load-out identify an exceedence, loaded soils will be returned to the mix pit for additional in-place blending utilizing pre-qualified low-activity soils, followed by additional sampling as appropriate.

Figure 3a

AAR I
0-1 METER INCREM
TOTAL

Left Portion of Site



C:\PM65\Documents\AAR-001a.p65 (fml:7/99)

Solutient Technologies, LLC

ATTACHMENT #4

Summary of Waste Manifests Evidencing Having Achieved WAC

Manifest Number	Date	Truck number	Trailer number	Grid	Est weight	Material	Activity pCi/g
79804	5/12/2014				40000	debris	1
79805	5/12/2014				40000	debris	1
79806	5/12/2014				40000	debris	1
79807	5/12/2014				40000	debris	1
79808	5/12/2014				40000	debris	1
79809	5/13/2014				40000	debris	1
79810	5/29/2014				40000	debris	1
79816	6/2/2014	132	32A &B	94	110000	soil	5
79817	6/2/2014	131	33A & 33B	94	104000	Soil	5
79818	6/2/2014	132	198 & 199	94	104000	soil	5
79819	6/2/2014	109	31A & 31B	94	102000	soil	5
79820	6/3/2014	131	33A & 33B	122	104000	soil	10
79821	6/3/2014	132	198 & 199	122	106000	soil	14.46
79822	6/4/2014	132	198 & 199	122	104000	soil	12.92
79823	6/4/2014	131	1 & 2	122	100000	soil	4.1
60514	6/5/2014	131	1 & 2	156	100000	soil	16.24
1	6/17/2014	132	29A	156	61500	soil	22.55
2		132	29B	156	44800	soil	11.36
3	6/17/2014	131	1	156	61500	soil	12.38
4		131	2	156	44800	soil	4.98
5	6/17/2014	132	29A	156	61500	soil	17.69
6		132	29B	156	44800	soil	16.77
7	6/17/2014	131	1	156	61500	soil	3.1
8		131	2	156	44800	soil	15.27
1	6/19/2014	132	29A	156 / 216	61500	soil	6.5
2		132	29B	216	44800	soil	4.57
3	6/19/2014	109	1	216	61500	soil	9.1
4		109	2	216	44800	soil	7.95
5	6/19/2014	132	29A	216	61500	soil	4.35
6		132	29B	216	44800	soil	6.63
7	6/19/2014	109	1	216	61500	soil	2.94
8		109	2	216	44800	soil	6.54
1	6/20/2014	132	29A	216	61500	soil	1.15
2		132	29B	216	44800	soil	0.91
3	6/20/2014	109	1	157	61500	soil	7.48
4		109	2	157	44800	soil	14.81
5	6/20/2014	132	29A	157	61500	soil	7.67
6		132	29B	157	44800	soil	6.44
7	6/20/2014	109	1	157	61500	soil	8.53
8		109	2	157	44800	soil	9.83
1	6/23/2014	109	1	157	61500	soil	4.63
2		109	2	157	44800	soil	18.85
3	6/23/2014	142	29A	123	61500	soil	13.39
4		142	29B	123	44800	soil	16.24
5	6/23/2014	109	1	216	61500	soil	7.9
6		109	2	216	44800	soil	15.92
7	6/23/2014	142	29A	216	61500	soil	13.38
8		142	29B	216	44800	soil	14.01
1	6/24/2014	109	1	216	61500	soil	6.67
2		109	2	217/247	44800	soil	3.39
1	6/25/2014	109	1	157	61500	soil	3.89
3		109	2	123	44800	soil	11.02
2	6/25/2014	132	29A	217-247	61500	soil	16.7
4		132	29B	217-247	44800	soil	13.93
5	6/25/2014	132	29A	217/247	61500	soil	24.89
7		132	29B	123	44800	soil	19.75
6	6/25/2014	109	1	123	61500	soil	12.51
8		109	2	123/124	44800	soil	10.28
1	6/26/2014	132	29A	217	61500	soil	35.96
7		132	29B	127-247	44800	soil	8.56
2	6/26/2014	109	1	217	61500	soil	11.73
4		109	2	124	44800	soil	9.37
5	6/26/2014	142	9	124	61500	soil	7.08
6		142	10	124-189	44800	soil	2.43

Manifest Number	Date	Truck number	Trailer number	Grid	Est weight	Material	Activity pCi/g
9	6/26/2014	109	1	217-247	61500	soil	12.11
10		109	2	214-247	44800	soil	11.39
11	6/26/2014	142	9	189	61500	soil	2.86
12		142	10	189	44800	soil	9.95
13	6/26/2014	132	29A	158	61500	soil	21.61
14		132	29B	156	44800	soil	11.77
1	6/27/2014	142	9	217-247-187	61500	soil	18.02
3		142	10	158	44800	soil	14.82
2	6/27/2014	109	1	217-247-187	61500	soil	13.51
4		109	2	158	44800	soil	21.6
5	6/27/2014	126	29A	158	61500	soil	10.89
6		126	29B	158	44800	soil	12
9	6/27/2014	126	29A	158	61500	soil	17.25
10		126	29B	158-189	44800	soil	5.37
11	6/27/2014	142	9	127-247-187	61500	soil	26.54
12		142	10	127-247-187	44800	soil	17.22
13	6/27/2014	109	1	217-247-187	61500	soil	12.59
14		109	2	127-247-187	44800	soil	14.23
1	6/30/2014	109	1	123-124-158	61500	soil	19.45
2		109	2	123-124-158	44800	soil	15.19
3	6/30/2014	142	9	247-217-187	61500	soil	18.66
4		142	10	247-217-187	44800	soil	9.44
8	6/30/2014	109	1	123-124-158	61500	soil	18.66
9		109	2	123-124-158	44800	soil	18.48
5	6/30/2014	132	29A	127-247-187	61500	soil	7.08
6		132	29B	127-247-187	44800	soil	6.54
10	6/30/2014	142	9	187	61500	soil	8.18
11		142	10	187	44800	soil	15.29
12	6/30/2014	132	29A	187	61500	soil	3.15
13		132	29B	187	44800	soil	4.48
1	7/1/2014	109	1	187	61500	soil	4.64
3		109	2	187	44800	soil	4.08
2	7/1/2014	132	29A	189-125	61500	soil	17.89
4		132	29B	189-125	44800	soil	14.54
5	7/1/2014	131	9	189-125	61500	soil	20.81
6		131	10	187	44800	soil	5.94
7	7/1/2014	109	1	189-125	61500	soil	12.39
8		109	2	189-125	44800	soil	12.21
9	7/1/2014	132	29A	189-125	61500	soil	17.5
10		132	29B	189-125	44800	soil	8.52
11	7/1/2014	131	9	189-125	61500	soil	11.58
12		131	10	189-125	44800	soil	13.46
1	7/2/2014	109	1	125	61500	soil	48.76
2		109	2	125-189	44800	soil	13.83
3	7/2/2014	131	9	125	61500	soil	19.92
4		131	10	125-189	44800	soil	6.53
5	7/2/2014	109	1	125	61500	soil	19.07
6		109	2	265-6 283-4	44800	soil	6.44
7	7/2/2014	131	9	125	61500	soil	20.65
8		131	10	265-6 283-4	44800	soil	8.91
1	7/8/2014	132	29A	265-6 283-4	61500	soil	11.94
2		132	29B	265-6 283-4	44800	soil	7.34
3	7/8/2014	109	1	126	61500	soil	2.92
4		109	2	126	44800	soil	3.79
5	7/8/2014	132	29A	265-6 283-4	61500	soil	11.54
6		132	29B	265-6 283-4	44800	soil	10.67
8	7/8/2014	109	1	126	61500	soil	11.58
7		109	2	265-6 283-4	44800	soil	13.58
10	7/8/2014	132	29A	265-6 283-4	61500	soil	9.21
9		132	29B	126	44800	soil	10.37
4	7/9/2014	109	1	1&2	61500	soil	6.69
3		109	2	126 1&2	44800	soil	6.21
1	7/9/2014	132	9	265-6 283-4	61500	soil	8.33
2		132	10	265-6 283-4	44800	soil	7.13

Manifest Number	Date	Truck number	Trailer number	Grid	Est weight	Material	Activity pCi/g
5	7/9/2014	109	29A	265-6 283-4	61500	soil	5.04
9		109	29B	265-6 283-4	44800	soil	2.29
8	7/9/2014	132	1	265-6 283-4	61500	soil	3.01
10			2	265-6 283-4	44800	soil	5.63
11	7/9/2014		9	265-6 283-4	61500	soil	4.74
12			10	265-6 283-4	44800	soil	6.38
3	7/10/2014		29A	265-6 283-4	61500	soil	3.69
4			29b	126 2&4	44800	soil	12.6
5	7/10/2014		1	265-6 283-4	61500	soil	5.82
6			2	126 2&4	44800	soil	9.19
9	7/10/2014		9	265-6 283-4	61500	soil	4.11
10			10	265-6 283-4	44800	soil	10.14
11	7/10/2014		29a	265-6 283-4	61500	soil	7.52
12			29b	158	44800	soil	8.91
13	7/10/2014		1	265-6 283-4	61500	soil	7.71
14			2	158	44800	soil	17.32
1	7/11/2014		9	265-6 283-4	61500	soil	4.53
2			10	124	44800	soil	13.5
3	7/11/2014		29A	265-6 283-4	61500	soil	14.86
4			29B	124 & 4	44800	soil	15.03
6	7/11/2014		9	125	61500	soil	13.76
8			10	125	44800	soil	16.52
5	7/11/2014		1	265-6 283-4	61500	soil	12.46
7			2	265-6 283-4	44800	soil	11.62
10	7/11/2014		29A	265-6 283-4	61500	soil	14.2
13			29B	265-6 283-4	44800	soil	11.95
11	7/11/2014		9	368	61500	soil	3.23
12			10	368	44800	soil	7.5
1	7/14/2014		9	265-6 283-4	61500	soil	19.89
2			10	265-6 283-4	44800	soil	5.09
4	7/14/2014		29A	368	61500	soil	5.78
3			29B	368	44800	soil	8.91
5	7/14/2014		1	98-99	61500	soil	3.09
6			2	98-99	44800	soil	4.32
7	7/14/2014		9	98-99	61500	soil	10.63
8			10	98-99	44800	soil	8.32
9	7/14/2014		29A	98-99	61500	soil	7.73
10			29B	98-99	44800	soil	11.35
1	7/15/2014		1	98-99	61500	soil	9.15
2			2	98-99	44800	soil	9.32
4	7/15/2014		9	101	61500	soil	8.91
3			10	101	44800	soil	8.93
5	7/15/2014		29A	101	61500	soil	3.99
6			29B	101	44800	soil	4.32
7	7/15/2014		1	98-99	61500	soil	6.16
8			2	98-99	44800	soil	7.44
9	7/15/2014	141	29A	101	61500	soil	13.29
10		141	29B	101	44800	soil	15.2
11	7/15/2014		9	101	61500	soil	7.89
12	7/16/2014		10	101	44800	soil	16.63
1	7/16/2014		1	265-266	61500	soil	12.19
2			2	265-266	44800	soil	10.4
3	7/16/2014		29A	101	61500	soil	15.36
4			29B	101	44800	soil	14.07
5	7/16/2014		1	370	61500	soil	4.47
7			2	255-6	44800	soil	11.74
8	7/16/2014		9	370	61500	soil	0.2
6			10	265-6	44800	soil	13.96
9	7/16/2014		29A	265-6	61500	soil	11.58
10			29B	265-6	44800	soil	11.76
1	7/17/2014		1	265-6	61500	soil	13.53
2			2	265-6	44800	soil	11.86
3	7/17/2014		9	370	61500	soil	3.91
4			10	370	44800	soil	3.66

Manifest Number	Date	Truck number	Trailer number	Grid	Est weight	Material	Activity pCi/g
5	7/17/2014		29A	265-6	61500	soil	19.99
6			29B	265-6	44800	soil	16.55
7	7/17/2014		11	265-6	61500	soil	27.17
8			12	265-6	44800	soil	22.76
9	7/17/2014		1	370	61500	soil	3.6
10			2	370	44800	soil	-0.073
11	7/17/2014		9	370	61500	soil	2.7
12			10	370	44800	soil	4.28
1	7/18/2014		11	370	61500	soil	-0.87
2			12	370	44800	soil	3.58
3	7/18/2014		29A	188	61500	soil	4.3
4			29B	188	44800	soil	6.57
5	7/18/2014		1	370-376	61500	soil	4.2
6			2	76	44800	soil	5.09
7	7/18/2014		9	188	61500	soil	5.88
8			10	188	44800	soil	5.5
9	7/18/2014		11	76	61500	soil	4.29
10			12	76	44800	soil	1.9
11	7/18/2014		29A	188	61500	soil	8.08
12			29B	188	44800	soil	10.33
13	7/18/2014		1	76	61500	soil	6.67
14			2	76	44800	soil	11.93
79812	7/21/2014		Bin 3	Debris		soil	1
1	7/21/2014		29A	188	61500	soil	6.19
3			29B	188	44800	soil	9.1
2	7/21/2014		1	76	61500	soil	9.27
4			2	76	44800	soil	8.28
5	7/21/2014		9	188	61500	soil	13.51
6			10	188	44800	soil	5.97
7	7/21/2014		11	75-76	61500	soil	16.26
8			12	75-76	44800	soil	10.81
79811	7/21/2014		2	Debris		soil	1
10	7/21/2014		198	188	61500	soil	7.97
12			199	188	44800	soil	7.59
11	7/21/2014		1	37-75	61500	soil	8.65
13			2	37-75	44800	soil	9.25
14	7/21/2014		29A	37-75	61500	soil	15.24
15			29B	37-75	44800	soil	11.38
16	7/21/2014		11	368-369	61500	soil	4.14
17			12	368-369	44800	soil	3.11
2	7/22/2014	109	11	369-368	61500	soil	1.37
3		109	12	369-368	44800	soil	3.72
1	7/22/2014	132	198	75-37-315	61500	soil	12.56
4		132	199	75-35-315	44800	soil	15.06
5	7/22/2014	111	29A	368-369	61500	soil	2.74
6		111	29B	368-369	44800	soil	0.57
7	7/22/2014	111	1	75-315-37	61500	soil	20.77
8		111	2	75-315-37	44800	soil	20.16
9	7/22/2014	109	11	368-375	61500	soil	4.37
10		109	12	368-375	44800	soil	4.84
11	7/22/2014	132	198	75-369	61500	soil	10.81
12		132	199	75-369	44800	soil	10.75
13	7/22/2014	111	29A	368-369	61500	soil	2.78
14		111	29B	368-369	44800	soil	1.6
15	7/22/2014	143	1	75-369	61500	soil	9.06
16		143	2	75-369	44800	soil	13.64
1	7/23/2014	132	9	368-369	61500	soil	1.14
3		132	10	368-369-375	44800	soil	1.87
2	7/23/2014	109	11	315-369	61500	soil	9.56
4		109	12	75-315-369	44800	soil	8.72
5	7/23/2014	111	29A	368-375	61500	soil	0.4
6		111	29B	368-375	44800	soil	1.64
7	7/23/2014	143	1	368-375	61500	soil	-1.09
8		143	2	368-375	44800	soil	-0.53

Manifest Number	Date	Truck number	Trailer number	Grid	Est weight	Material	Activity pCi/g
9	7/23/2014	132	9	368-375	61500	soil	1.59
10		132	10	368-375	44800	soil	2.81
11	7/23/2014	109	11	74-36-315	61500	soil	10.9
12		109	12	74-36-315	44800	soil	11.05
13	7/23/2014	111	29A	368-375	61500	soil	0.57
14		111	29B	368-375	44800	soil	2.36
15	7/23/2014	143	1	74-36-315	61500	soil	3.77
16		143	2	74-36-315	44800	soil	6.01
1	7/24/2014	109	11	368-375	61500	soil	3.93
2		109	12	368-375	44800	soil	2.96
3	7/24/2014	132	198	75-36-368	61500	soil	4.34
4		132	199	75-36-368	44800	soil	3.63
5	7/24/2014	111	29A	75-36-368	61500	soil	7.38
6		111	29B	75-36-368	44800	soil	7.87
7	7/24/2014	125	1	315	61500	soil	3.68
8		125	2	315	44800	soil	7.17
9	7/24/2014	109	11	74	61500	soil	3.07
10		109	12	74	44800	soil	3.41
11	7/24/2014	132	198	74	61500	soil	5.76
12		132	199	74	44800	soil	5.44
13	7/24/2014	111	29A	315	61500	soil	8.93
14		111	29B	315	44800	soil	2.92
15	7/24/2014	125	1	98	61500	soil	4.12
16		125	2	98	44800	soil	8.51
17	7/24/2014	109	11	315	61500	soil	3.07
18		109	12	315	44800	soil	2.93
19	7/24/2014	132	198	315	61500	soil	6.12
20		132	199	98	44800	soil	18.53
1	7/25/2014	111	29A	98-315	61500	soil	10.79
2		111	29B	98-315	44800	soil	18.63
3	7/25/2014	143	1	98-315	61500	soil	12.42
4		143	2	98-315	44800	soil	7.03
5	7/25/2014	109	11	98-315	61500	soil	9.43
6		109	12	98-315	44800	soil	9.8
7	7/25/2014	132	198	98-315	61500	soil	3.92
8		132	199	98-315	44800	soil	4.28
9	7/25/2014	109	12	98-315	44800	soil	2.41
7/28/2014	7/28/2014	sample	-	98	8oz	soil	3.02
						Ave pCi/g	9.205806122

Manifest Number	Date	Truck number	Trailer number	Grid	Est weight	Material	Activity pCi/g
79804	5/12/2014				40000	debris	1
79805	5/12/2014				40000	debris	1
79806	5/12/2014				40000	debris	1
79807	5/12/2014				40000	debris	1
79808	5/12/2014				40000	debris	1
79809	5/13/2014				40000	debris	1
79810	5/29/2014				40000	debris	1
79816	6/2/2014	132	32A &B	94	110000	soil	5
79817	6/2/2014	131	33A & 33B	94	104000	Soil	5
79818	6/2/2014	132	198 & 199	94	104000	soil	5
79819	6/2/2014	109	31A & 31B	94	102000	soil	5
79820	6/3/2014	131	33A & 33B	122	104000	soil	10
79821	6/3/2014	132	198 & 199	122	106000	soil	14.46
79822	6/4/2014	132	198 & 199	122	104000	soil	12.92
79823	6/4/2014	131	1 & 2	122	100000	soil	4.1
60514	6/5/2014	131	1 & 2	156	100000	soil	16.24
1	6/17/2014	132	29A	156	61500	soil	22.55
2		132	29B	156	44800	soil	11.36
3	6/17/2014	131	1	156	61500	soil	12.38
4		131	2	156	44800	soil	4.98
5	6/17/2014	132	29A	156	61500	soil	17.69
6		132	29B	156	44800	soil	16.77
7	6/17/2014	131	1	156	61500	soil	3.1
8		131	2	156	44800	soil	15.27
1	6/19/2014	132	29A	156 / 216	61500	soil	6.5
2		132	29B	216	44800	soil	4.57
3	6/19/2014	109	1	216	61500	soil	9.1
4		109	2	216	44800	soil	7.95
5	6/19/2014	132	29A	216	61500	soil	4.35
6		132	29B	216	44800	soil	6.63
7	6/19/2014	109	1	216	61500	soil	2.94
8		109	2	216	44800	soil	6.54
1	6/20/2014	132	29A	216	61500	soil	1.15
2		132	29B	216	44800	soil	0.91
3	6/20/2014	109	1	157	61500	soil	7.48
4		109	2	157	44800	soil	14.81
5	6/20/2014	132	29A	157	61500	soil	7.67
6		132	29B	157	44800	soil	6.44
7	6/20/2014	109	1	157	61500	soil	8.53
8		109	2	157	44800	soil	9.83
1	6/23/2014	109	1	157	61500	soil	4.63
2		109	2	157	44800	soil	18.85
3	6/23/2014	142	29A	123	61500	soil	13.39
4		142	29B	123	44800	soil	16.24
5	6/23/2014	109	1	216	61500	soil	7.9
6		109	2	216	44800	soil	15.92
7	6/23/2014	142	29A	216	61500	soil	13.38
8		142	29B	216	44800	soil	14.01
1	6/24/2014	109	1	216	61500	soil	6.67
2		109	2	217/247	44800	soil	3.39
1	6/25/2014	109	1	157	61500	soil	3.89
3		109	2	123	44800	soil	11.02
2	6/25/2014	132	29A	217-247	61500	soil	16.7
4		132	29B	217-247	44800	soil	13.93
5	6/25/2014	132	29A	217/247	61500	soil	24.89
7		132	29B	123	44800	soil	19.75
6	6/25/2014	109	1	123	61500	soil	12.51
8		109	2	123/124	44800	soil	10.28
1	6/26/2014	132	29A	217	61500	soil	35.96
7		132	29B	127-247	44800	soil	8.56
2	6/26/2014	109	1	217	61500	soil	11.73
4		109	2	124	44800	soil	9.37
5	6/26/2014	142	9	124	61500	soil	7.08
6		142	10	124-189	44800	soil	2.43

Manifest Number	Date	Truck number	Trailer number	Grid	Est weight	Material	Activity pCi/g
9	6/26/2014	109	1	217-247	61500	soil	12.11
10		109	2	214-247	44800	soil	11.39
11	6/26/2014	142	9	189	61500	soil	2.86
12		142	10	189	44800	soil	9.95
13	6/26/2014	132	29A	158	61500	soil	21.61
14		132	29B	156	44800	soil	11.77
1	6/27/2014	142	9	217-247-187	61500	soil	18.02
3		142	10	158	44800	soil	14.82
2	6/27/2014	109	1	217-247-187	61500	soil	13.51
4		109	2	158	44800	soil	21.6
5	6/27/2014	126	29A	158	61500	soil	10.89
6		126	29B	158	44800	soil	12
9	6/27/2014	126	29A	158	61500	soil	17.25
10		126	29B	158-189	44800	soil	5.37
11	6/27/2014	142	9	127-247-187	61500	soil	26.54
12		142	10	127-247-187	44800	soil	17.22
13	6/27/2014	109	1	217-247-187	61500	soil	12.59
14		109	2	127-247-187	44800	soil	14.23
1	6/30/2014	109	1	123-124-158	61500	soil	19.45
2		109	2	123-124-158	44800	soil	15.19
3	6/30/2014	142	9	247-217-187	61500	soil	18.66
4		142	10	247-217-187	44800	soil	9.44
8	6/30/2014	109	1	123-124-158	61500	soil	18.66
9		109	2	123-124-158	44800	soil	18.48
5	6/30/2014	132	29A	127-247-187	61500	soil	7.08
6		132	29B	127-247-187	44800	soil	6.54
10	6/30/2014	142	9	187	61500	soil	8.18
11		142	10	187	44800	soil	15.29
12	6/30/2014	132	29A	187	61500	soil	3.15
13		132	29B	187	44800	soil	4.48
1	7/1/2014	109	1	187	61500	soil	4.64
3		109	2	187	44800	soil	4.08
2	7/1/2014	132	29A	189-125	61500	soil	17.89
4		132	29B	189-125	44800	soil	14.54
5	7/1/2014	131	9	189-125	61500	soil	20.81
6		131	10	187	44800	soil	5.94
7	7/1/2014	109	1	189-125	61500	soil	12.39
8		109	2	189-125	44800	soil	12.21
9	7/1/2014	132	29A	189-125	61500	soil	17.5
10		132	29B	189-125	44800	soil	8.52
11	7/1/2014	131	9	189-125	61500	soil	11.58
12		131	10	189-125	44800	soil	13.46
1	7/2/2014	109	1	125	61500	soil	48.76
2		109	2	125-189	44800	soil	13.83
3	7/2/2014	131	9	125	61500	soil	19.92
4		131	10	125-189	44800	soil	6.53
5	7/2/2014	109	1	125	61500	soil	19.07
6		109	2	265-6 283-4	44800	soil	6.44
7	7/2/2014	131	9	125	61500	soil	20.65
8		131	10	265-6 283-4	44800	soil	8.91
1	7/8/2014	132	29A	265-6 283-4	61500	soil	11.94
2		132	29B	265-6 283-4	44800	soil	7.34
3	7/8/2014	109	1	126	61500	soil	2.92
4		109	2	126	44800	soil	3.79
5	7/8/2014	132	29A	265-6 283-4	61500	soil	11.54
6		132	29B	265-6 283-4	44800	soil	10.67
8	7/8/2014	109	1	126	61500	soil	11.58
7		109	2	265-6 283-4	44800	soil	13.58
10	7/8/2014	132	29A	265-6 283-4	61500	soil	9.21
9		132	29B	126	44800	soil	10.37
4	7/9/2014	109	1	1&2	61500	soil	6.69
3		109	2	126 1&2	44800	soil	6.21
1	7/9/2014	132	9	265-6 283-4	61500	soil	8.33
2		132	10	265-6 283-4	44800	soil	7.13

Manifest Number	Date	Truck number	Trailer number	Grid	Est weight	Material	Activity pCi/g
5	7/9/2014	109	29A	265-6 283-4	61500	soil	5.04
9		109	29B	265-6 283-4	44800	soil	2.29
8	7/9/2014	132	1	265-6 283-4	61500	soil	3.01
10			2	265-6 283-4	44800	soil	5.63
11	7/9/2014		9	265-6 283-4	61500	soil	4.74
12			10	265-6 283-4	44800	soil	6.38
3	7/10/2014		29A	265-6 283-4	61500	soil	3.69
4			29b	126 2&4	44800	soil	12.6
5	7/10/2014		1	265-6 283-4	61500	soil	5.82
6			2	126 2&4	44800	soil	9.19
9	7/10/2014		9	265-6 283-4	61500	soil	4.11
10			10	265-6 283-4	44800	soil	10.14
11	7/10/2014		29a	265-6 283-4	61500	soil	7.52
12			29b	158	44800	soil	8.91
13	7/10/2014		1	265-6 283-4	61500	soil	7.71
14			2	158	44800	soil	17.32
1	7/11/2014		9	265-6 283-4	61500	soil	4.53
2			10	124	44800	soil	13.5
3	7/11/2014		29A	265-6 283-4	61500	soil	14.86
4			29B	124 & 4	44800	soil	15.03
6	7/11/2014		9	125	61500	soil	13.76
8			10	125	44800	soil	16.52
5	7/11/2014		1	265-6 283-4	61500	soil	12.46
7			2	265-6 283-4	44800	soil	11.62
10	7/11/2014		29A	265-6 283-4	61500	soil	14.2
13			29B	265-6 283-4	44800	soil	11.95
11	7/11/2014		9	368	61500	soil	3.23
12			10	368	44800	soil	7.5
1	7/14/2014		9	265-6 283-4	61500	soil	19.89
2			10	265-6 283-4	44800	soil	5.09
4	7/14/2014		29A	368	61500	soil	5.78
3			29B	368	44800	soil	8.91
5	7/14/2014		1	98-99	61500	soil	3.09
6			2	98-99	44800	soil	4.32
7	7/14/2014		9	98-99	61500	soil	10.63
8			10	98-99	44800	soil	8.32
9	7/14/2014		29A	98-99	61500	soil	7.73
10			29B	98-99	44800	soil	11.35
1	7/15/2014		1	98-99	61500	soil	9.15
2			2	98-99	44800	soil	9.32
4	7/15/2014		9	101	61500	soil	8.91
3			10	101	44800	soil	8.93
5	7/15/2014		29A	101	61500	soil	3.99
6			29B	101	44800	soil	4.32
7	7/15/2014		1	98-99	61500	soil	6.16
8			2	98-99	44800	soil	7.44
9	7/15/2014	141	29A	101	61500	soil	13.29
10		141	29B	101	44800	soil	15.2
11	7/15/2014		9	101	61500	soil	7.89
12	7/16/2014		10	101	44800	soil	16.63
1	7/16/2014		1	265-266	61500	soil	12.19
2			2	265-266	44800	soil	10.4
3	7/16/2014		29A	101	61500	soil	15.36
4			29B	101	44800	soil	14.07
5	7/16/2014		1	370	61500	soil	4.47
7			2	255-6	44800	soil	11.74
8	7/16/2014		9	370	61500	soil	0.2
6			10	265-6	44800	soil	13.96
9	7/16/2014		29A	265-6	61500	soil	11.58
10			29B	265-6	44800	soil	11.76
1	7/17/2014		1	265-6	61500	soil	13.53
2			2	265-6	44800	soil	11.86
3	7/17/2014		9	370	61500	soil	3.91
4			10	370	44800	soil	3.66

Manifest Number	Date	Truck number	Trailer number	Grid	Est weight	Material	Activity pCi/g
5	7/17/2014		29A	265-6	61500	soil	19.99
6			29B	265-6	44800	soil	16.55
7	7/17/2014		11	265-6	61500	soil	27.17
8			12	265-6	44800	soil	22.76
9	7/17/2014		1	370	61500	soil	3.6
10			2	370	44800	soil	-0.073
11	7/17/2014		9	370	61500	soil	2.7
12			10	370	44800	soil	4.28
1	7/18/2014		11	370	61500	soil	-0.87
2			12	370	44800	soil	3.58
3	7/18/2014		29A	188	61500	soil	4.3
4			29B	188	44800	soil	6.57
5	7/18/2014		1	370-376	61500	soil	4.2
6			2	76	44800	soil	5.09
7	7/18/2014		9	188	61500	soil	5.88
8			10	188	44800	soil	5.5
9	7/18/2014		11	76	61500	soil	4.29
10			12	76	44800	soil	1.9
11	7/18/2014		29A	188	61500	soil	8.08
12			29B	188	44800	soil	10.33
13	7/18/2014		1	76	61500	soil	6.67
14			2	76	44800	soil	11.93
79812	7/21/2014		Bin 3	Debris		soil	1
1	7/21/2014		29A	188	61500	soil	6.19
3			29B	188	44800	soil	9.1
2	7/21/2014		1	76	61500	soil	9.27
4			2	76	44800	soil	8.28
5	7/21/2014		9	188	61500	soil	13.51
6			10	188	44800	soil	5.97
7	7/21/2014		11	75-76	61500	soil	16.26
8			12	75-76	44800	soil	10.81
79811	7/21/2014		2	Debris		soil	1
10	7/21/2014		198	188	61500	soil	7.97
12			199	188	44800	soil	7.59
11	7/21/2014		1	37-75	61500	soil	8.65
13			2	37-75	44800	soil	9.25
14	7/21/2014		29A	37-75	61500	soil	15.24
15			29B	37-75	44800	soil	11.38
16	7/21/2014		11	368-369	61500	soil	4.14
17			12	368-369	44800	soil	3.11
2	7/22/2014	109	11	369-368	61500	soil	1.37
3		109	12	369-368	44800	soil	3.72
1	7/22/2014	132	198	75-37-315	61500	soil	12.56
4		132	199	75-35-315	44800	soil	15.06
5	7/22/2014	111	29A	368-369	61500	soil	2.74
6		111	29B	368-369	44800	soil	0.57
7	7/22/2014	111	1	75-315-37	61500	soil	20.77
8		111	2	75-315-37	44800	soil	20.16
9	7/22/2014	109	11	368-375	61500	soil	4.37
10		109	12	368-375	44800	soil	4.84
11	7/22/2014	132	198	75-369	61500	soil	10.81
12		132	199	75-369	44800	soil	10.75
13	7/22/2014	111	29A	368-369	61500	soil	2.78
14		111	29B	368-369	44800	soil	1.6
15	7/22/2014	143	1	75-369	61500	soil	9.06
16		143	2	75-369	44800	soil	13.64
1	7/23/2014	132	9	368-369	61500	soil	1.14
3		132	10	368-369-375	44800	soil	1.87
2	7/23/2014	109	11	315-369	61500	soil	9.56
4		109	12	75-315-369	44800	soil	8.72
5	7/23/2014	111	29A	368-375	61500	soil	0.4
6		111	29B	368-375	44800	soil	1.64
7	7/23/2014	143	1	368-375	61500	soil	-1.09
8		143	2	368-375	44800	soil	-0.53

Manifest Number	Date	Truck number	Trailer number	Grid	Est weight	Material	Activity pCi/g
9	7/23/2014	132	9	368-375	61500	soil	1.59
10		132	10	368-375	44800	soil	2.81
11	7/23/2014	109	11	74-36-315	61500	soil	10.9
12		109	12	74-36-315	44800	soil	11.05
13	7/23/2014	111	29A	368-375	61500	soil	0.57
14		111	29B	368-375	44800	soil	2.36
15	7/23/2014	143	1	74-36-315	61500	soil	3.77
16		143	2	74-36-315	44800	soil	6.01
1	7/24/2014	109	11	368-375	61500	soil	3.93
2		109	12	368-375	44800	soil	2.96
3	7/24/2014	132	198	75-36-368	61500	soil	4.34
4		132	199	75-36-368	44800	soil	3.63
5	7/24/2014	111	29A	75-36-368	61500	soil	7.38
6		111	29B	75-36-368	44800	soil	7.87
7	7/24/2014	125	1	315	61500	soil	3.68
8		125	2	315	44800	soil	7.17
9	7/24/2014	109	11	74	61500	soil	3.07
10		109	12	74	44800	soil	3.41
11	7/24/2014	132	198	74	61500	soil	5.76
12		132	199	74	44800	soil	5.44
13	7/24/2014	111	29A	315	61500	soil	8.93
14		111	29B	315	44800	soil	2.92
15	7/24/2014	125	1	98	61500	soil	4.12
16		125	2	98	44800	soil	8.51
17	7/24/2014	109	11	315	61500	soil	3.07
18		109	12	315	44800	soil	2.93
19	7/24/2014	132	198	315	61500	soil	6.12
20		132	199	98	44800	soil	18.53
1	7/25/2014	111	29A	98-315	61500	soil	10.79
2		111	29B	98-315	44800	soil	18.63
3	7/25/2014	143	1	98-315	61500	soil	12.42
4		143	2	98-315	44800	soil	7.03
5	7/25/2014	109	11	98-315	61500	soil	9.43
6		109	12	98-315	44800	soil	9.8
7	7/25/2014	132	198	98-315	61500	soil	3.92
8		132	199	98-315	44800	soil	4.28
9	7/25/2014	109	12	98-315	44800	soil	2.41
7/28/2014	7/28/2014	sample	-	98	8oz	soil	3.02
						Ave pCi/g	9.205806122

ATTACHMENT #5

Procedures for Drying Samples Preparatory to Gamma Spectrometric Analysis

Procedure for Drying Soil Samples Preparatory to Gamma Spectrometry Analysis

Following grid excavation to a depth of one meter, an auger drill will be used to obtain a composite soil sample in each of the grid quadrants within the 1-2 meter zone. Random sample point locations will be identified utilizing a computer-based program introduced to Solutient by ORAU.

Resultant samples will be placed in one-gallon polypropylene lock-tight bags. Each bag will be labelled with the sample date, the grid and the quadrant from which it originates. Samples will be transported to the on-site laboratory in preparation for Gamma Spectroscopy analysis.

The following procedures apply to sample preparation:

1) Utilize the information on each sample bag with which to assign and log a discrete sample identification number. This same identifying information will be written on the exterior of the 7.5cm D X 5.0cm H metal sample container, utilizing a fine-point black-ink permanent marker.
2) A digital scale, capable of measurements in 0.1 gram increments, will be utilized to weigh each empty sample container/lid combination. The resultant weight will be recorded on the sample container using a fine-point black-ink permanent marker.
3) With the lid placed under the sample container, the scale will be set to zero, following which the sample container will be filled with an aliquot of sample material.
4) The filled sample container will be placed in a drying oven set at 350 degrees F. Following appropriate dwell time (normally 2-3 hours), the container will be removed from the oven.
5) Utilizing a knife-like instrument, the sample material will be aerated and manipulated to enhance thorough dehydration, following which it will be returned to the drying oven.
6) Once the sample appears optimally dry, the container will be removed from the oven and allowed to cool for an unspecified time period.
7) Following cooling, the sample container/lid combination will be placed atop the digital scale. The resultant gross weight will be recorded on the sample container utilizing a fine-point black-ink permanent marker.
8) An aliquot equal to 200.3 grams will be retained in the sample container, with the subsequent gross weight of sample material and container/lid approximating 211.8 grams.
9) Place and seal the lid on the sample container and stage said sample in queue for MCA Gamma Spectroscopy analysis.

ATTACHMENT #6

Data Entry Procedure and Calculation Formulas for Table 7-1

Data Entry Procedure and Calculation Formulas for Table 7-1

1) The gamma spec reports are 5 to 6 pages long with the following titles:

- Page 1 – Gamma Spectrum Analysis
- Page 2 – Peak Analysis Report
- Page 3 – Nuclide Identification Report
- Page 4 – Interference Corrected Report
- Page 5 – Nuclide MDA Report
- Page 6 – Nuclide MDA Report Continued

2) Obtain the Ac-228 911.07 keV energy peak information from Page 3 if available under column labeled "Activity (pCi/Gram)"

3) If there is no data on Page 3 go to Page 5 or 6 of the report and obtain the Ac-228 911.07 keV energy peak information from the last column labeled "Activity (pCi/Gram)"

4) Go to Table 7-1 and perform the following:

5) Type the Ac-228 value into column "H" of the spreadsheet. Red values in parentheses are negative values obtained from the gamma spec report.

6) The spreadsheet formula in column "E" doubles this value to represent the inclusion of Th-228.

7) Colum "F" removes the background value of 1.3 pCi/g from column "E". If the value in Column E is negative the value in Column "F", after background subtraction, shows a value of "0".

8) The formula in column "I" doubles the value form column "E" to represent inclusion of Th-230, along with Th-232 and Th-228 for the Total Thorium value.

9) **Type** the value from column "I" into column "G" for the final Total Thorium value. (Note-This extra step was performed so the formulas throughout the spreadsheet could be pasted initially and all of the zeros in column "I" would not affect the running average as data was entered.

10) Cell #419 in Column "G" averages the data in column "D" from the original samples and column "G" from the Solutient samples.

The Final Average Total Thorium Concentration for all of the grids after incorporating the original and new data is 8.21 pCi/g.

NOTE 1 - Grids 158-1, 216-3, and 216-4 show the Ac-228 value from 2 meters as additional material was removed from these grids.

NOTE 2 - With respect to establishing the background value of 1.3 pCi/g, reference is made to the "Site Characterization Report Phase II, Former Brooks and Perkins, Inc. Site, AAR Manufacturing Group, Inc., Livonia, Michigan, Revision 0, August 1999 page 2 which notes that sample results were corrected for background (1.3 pCi/g).

ATTACHMENT #7

Table 7-1
Results for 1-2 Meter Per Sample and Overall Average Concentration

Solutient Technologies, LLC

Table 7-1
1-2 Meter Layer

	A	B	C	D	E	F	G	H	I
1	**Original Sample Results**				**New Sample Results**				
2	**Grid #**	**Th232/Th228 pCi/g**	**Th232/Th228 bkg sub pCi/g**	**Total Thorium (Th-230 added) pCi/g**	**Th-232/Th-228 pCi/g**	**Th-232/Th-228 bkg sub pCi/g**	**Total Thorium (Th-230 added) pCi/g**	**Type in Th-232 value in pCi/g**	**Total Thorium (Th-230 added) Type this value in Column G**
3	31	0.94	-0.36	0					
4	31	0.94	-0.36	0					
5	32	0.88	-0.42	0					
6	32	0.88	-0.42	0					
7	33	0.82	-0.48	0					
8	33	0.82	-0.48	0					
9	34	0.86	-0.44	0					
10	34	0.86	-0.44	0					
11	35	1.47	0.17	0.34					
12	35	1.47	0.17	0.34					
13	36	4.56	3.26	6.52	-1.44	0.00	0.00	(0.72)	**0.00**
14	36	4.56	3.26	6.52	4.97	3.67	7.34	2.48	**7.34**
15	37	10.5	9.2	18.4	0.50	-0.80	0.00	0.25	**0.00**
16	37	11.2	9.9	19.8	1.83	0.53	1.06	0.91	**1.06**
17	38	4.32	3.02	6.04					
18	38	4.72	3.42	6.84					
19	69	1.11	-0.19	0					
20	69	1.11	-0.19	0					
21	69	1.11	-0.19	0					
22	69	1.11	-0.19	0					
23	70	1.16	-0.14	0					
24	70	1.16	-0.14	0					
25	70	1.16	-0.14	0					
26	70	1.16	-0.14	0					
27	71	0.66	-0.64	0					
28	71	0.66	-0.64	0					
29	71	0.66	-0.64	0					
30	71	0.66	-0.64	0					
31	72	0.89	-0.41	0					
32	72	0.89	-0.41	0					
33	72	0.89	-0.41	0					
34	72	0.89	-0.41	0					

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Table 7-1
1-2 Meter Layer

	A	B	C	D	E	F	G	H	I
1	Original Sample Results				New Sample Results				
2	Grid #	Th232/Th228 pCi/g	Th232/Th228 bkg sub pCi/g	Total Thorium (Th-230 added) pCi/g	Th-232/Th-228 pCi/g	Th-232/Th-228 bkg sub pCi/g	Total Thorium (Th-230 added) pCi/g	Type in Th-232 value in pCi/g	Total Thorium (Th-230 added) Type this value in Column G
35	73	1.02	-0.28	0					
36	73	1.02	-0.28	0					
37	73	1.02	-0.28	0					
38	73	1.02	-0.28	0					
39	74	3.88	2.58	5.16	-2.20	0.00	0.00	(1.10)	**0.00**
40	74	3.88	2.58	5.16	7.18	5.88	11.76	3.59	**11.76**
41	74	3.88	2.58	5.16	0.91	-0.39	0.00	0.46	**0.00**
42	74	3.88	2.58	5.16	2.03	0.73	1.46	1.02	**1.46**
43	75	38	36.7	73.4	6.75	5.45	10.91	3.38	**10.91**
44	75	10.2	8.9	17.8	2.36	1.06	2.13	1.18	**2.13**
45	75	3.32	2.02	4.04	1.77	0.47	0.93	0.88	**0.93**
46	75	2.92	1.62	3.24	0.93	-0.37	0.00	0.47	**0.00**
47	76	4.74	3.44	6.88	4.13	2.83	5.65	2.06	**5.65**
48	76	4.74	3.44	6.88	7.03	5.73	11.46	3.52	**11.46**
49	76	2.86	1.56	3.12	-1.55	0.00	0.00	(0.77)	**0.00**
50	76	2.86	1.56	3.12	2.18	0.88	1.77	1.09	**1.77**
51	94	1.8	0.5	1	3.38	2.08	4.15	1.69	**4.15**
52	94	1.8	0.5	1	2.14	0.84	1.67	1.07	**1.67**
53	94	1.8	0.5	1	-3.84	0.00	0.00	(1.92)	**0.00**
54	94	1.8	0.5	1	-0.88	0.00	0.00	(0.44)	**0.00**
55	95	1.08	-0.22	0					
56	95	1.08	-0.22	0					
57	95	1.08	-0.22	0					
58	95	1.08	-0.22	0					
59	96	1.2	-0.1	0					
60	96	1.2	-0.1	0					
61	96	1.2	-0.1	0					
62	96	1.2	-0.1	0					
63	97	1.04	-0.26	0					
64	97	1.04	-0.26	0					
65	97	1.04	-0.26	0					
66	97	1.04	-0.26	0					

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Table 7-1
1-2 Meter Layer

	A	B	C	D	E	F	G	H	I
1	**Original Sample Results**				**New Sample Results**				
2	**Grid #**	**Th232/Th228 pCi/g**	**Th232/Th228 bkg sub pCi/g**	**Total Thorium (Th-230 added) pCi/g**	**Th-232/Th-228 pCi/g**	**Th-232/Th-228 bkg sub pCi/g**	**Total Thorium (Th-230 added) pCi/g**	**Type in Th-232 value in pCi/g**	**Total Thorium (Th-230 added) Type this value in Column G**
67	98	1.52	0.22	0.44	4.31	3.01	6.03	2.16	**6.03**
68	98	1.52	0.22	0.44	4.31	3.01	6.03	2.16	**6.03**
69	98	1.52	0.22	0.44	2.67	1.37	2.74	1.34	**2.74**
70	98	1.52	0.22	0.44	1.19	-0.11	0.00	0.60	**0.00**
71	99	0.96	-0.34	0	1.24	-0.06	0.00	0.62	**0.00**
72	99	0.96	-0.34	0	-1.54	0.00	0.00	(0.77)	**0.00**
73	99	3.7	2.4	4.8	3.47	2.17	4.34	1.73	**4.34**
74	99	1.02	-0.28	0	-0.37	0.00	0.00	(0.18)	**0.00**
75	100	32.8	31.5	63					
76	100	10.2	8.9	17.8					
77	100	51	49.7	99.4					
78	100	15.8	14.5	29					
79	101	8.36	7.06	14.12	0.06	-1.24	0.00	0.03	**0.00**
80	101	1.09	-0.21	0	-3.06	0.00	0.00	(1.53)	**0.00**
81	101	1.56	0.26	0.52	-0.98	0.00	0.00	(0.49)	**0.00**
82	101	1.56	0.26	0.52	0.61	-0.69	0.00	0.31	**0.00**
83	119	1.66	0.36	0.72					
84	119	1.66	0.36	0.72					
85	119	1.66	0.36	0.72					
86	119	1.66	0.36	0.72					
87	120	1.13	-0.17	0					
88	120	1.13	-0.17	0					
89	120	1.13	-0.17	0					
90	120	1.13	-0.17	0					
91	121	1.13	-0.17	0					
92	121	1.13	-0.17	0					
93	121	1.13	-0.17	0					
94	122	1.52	0.22	0.44	7.53	6.23	12.46	3.77	**12.46**
95	122	1.52	0.22	0.44	0.63	-0.67	0.00	0.31	**0.00**
96	122	1.52	0.22	0.44	4.09	2.79	5.59	2.05	**5.59**
97	122	1.52	0.22	0.44	1.04	-0.26	0.00	0.52	**0.00**

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Table 7-1
1-2 Meter Layer

	A	B	C	D	E	F	G	H	I
1	Original Sample Results				New Sample Results				
2	Grid #	Th232/Th228 pCi/g	Th232/Th228 bkg sub pCi/g	Total Thorium (Th-230 added) pCi/g	Th-232/Th-228 pCi/g	Th-232/Th-228 bkg sub pCi/g	Total Thorium (Th-230 added) pCi/g	Type in Th-232 value in pCi/g	Total Thorium (Th-230 added) Type this value in Column G
98	123	1.52	0.22	0.44	4.38	3.08	6.17	2.19	**6.17**
99	123	9.2	7.9	15.8	3.16	1.86	3.73	1.58	**3.73**
100	123	1.8	0.5	1	5.41	4.11	8.22	2.71	**8.22**
101	123	5.18	3.88	7.76	1.84	0.54	1.07	0.92	**1.07**
102	124	1.57	0.27	0.54	7.83	6.53	13.06	3.91	**13.06**
103	124	1.57	0.27	0.54	5.72	4.42	8.84	2.86	**8.84**
104	124	1.57	0.27	0.54	0.63	-0.67	0.00	0.32	**0.00**
105	124	1.57	0.27	0.54	0.93	-0.37	0.00	0.46	**0.00**
106	125	3.22	1.92	3.84	35.58	34.28	68.56	17.79	**68.56**
107	125	3.22	1.92	3.84	-1.24	0.00	0.00	(0.62)	**0.00**
108	125	3.22	1.92	3.84	-0.28	0.00	0.00	(0.14)	**0.00**
109	125	3.22	1.92	3.84	2.70	1.40	2.80	1.35	**2.80**
110	126	6.2	4.9	9.8	0.15	-1.15	0.00	0.08	**0.00**
111	126	6.2	4.9	9.8	4.69	3.39	6.78	2.34	**6.78**
112	126	3.12	1.82	3.64	-2.05	0.00	0.00	(1.02)	**0.00**
113	126	3.12	1.82	3.64	3.07	1.77	3.54	1.53	**3.54**
114	152	0.99	-0.31	0					
115	152	0.99	-0.31	0					
116	152	0.99	-0.31	0					
117	152	0.99	-0.31	0					
118	153	0.99	-0.31	0					
119	153	0.99	-0.31	0					
120	153	0.99	-0.31	0					
121	153	0.99	-0.31	0					
122	154	1.05	-0.25	0					
123	154	1.05	-0.25	0					
124	154	1.05	-0.25	0					
125	154	1.05	-0.25	0					
126	155	0.89	-0.41	0					
127	155	0.89	-0.41	0					
128	155	0.89	-0.41	0					
129	155	0.89	-0.41	0					

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Table 7-1
1-2 Meter Layer

	A	B	C	D	E	F	G	H	I
1	**Original Sample Results**				**New Sample Results**				
2	**Grid #**	**Th232/Th228 pCi/g**	**Th232/Th228 bkg sub pCi/g**	**Total Thorium (Th-230 added) pCi/g**	**Th-232/Th-228 pCi/g**	**Th-232/Th-228 bkg sub pCi/g**	**Total Thorium (Th-230 added) pCi/g**	**Type in Th-232 value in pCi/g**	**Total Thorium (Th-230 added) Type this value in Column G**
130	156	9.94	8.64	17.28	8.76	7.46	14.92	4.38	**14.92**
131	156	1.18	-0.12	0	8.45	7.15	14.31	4.23	**14.31**
132	156	5	3.7	7.4	17.85	16.55	33.09	8.92	**33.09**
133	156	1.02	-0.28	0	-2.71	0.00	0.00	(1.35)	**0.00**
134	157	1.44	0.14	0.28	32.86	31.56	63.13	16.43	**63.13**
135	157	1.44	0.14	0.28	13.37	12.07	24.13	6.68	**24.13**
136	157	1.44	0.14	0.28	43.33	42.03	84.06	21.67	**84.06**
137	157	1.44	0.14	0.28	4.99	3.69	7.39	2.50	**7.39**
138	158	1.87	0.57	1.14	0.22	-1.08	0.00	0.11	**0.00**
139	158	1.87	0.57	1.14	9.27	7.97	15.94	4.64	**15.94**
140	158	1.87	0.57	1.14	50.86	49.56	99.11	25.43	**99.11**
141	158	1.87	0.57	1.14	18.91	17.61	35.22	9.46	**35.22**
142	159	1.08	-0.22	0					
143	159	1.08	-0.22	0					
144	159	1.08	-0.22	0					
145	159	1.08	-0.22	0					
146	183	0.8	-0.5	0					
147	183	0.8	-0.5	0					
148	183	0.8	-0.5	0					
149	183	0.8	-0.5	0					
150	184	1.17	-0.13	0					
151	184	1.17	-0.13	0					
152	184	1.17	-0.13	0					
153	184	1.17	-0.13	0					
154	185	1.16	-0.14	0					
155	185	1.16	-0.14	0					
156	185	1.16	-0.14	0					
157	185	1.16	-0.14	0					
158	186	1.42	0.12	0.24					
159	186	1.42	0.12	0.24					
160	186	1.42	0.12	0.24					
161	186	1.42	0.12	0.24					

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Table 7-1
1-2 Meter Layer

	A	B	C	D	E	F	G	H	I
1	Original Sample Results				New Sample Results				
2	Grid #	Th232/Th228 pCi/g	Th232/Th228 bkg sub pCi/g	Total Thorium (Th-230 added) pCi/g	Th-232/Th-228 pCi/g	Th-232/Th-228 bkg sub pCi/g	Total Thorium (Th-230 added) pCi/g	Type in Th-232 value in pCi/g	Total Thorium (Th-230 added) Type this value in Column G
162	187	1.28	-0.02	0	21.16	19.86	39.71	10.58	**39.71**
163	187	3.5	2.2	4.4	21.81	20.51	41.01	10.90	**41.01**
164	187	0.92	-0.38	0	6.76	5.46	10.91	3.38	**10.91**
165	187	4.38	3.08	6.16	19.54	18.24	36.49	9.77	**36.49**
166	188	9.18	7.88	15.76	4.59	3.29	6.59	2.30	**6.59**
167	188	3.26	1.96	3.92	0.14	-1.16	0.00	0.07	**0.00**
168	188	5.66	4.36	8.72	4.22	2.92	5.84	2.11	**5.84**
169	188	21	19.7	39.4	-0.78	0.00	0.00	(0.39)	**0.00**
170	189	11.1	9.8	19.6	-0.14	0.00	0.00	(0.07)	**0.00**
171	189	24.8	23.5	47	12.16	10.86	21.72	6.08	**21.72**
172	189	3.28	1.98	3.96	28.44	27.14	54.29	14.22	**54.29**
173	189	3.28	1.98	3.96	30.41	29.11	58.22	15.21	**58.22**
174	190	0.88	-0.42	0					
175	190	0.88	-0.42	0					
176	190	0.88	-0.42	0					
177	190	0.88	-0.42	0					
178	213	0.76	-0.54	0					
179	213	0.76	-0.54	0					
180	213	0.76	-0.54	0					
181	213	0.76	-0.54	0					
182	214	7.96	6.66	13.32					
183	214	5.54	4.24	8.48					
184	214	0.86	-0.44	0					
185	214	2.16	0.86	1.72					
186	215	2.94	1.64	3.28					
187	215	5.4	4.1	8.2					
188	215	1.18	-0.12	0					
189	215	126	124.7	249.4					
190	216	4.08	2.78	5.56	3.60	2.30	4.61	1.80	**4.61**
191	216	1.02	-0.28	0	5.65	4.35	8.70	2.83	**8.70**
192	216	30.6	29.3	58.6	13.49	12.19	24.38	6.75	**24.38**
193	216	2.18	0.88	1.76	14.72	13.42	26.85	7.36	**26.85**

Solutient Technologies, LLC

Table 7-1
1-2 Meter Layer

	A	B	C	D	E	F	G	H	I
1	Original Sample Results				New Sample Results				
2	Grid #	Th232/Th228 pCi/g	Th232/Th228 bkg sub pCi/g	Total Thorium (Th-230 added) pCi/g	Th-232/Th-228 pCi/g	Th-232/Th-228 bkg sub pCi/g	Total Thorium (Th-230 added) pCi/g	Type in Th-232 value in pCi/g	Total Thorium (Th-230 added) Type this value in Column G
194	217	1.11	-0.19	0	5.36	4.06	8.11	2.68	**8.11**
195	217	6.62	5.32	10.64	18.39	17.09	34.17	9.19	**34.17**
196	217	22.6	21.3	42.6	20.11	18.81	37.61	10.05	**37.61**
197	217	9.26	7.96	15.92	41.14	39.84	79.68	20.57	**79.68**
198	218	**6.5**	5.2	10.4					
199	218	**4.46**	3.16	6.32					
200	218	**2.52**	1.22	2.44					
201	218	**8.3**	7	14					
202	219	19.6	18.3	36.6					
203	219	20	18.7	37.4					
204	219	4.22	2.92	5.84					
205	219	114	112.7	225.4					
206	220	0.86	-0.44	0					
207	220	1.2	-0.1	0					
208	220	1.14	-0.16	0					
209	220	1.17	-0.13	0					
210	243	0.83	-0.47	0					
211	243	0.83	-0.47	0					
212	243	0.83	-0.47	0					
213	243	0.83	-0.47	0					
214	244	1.07	-0.23	0					
215	244	1.07	-0.23	0					
216	244	1.07	-0.23	0					
217	244	1.07	-0.23	0					
218	245	0.83	-0.47	0					
219	245	0.83	-0.47	0					
220	245	0.83	-0.47	0					
221	245	0.83	-0.47	0					
222	246	1.4	0.1	0.2					
223	246	1.4	0.1	0.2					
224	246	1.4	0.1	0.2					
225	246	1.4	0.1	0.2					

Solutient Technologies, LLC

Table 7-1
1-2 Meter Layer

	A	B	C	D	E	F	G	H	I
1	Original Sample Results				New Sample Results				
2	Grid #	Th232/Th228 pCi/g	Th232/Th228 bkg sub pCi/g	Total Thorium (Th-230 added) pCi/g	Th-232/Th-228 pCi/g	Th-232/Th-228 bkg sub pCi/g	Total Thorium (Th-230 added) pCi/g	Type in Th-232 value in pCi/g	Total Thorium (Th-230 added) Type this value in Column G
226	247	1.64	0.34	0.68	1.00	-0.30	0.00	0.50	**0.00**
227	247	1.64	0.34	0.68	7.73	6.43	12.86	3.86	**12.86**
228	247	1.64	0.34	0.68	-0.66	0.00	0.00	(0.33)	**0.00**
229	247	1.64	0.34	0.68	5.10	3.80	7.59	2.55	**7.59**
230	248	**1.23**	-0.07	0					
231	248	**1.07**	-0.23	0					
232	248	**6.82**	5.52	11.04					
233	248	**1.4**	0.1	0.2					
234	249	31	29.7	59.4					
235	249	13.7	12.4	24.8					
236	249	250	248.7	497.4					
237	249	33	31.7	63.4					
238	260	0.94	-0.36	0					
239	260	0.94	-0.36	0					
240	260	0.94	-0.36	0					
241	260	0.94	-0.36	0					
242	261	1.16	-0.14	0					
243	261	1.16	-0.14	0					
244	261	1.16	-0.14	0					
245	261	1.16	-0.14	0					
246	262	0.81	-0.49	0					
247	262	0.81	-0.49	0					
248	262	0.81	-0.49	0					
249	262	0.81	-0.49	0					
250	263	0.99	-0.31	0					
251	263	0.99	-0.31	0					
252	263	0.99	-0.31	0					
253	263	0.99	-0.31	0					
254	264	**1.3**	0	0					
255	264	**1.3**	0	0					
256	264	**1.3**	0	0					
257	264	**1.3**	0	0					

Solutient Technologies, LLC

Table 7-1
1-2 Meter Layer

	A	B	C	D	E	F	G	H	I
1	Original Sample Results				New Sample Results				
2	Grid #	Th232/Th228 pCi/g	Th232/Th228 bkg sub pCi/g	Total Thorium (Th-230 added) pCi/g	Th-232/Th-228 pCi/g	Th-232/Th-228 bkg sub pCi/g	Total Thorium (Th-230 added) pCi/g	Type in Th-232 value in pCi/g	Total Thorium (Th-230 added) Type this value in Column G
258	265	0.97	-0.33	0	3.84	2.54	5.09	1.92	**5.09**
259	265	0.97	-0.33	0	6.78	5.48	10.95	3.39	**10.95**
260	265	0.97	-0.33	0	7.26	5.96	11.93	3.63	**11.93**
261	265	0.97	-0.33	0	5.26	3.96	7.91	2.63	**7.91**
262	266	36.2	34.9	69.8	5.34	4.04	8.09	2.67	**8.09**
263	266	17.2	15.9	31.8	-3.72	0.00	0.00	(1.86)	**0.00**
264	266	21.8	20.5	41	6.31	5.01	10.03	3.16	**10.03**
265	266	3.98	2.68	5.36	5.02	3.72	7.44	2.51	**7.44**
266	278	0.89	-0.41	0					
267	278	0.89	-0.41	0					
268	278	0.89	-0.41	0					
269	278	0.89	-0.41	0					
270	279	1.07	-0.23	0					
271	279	1.07	-0.23	0					
272	279	1.07	-0.23	0					
273	279	1.07	-0.23	0					
274	280	1.12	-0.18	0					
275	280	1.12	-0.18	0					
276	280	1.12	-0.18	0					
277	280	1.12	-0.18	0					
278	281	1.14	-0.16	0					
279	281	1.14	-0.16	0					
280	281	1.14	-0.16	0					
281	281	1.14	-0.16	0					
282	282	**1.04**	-0.26	0					
283	282	**1.04**	-0.26	0					
284	282	**1.04**	-0.26	0					
285	282	**1.04**	-0.26	0					
286	283	0.95	-0.35	0	4.27	2.97	5.94	2.14	**5.94**
287	283	0.95	-0.35	0	1.60	0.30	0.60	0.80	**0.60**
288	283	0.95	-0.35	0	2.99	1.69	3.39	1.50	**3.39**
289	283	0.95	-0.35	0	2.89	1.59	3.17	1.44	**3.17**

Solutient Technologies, LLC

Table 7-1
1-2 Meter Layer

	A	B	C	D	E	F	G	H	I
1	Original Sample Results				New Sample Results				
2	Grid #	Th232/Th228 pCi/g	Th232/Th228 bkg sub pCi/g	Total Thorium (Th-230 added) pCi/g	Th-232/Th-228 pCi/g	Th-232/Th-228 bkg sub pCi/g	Total Thorium (Th-230 added) pCi/g	Type in Th-232 value in pCi/g	Total Thorium (Th-230 added) Type this value in Column G
290	284	1.04	-0.26	0	1.91	0.61	1.22	0.95	**1.22**
291	284	1.04	-0.26	0	2.00	0.70	1.41	1.00	**1.41**
292	284	1.04	-0.26	0	0.63	-0.67	0.00	0.32	**0.00**
293	284	1.04	-0.26	0	1.10	-0.20	0.00	0.55	**0.00**
294	310	0.9	-0.4	0					
295	310	0.9	-0.4	0					
296	310	0.9	-0.4	0					
297	310	0.9	-0.4	0					
298	311	0.92	-0.38	0					
299	311	0.92	-0.38	0					
300	311	0.92	-0.38	0					
301	311	0.92	-0.38	0					
302	312	0.85	-0.45	0					
303	312	0.85	-0.45	0					
304	312	0.85	-0.45	0					
305	312	0.85	-0.45	0					
306	313	1.47	0.17	0.34					
307	313	1.47	0.17	0.34					
308	313	1.47	0.17	0.34					
309	313	1.47	0.17	0.34					
310	314	1.36	0.06	0.12					
311	314	1.36	0.06	0.12					
312	314	1.36	0.06	0.12					
313	314	1.36	0.06	0.12					
314	315	0.93	-0.37	0	2.07	0.77	1.54	1.04	**1.54**
315	315	0.93	-0.37	0	0.32	-0.98	0.00	0.16	**0.00**
316	315	0.93	-0.37	0	0.82	-0.48	0.00	0.41	**0.00**
317	315	0.93	-0.37	0	1.28	-0.02	0.00	0.64	**0.00**
318	316	1.075	-0.225	0					
319	316	1.075	-0.225	0					
320	316	1.075	-0.225	0					
321	316	1.075	-0.225	0					

Solutient Technologies, LLC

Table 7-1
1-2 Meter Layer

	A	B	C	D	E	F	G	H	I
1	Original Sample Results				New Sample Results				
2	Grid #	Th232/Th228 pCi/g	Th232/Th228 bkg sub pCi/g	Total Thorium (Th-230 added) pCi/g	Th-232/Th-228 pCi/g	Th-232/Th-228 bkg sub pCi/g	Total Thorium (Th-230 added) pCi/g	Type in Th-232 value in pCi/g	Total Thorium (Th-230 added) Type this value in Column G
322	348	1.17	-0.13	0					
323	348	1.17	-0.13	0					
324	349	1.19	-0.11	0					
325	349	1.19	-0.11	0					
326	350	1.13	-0.17	0					
327	350	1.13	-0.17	0					
328	351	1.34	0.04	0.08					
329	351	1.34	0.04	0.08					
330	352	3.78	2.48	4.96					
331	352	3.78	2.48	4.96					
332	352	3.78	2.48	4.96					
333	352	3.78	2.48	4.96					
334	353	1.21	-0.09	0					
335	353	1.21	-0.09	0					
336	353	1.21	-0.09	0					
337	353	1.21	-0.09	0					
338	354	3.44	2.14	4.28					
339	354	3.44	2.14	4.28					
340	354	3.44	2.14	4.28					
341	354	3.44	2.14	4.28					
342	355	1.08	-0.22	0					
343	355	1.08	-0.22	0					
344	355	1.08	-0.22	0					
345	355	1.08	-0.22	0					
346	356	1.22	-0.08	0					
347	356	1.22	-0.08	0					
348	356	1.22	-0.08	0					
349	356	1.22	-0.08	0					
350	357	0.97	-0.33	0					
351	357	0.97	-0.33	0					
352	357	0.97	-0.33	0					
353	357	0.97	-0.33	0					

Solutient Technologies, LLC

Table 7-1
1-2 Meter Layer

	A	B	C	D	E	F	G	H	I
1	Original Sample Results				New Sample Results				
2	Grid #	Th232/Th228 pCi/g	Th232/Th228 bkg sub pCi/g	Total Thorium (Th-230 added) pCi/g	Th-232/Th-228 pCi/g	Th-232/Th-228 bkg sub pCi/g	Total Thorium (Th-230 added) pCi/g	Type in Th-232 value in pCi/g	Total Thorium (Th-230 added) Type this value in Column G
354	358	3.52	2.22	4.44					
355	358	3.52	2.22	4.44					
356	358	3.52	2.22	4.44					
357	358	3.52	2.22	4.44					
358	359	1.12	-0.18	0					
359	359	1.12	-0.18	0					
360	359	1.12	-0.18	0					
361	359	1.12	-0.18	0					
362	360	1.58	0.28	0.56					
363	360	1.58	0.28	0.56					
364	360	1.58	0.28	0.56					
365	360	1.58	0.28	0.56					
366	361	1.58	0.28	0.56					
367	361	1.58	0.28	0.56					
368	361	1.58	0.28	0.56					
369	361	1.58	0.28	0.56					
370	362	1.93	0.63	1.26					
371	362	1.93	0.63	1.26					
372	362	1.93	0.63	1.26					
373	362	1.93	0.63	1.26					
374	363	1.55	0.25	0.5					
375	363	1.55	0.25	0.5					
376	363	1.55	0.25	0.5					
377	363	1.55	0.25	0.5					
378	364	1.55	0.25	0.5					
379	364	1.55	0.25	0.5					
380	364	1.55	0.25	0.5					
381	364	1.55	0.25	0.5					
382	365	0.92	-0.38	0					
383	365	0.92	-0.38	0					
384	365	0.92	-0.38	0					
385	365	0.92	-0.38	0					

Solutient Technologies, LLC

Table 7-1
1-2 Meter Layer

	A	B	C	D	E	F	G	H	I
1	Original Sample Results				New Sample Results				
2	Grid #	Th232/Th228 pCi/g	Th232/Th228 bkg sub pCi/g	Total Thorium (Th-230 added) pCi/g	Th-232/Th-228 pCi/g	Th-232/Th-228 bkg sub pCi/g	Total Thorium (Th-230 added) pCi/g	Type in Th-232 value in pCi/g	Total Thorium (Th-230 added) Type this value in Column G
386	366	8.06	6.76	13.52					
387	366	8.46	7.16	14.32					
388	366	11.1	9.8	19.6					
389	366	8.08	6.78	13.56					
390	367	0.48	-0.82	0					
391	367	0.48	-0.82	0					
392	367	0.48	-0.82	0					
393	367	0.48	-0.82	0					
394	368	37	35.7	71.4	0.23	-1.07	0.00	0.12	**0.00**
395	368	37	35.7	71.4	-0.35	0.00	0.00	(0.18)	**0.00**
396	368	37	35.7	71.4	6.09	4.79	9.59	3.05	**9.59**
397	368	37	35.7	71.4	0.64	-0.66	0.00	0.32	**0.00**
398	369	**13.1**	11.8	23.6	5.16	3.86	7.71	2.58	**7.71**
399	369	**16.4**	15.1	30.2	0.31	-0.99	0.00	0.16	**0.00**
400	369	**10.8**	9.5	19	1.95	0.65	1.29	0.97	**1.29**
401	369	**15.8**	14.5	29	-1.73	0.00	0.00	(0.87)	**0.00**
402	370	21.4	20.1	40.2	7.38	6.08	12.17	3.69	**12.17**
403	370	31.2	29.9	59.8	0.70	-0.60	0.00	0.35	**0.00**
404	370	22.8	21.5	43	3.98	2.68	5.37	1.99	**5.37**
405	370	21.4	20.1	40.2	4.57	3.27	6.53	2.28	**6.53**
406	371	2.22	0.92	1.84					
407	371	2.22	0.92	1.84					
408	371	4.32	3.02	6.04					
409	371	4.32	3.02	6.04					
410	372	0.84	-0.46	0					
411	372	0.84	-0.46	0					
412	373	2.78	1.48	2.96					
413	373	2.78	1.48	2.96					
414	374	3	1.7	3.4					
415	374	3	1.7	3.4					
416	375	31.6	30.3	60.6	3.49	2.19	4.39	1.75	**4.39**
417	375	50.6	49.3	98.6	0.85	-0.45	0.00	0.43	**0.00**

Table 7-1
1-2 Meter Layer

	A	B	C	D	E	F	G	H	I
1	**Original Sample Results**				**New Sample Results**				
2	**Grid #**	**Th232/Th228 pCi/g**	**Th232/Th228 bkg sub pCi/g**	**Total Thorium (Th-230 added) pCi/g**	**Th-232/Th-228 pCi/g**	**Th-232/Th-228 bkg sub pCi/g**	**Total Thorium (Th-230 added) pCi/g**	**Type in Th-232 value in pCi/g**	**Total Thorium (Th-230 added) Type this value in Column G**
418									
419	Average Total Thorium Concentration			7.6			**8.21**		
420									
421	Section 3.3 Work Plan	After excavating soil to a depth of one meter, the average concentration in the 1-2 meter level will be verified by removing and analyzing soil samples. Four samples will be removed from each 100 square meter grid. The concentration of the four grid samples will be added to the existing data for the 1-2 meter layer presented in Table3.4. If the average thorium concentration of an exposed grid in the 1-2 meter layer causes the average concentration in **the entire 1-2 meter layer to exceed 20 pCi/g**, AAR will remove the exposed grid to an appropriate depth and replace it with clean fill.							
422									
423									
424									
425									
426									
427									
428									

Solutient Technologies, LLC

ATTACHMENT #8

Random Locations of the 1-2 Meter Soil Samples for Each Grid/Quadrant

Quadrant Length 5 m

		Random		Coordinate (m)	
Grid #	Random Coordinate	X	Y	X	Y
94	1	0.344156	0.961364	1.7	4.8
94	2	0.52305	0.952092	2.6	4.8
94	3	0.88099	0.984744	4.4	4.9
94	4	0.651309	0.482088	3.3	2.4
122	5	0.498395	0.176127	2.5	0.9
122	6	0.832182	0.018862	4.2	0.1
122	7	0.271283	0.989585	1.4	4.9
122	8	0.621844	0.521496	3.1	2.6
156	9	0.844736	0.920334	4.2	4.6
156	10	0.309281	0.437501	1.5	2.2
156	11	0.054359	0.807579	0.3	4.0
156	12	0.738915	0.376241	3.7	1.9
216	13	0.891283	0.456715	4.5	2.3
216	14	0.80213	0.437171	4.0	2.2
216	15	0.158756	0.991226	0.8	5.0
216	16	0.222436	0.183413	1.1	0.9
216 (alt)	17	0.606336	0.437948	3.0	2.2
216 (alt)	18	0.482816	0.217706	2.4	1.1
216 (alt)	19	0.364397	0.062635	1.8	0.3
216 (alt)	20	0.496519	0.241848	2.5	1.2
216 (alt)	21	0.167482	0.683406	0.8	3.4
216 (alt)	22	0.932731	0.307419	4.7	1.5
216 (alt)	23	0.795872	0.108046	4.0	0.5
216 (alt)	24	0.404483	0.827311	2.0	4.1
216 (alt)	25	0.600817	0.184213	3.0	0.9
216 (alt)	26	0.827592	0.972375	4.1	4.9
157	27	0.133566	0.362095	0.7	1.8
157	28	0.331605	0.551568	1.7	2.8
157	29	0.086971	0.791948	0.4	4.0
157	30	0.296869	0.156368	1.5	0.8
217	31	0.521721	0.800375	2.6	4.0
217	32	0.076398	0.137253	0.4	0.7
217	33	0.926158	0.329441	4.6	1.6
217	34	0.349143	0.743322	1.7	3.7
247	35	0.688725	0.231306	3.4	1.2
247	36	0.079367	0.759592	0.4	3.8
247	37	0.595865	0.099869	3.0	0.5
247	38	0.541816	0.712874	2.7	3.6
187	39	0.030097	0.694415	0.2	3.5
187	40	0.117372	0.069884	0.6	0.3
187	41	0.580359	0.091652	2.9	0.5
187	42	0.554488	0.71086	2.8	3.6

123	43	0.858538	0.414102	4.3	2.1
123	44	0.110942	0.697049	0.6	3.5
123	45	0.972316	0.176233	4.9	0.9
123	46	0.807098	0.287055	4.0	1.4
124	47	0.063393	0.577473	0.3	2.9
124	48	0.681516	0.258875	3.4	1.3
125	49	0.618399	0.849545	3.1	4.2
125	50	0.749316	0.0376	3.7	0.2
158	51	0.545315	0.67179	2.7	3.4
158	52	0.561291	0.749901	2.8	3.7
158	53	0.25914	0.232379	1.3	1.2
158	54	0.420818	0.666748	2.1	3.3
189	55	0.302333	0.330081	1.5	1.7
189	56	0.845553	0.05868	4.2	0.3
189	57	0.380722	0.29009	1.9	1.5
189	58	0.466551	0.571757	2.3	2.9
125	59	0.772139	0.434429	3.9	2.2
125	60	0.326964	0.968589	1.6	4.8
124	61	0.428004	0.826342	2.1	4.1
124	62	0.85492	0.807241	4.3	4.0
126	63	0.443572	0.928908	2.2	4.6
126	64	0.11878	0.056862	0.6	0.3
126	65	0.253828	0.029873	1.3	0.1
126	66	0.250727	0.849026	1.3	4.2
368	67	0.26993	0.621173	1.3	3.1
368	68	0.487021	0.189866	2.4	0.9
368	69	0.323927	0.380068	1.6	1.9
368	70	0.02635	0.071952	0.1	0.4
283	71	0.790946	0.54814	4.0	2.7
283	72	0.043744	0.298322	0.2	1.5
284	73	0.348318	0.215246	1.7	1.1
284	74	0.041128	0.013278	0.2	0.1
284	75	0.193071	0.870889	1.0	4.4
284	76	0.348798	0.072475	1.7	0.4
265	77	0.726901	0.787361	3.6	3.9
265	78	0.478587	0.206893	2.4	1.0
265	79	0.03253	0.315397	0.2	1.6
265	80	0.612023	0.423267	3.1	2.1
283	81	0.66022	0.051435	3.3	0.3
283	82	0.055731	0.67328	0.3	3.4
99	83	0.075042	0.767285	0.4	3.8
99	84	0.396029	0.205392	2.0	1.0
99	85	0.7023	0.234285	3.5	1.2
99	86	0.679827	0.745169	3.4	3.7
101	87	0.672118	0.29618	3.4	1.5
101	88	0.433659	0.866236	2.2	4.3
101	89	0.584418	0.507652	2.9	2.5

101	90	0.043656	0.940121	0.2	4.7
266	91	0.545975	0.030947	2.7	0.2
266	92	0.906895	0.57984	4.5	2.9
266	93	0.480634	0.178638	2.4	0.9
266	94	0.07669	0.962097	0.4	4.8
188	95	0.691357	0.296083	3.5	1.5
188	96	0.195146	0.737974	1.0	3.7
188	97	0.671081	0.668178	3.4	3.3
188	98	0.210033	0.653219	1.1	3.3
76	99	0.29047	0.04337	1.5	0.2
76	100	0.374231	0.675679	1.9	3.4
76	101	0.580589	0.74815	2.9	3.7
76	102	0.591302	0.489848	3.0	2.4
370	103	0.316555	0.531534	1.6	2.7
370	104	0.545632	0.148572	2.7	0.7
370	105	0.439419	0.983714	2.2	4.9
370	106	0.529081	0.942948	2.6	4.7
369	107	0.898267	0.756075	4.5	3.8
369	108	0.404094	0.307813	2.0	1.5
369	109	0.287838	0.297512	1.4	1.5
369	110	0.891333	0.41404	4.5	2.1
75	111	0.641067	0.480097	3.2	2.4
75	112	0.598143	0.614359	3.0	3.1
75	113	0.563487	0.223309	2.8	1.1
75	114	0.710989	0.472595	3.6	2.4
37	115	0.768433	0.663762	3.8	3.3
37	116	0.394806	0.180759	2.0	0.9
37	117	0.675856	0.028664	3.4	0.1
37	118	0.008633	0.136524	0.0	0.7
375	119	0.329733	0.618166	1.6	3.1
375	120	0.293888	0.849738	1.5	4.2
74	121	0.702632	0.219462	3.5	1.1
74	122	0.085376	0.54581	0.4	2.7
74	123	0.235456	0.064521	1.2	0.3
74	124	0.704696	0.3376	3.5	1.7
36	125	0.727269	0.167426	3.6	0.8
36	126	0.901791	0.608375	4.5	3.0
98	127	0.914747	0.332548	4.6	1.7
98	128	0.378438	0.40738	1.9	2.0
98	129	0.600813	0.63451	3.0	3.2
98	130	0.952382	0.563998	4.8	2.8
315	131	0.441082	0.100264	2.2	0.5
315	132	0.99403	0.637936	5.0	3.2
315	133	0.344156	0.961364	1.7	4.8
315	134	0.52305	0.952092	2.6	4.8